

White Rock Wind Farm

Stage 1

CEMP – Annexure H Bushfire Risk Management Plan



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For: White Rock Wind Farm Pty Ltd



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1 INTRODUCTION TO THIS DOCUMENT

1.1 BACKGROUND AND SETTING

This Bushfire Risk Management Plan has been prepared by ERM for White Rock Wind Farm Pty Ltd (WRWFPL) as a component of the Construction Environmental Management Plan (CEMP) required by Project Approval Condition E21 for the White Rock Wind Farm (WRWF). WRWF was approved by the NSW Minister for Planning on the 12th of July 2012. The Project Approval was modified on 24 July 2015 and 01 April 2016.

The Conditions of Approval C14 and C15 address Bushfire Risk. These conditions are shown below:

Condition C14 – *The Proponent shall ensure that all project components on site are designed, constructed and operated to minimise ignition risks, provide for asset protection consistent with relevant RFS design guidelines (Planning for Bushfire Protection 2006 and Standards for Asset Protection) and provide for necessary emergency management including appropriate fire-fighting equipment and water supplies on site to respond to a bush fire.*

Condition C15 – *Throughout the operational life of the project, the Proponent shall regularly consult with the local RFS about details of the project, including the construction timetable and the final location of all infrastructure on the site. The Proponent shall comply with any reasonable request of the local RFS to reduce the risk of bushfire and to enable fast access in emergencies.*

The relevant item from the Statements of Commitments (Item 38 refer Appendix A) is also incorporated into this Bushfire Risk Management Plan.

1.2 SCOPE

This plan covers all land associated with the White Rock Wind Farm and is currently relevant only to the construction phase of Stage 1 of the WRWF project. This Plan has been reviewed by the local NSW RFS for comment, specific to the management of construction impacts and risks.

This plan is intended to be an adaptive management document. Specifically, prior to the wind farm becoming operational, operational issues would be incorporated into this Bushfire Risk Management Plan.

1.3 PURPOSE

This plan identifies those activities associated with the construction phase of the White Rock Wind Farm Stage 1 that could be a potential bushfire threat and establishes strategies to manage these risks. The plan also includes a risk assessment approach/methodology that construction personnel can use to assess the level of risk of a particular activity and the effectiveness of their treatment options.

1.4 AIMS AND OBJECTIVES

All development on Bush Fire Prone Land must satisfy the aim and objectives of *Planning for Bushfire Protection* (PBP, page 1).

“The aim of PBP is to use the NSW development assessment system to provide for the protection of human life (including firefighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment”

“More specifically, the objectives are to:

- (i) afford occupants of any building adequate protection from exposure to a bush fire;*
- (ii) provide for a defensible space to be located around buildings;*
- (iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition;*
- (iv) ensure that safe operational access and egress for emergency service personnel and residents is available;*
- (v) provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ); and*
- (vi) ensure that utility services are adequate to meet the needs of firefighters (and others assisting in bush fire fighting).”*

These aims and objectives are mostly applicable to residential development, which is the focus of the PBP guidelines. With these in mind, however, the following objectives for bushfire management and mitigation during the construction phase of the White Rock Wind Farm are relevant:

- To ensure all construction personnel are adequately protected from exposure to a bushfire;
- To maintain asset protection zones around buildings on site (control room, substation, construction site sheds, amenities buildings, etc) during their construction and, for all permanent structures, after completion of construction;
- To undertake all construction activities in a manner that minimises any potential for material ignition;
- To ensure safe site access and egress for all staff and emergency personnel if required. It is noted that the access track network developed for the Stage 1 WRWF project will provide improved access and egress for staff and emergency personnel as well as for the local landowners in their normal pastoral activities;
- To ensure appropriate fire-fighting equipment is held on site and all staff are aware of the workplace health and safety protocols in the event of a fire;
- To locate and map any supplies of water present on site that could assist to meet the needs of fire fighters (and others assisting in bush fire-fighting and to ensure the location of these water sources is known;
- To regularly consult with the local NSW RFS on appropriate bush fire management strategies.

2 DETAILS OF THE PROJECT

2.1 BACKGROUND

The White Rock Wind Farm Stage 1 project involves the construction and operation of up to 70 wind turbines on ridges in the vicinity of White Rock Mountain in the New England region of NSW. An Environmental Assessment (EA) to assess the potential environmental impacts of the wind farm was undertaken by Epuron in 2011. In accordance with the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) and State Environmental Planning Policy (Major Projects) 2005, the proposal was considered to be a major project and was assessed under Part 3A of the EP&A Act. The White Rock Wind Farm was approved by the NSW Minister for Planning on the 10th of July 2012 following assessment under Part 3A of the NSW Environment Planning and Assessment Act 1979 (EP&A Act). The Project Approval was modified on 24 July 2015 and again on 01 April 2016.

White Rock Wind Farm Pty Ltd (WRWFPL) is the proponent for the construction and operation of the wind farm.

2.2 LOCATION

The White Rock Wind Farm (WRWF) is to be located along north-south trending ridges of the Great Dividing Range between Matheson and Maybole in NSW's New England region. The WRWF project area is about 20km west of Glen Innes and about 40km east of Inverell (Figure 2-1).

The wind farm is located on private property within and adjacent to agricultural areas used for sheep and cattle grazing and scattered areas of cropping. The land is Zone RU1 – Primary Production under the Glen Innes Severn and Inverell Local Environmental Plans (LEPs).

In general, the WRWF project locality can be characterised as grassland ridges with woodland patches across the bulk of the project area. Prior to the project development access is not available from the northern site entrance to the southern entrance due to property boundaries and lack of cross boundary gates and tracks. The project will provide access tracks of good standard that will enable safe and direct access between the parts of the project and across a range of properties. Figure 2.2 shows the properties where the project is located.

Residential dwellings are located within the project area and the surrounding area generally in valleys for the northern part of the project area and on elevated plateau areas in the vicinity of the southern part of the project.

The nearest township is that of Glen Innes, some 20 km to the east of the project area. Inverell is about 40km west of the northern entrance to the project area.

Access to the WRWF Project Area and locations of emergency agency centres in Glen Innes are shown in Figure 2-3.

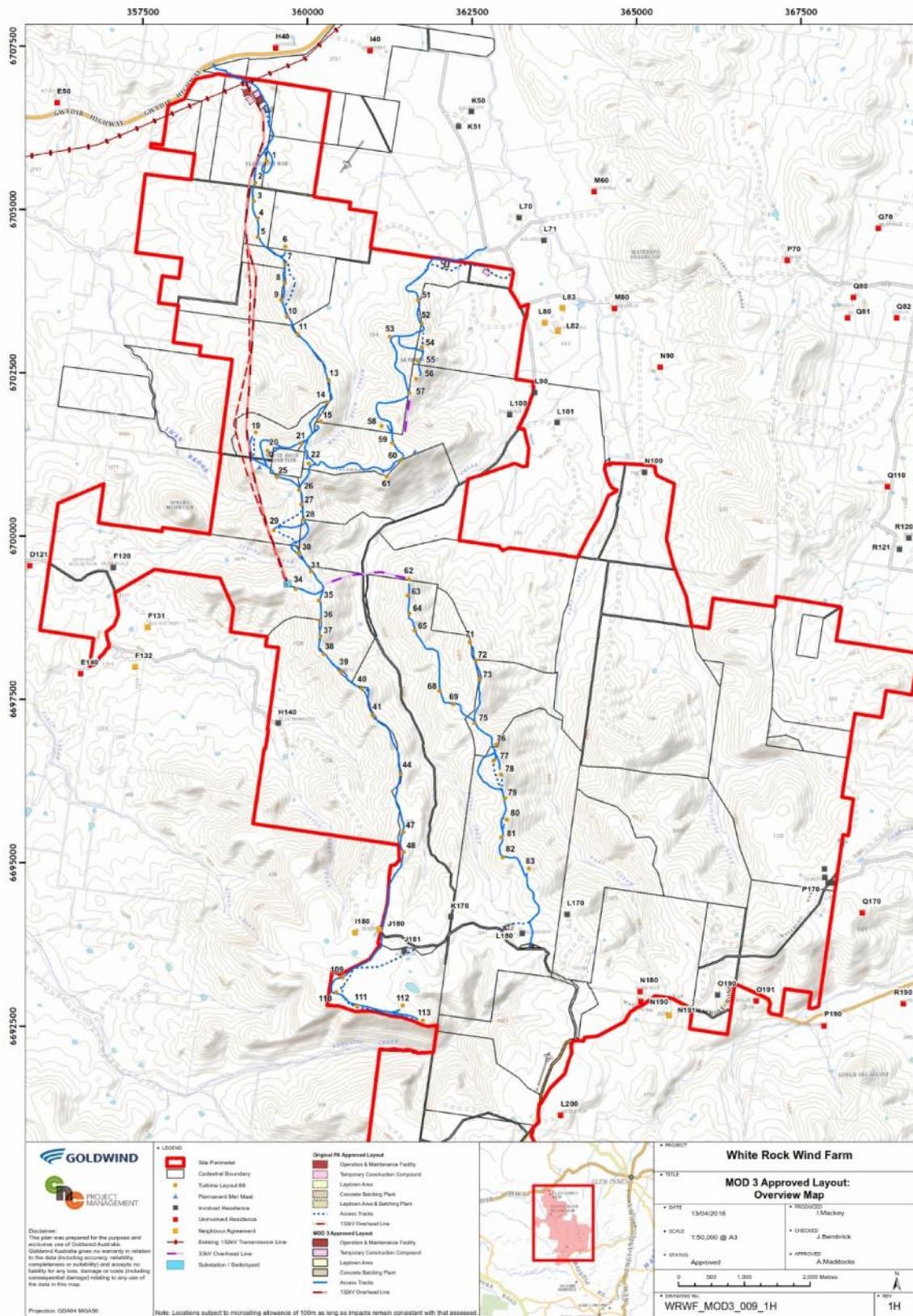


Figure 2-1 WRWF Locality Map and Project Layout

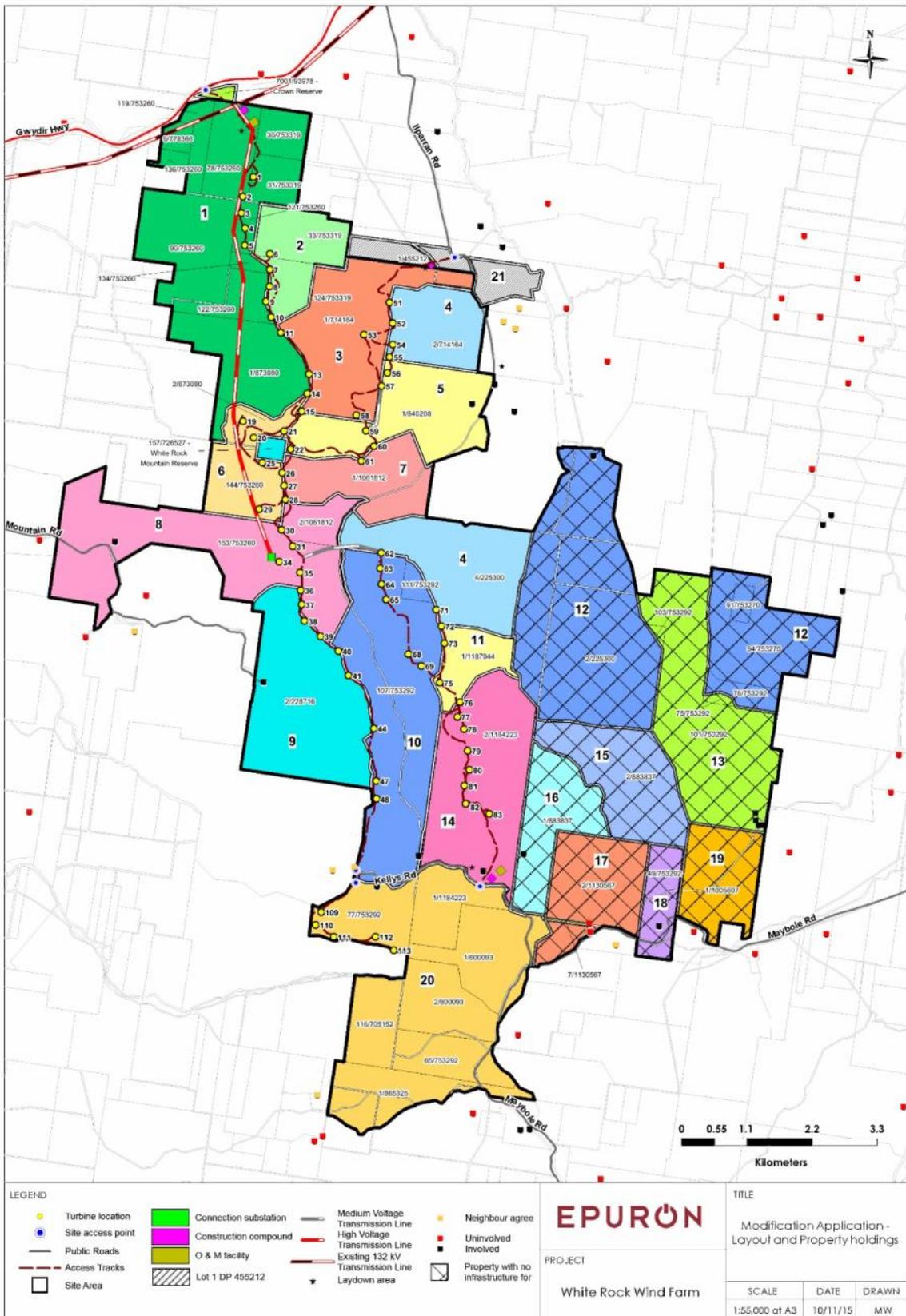


Figure 2-2 WRWF Project Layout and Property Holdings

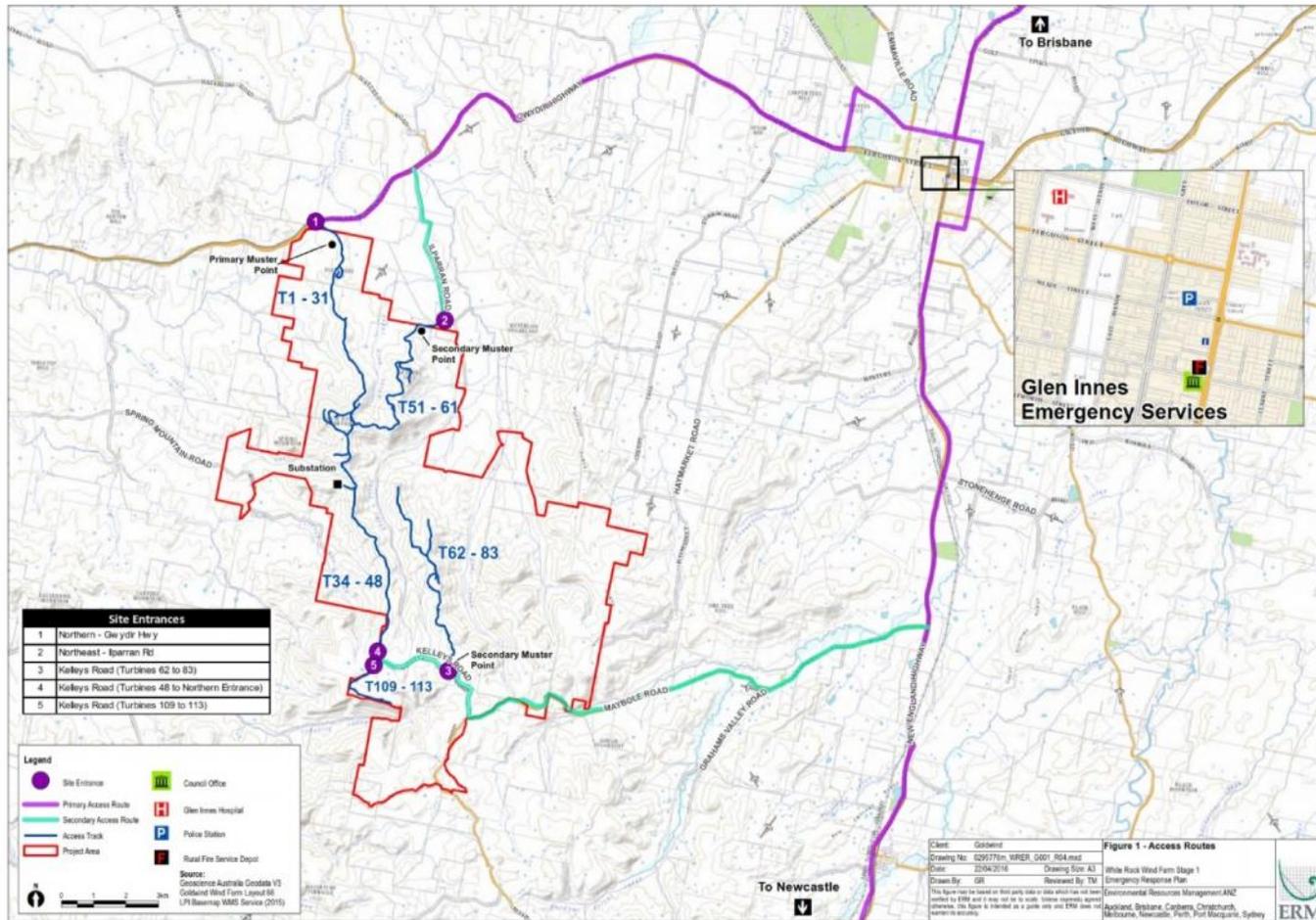


Figure 2.3 - WRWF Project access routes, entry points and emergency agency centre locations

2.3 SITE BUSHFIRE CHARACTERISTICS

The wind farm is located predominantly in semi-cleared exotic pasture with varying density of scattered trees and woodland fragments as well as more extensive woodland areas in close proximity to some of the proposed infrastructure. Factors mitigating fire risks at the site include, the elevation of the site from 1,000m to 1,400m and associated cooler summer temperatures and cold winter periods, the fragmented nature of woodland and forest remnants, the distance proposed between groups of infrastructure, the use of 45km of 33kV underground cabling rather than overhead powerline and the low density of human settlement and assets in the area. Additionally, there is; the local presence of the Rural Fire Service. Continued grazing regimes at all sites and cultivation of the more gently sloping lands in south and north act to reduce fuels. It is understood that bushfires are rare for this locality.

The bushfire danger period for the Glen Innes Severn and Inverell Local Government Areas is legislated as 1st August to 31st March every year, but can be varied subject to local conditions. Summer conditions in the local district can be dry and hot with high wind speeds, producing local grass fire hazards. Potential ignition sources include farm and construction machinery, hay storage, 'hot works' during construction, vehicles stopping in long grass on road verges, cigarette butts thrown from car windows and lightning strikes. The elevated position of the sites may increase the frequency of lightning strike. The steep topography and absence of built areas or natural fire breaks such as large water bodies may assist the rate of spread of wildfires.

In the event of a Total Fire Ban being declared by the Commissioner of the NSW RFS, a formal request for exemption will need to be submitted for 'urgent and essential works'.

2.4 PROJECT ACTIVITIES

Specific activity dependencies and timing are illustrated in Table 2-1.

Table 2-1 Construction activities, with a potential to start fires

Activity phases and fire risks	Duration of phase	Period of phase
Early works/preparatory works <ul style="list-style-type: none"> • Hot works associated with activities such as fencing, use of generators etc • Sparks from earthworks and general machinery use 	87 days	January 2016 to March 2016
Access track and hardstand construction <ul style="list-style-type: none"> • Sparks from earthworks and general machinery use 	641 days	April 2016 to January 2018
Turbine foundations <ul style="list-style-type: none"> • Sparks from earthworks • Hot works including welding, grinding etc 	175 days	June 2016 to March 2017

Activity phases and fire risks	Duration of phase	Period of phase
<ul style="list-style-type: none"> Worker behaviour (eg smoking) 		
Delivery turbines and towers <ul style="list-style-type: none"> Operation of trucks and cranes 	100 days	June 2016 to March 2017
Trenching and 33kV cable installation <ul style="list-style-type: none"> Sparks from earthworks Hot works including welding, grinding etc Worker behaviour (eg smoking) 	290 days	July 2016 to August 2017
Turbine installation <ul style="list-style-type: none"> Hot works including welding, grinding etc Worker behaviour (eg smoking) 	185 days	June 2016 to September 2017
Transgrid site preparations <ul style="list-style-type: none"> Sparks from earthworks Hot works including welding, grinding etc Worker behaviour (eg smoking) 	50 days	April 2016 to March 2017
Transgrid connection <ul style="list-style-type: none"> Hot works associated with activities such as welding, use of generators etc Electrical fires from testing and commissioning 	310 days	March 2017 to May 2017
Commissioning <ul style="list-style-type: none"> Electrical faults 	80 days	August 2017 to November 2017
Decommissioning temporary facilities <ul style="list-style-type: none"> Earthworks, Fuel ignition 	30 days	October 2017 to December 2017
Operation <ul style="list-style-type: none"> Routine maintenance works involving hot works, earthworks etc Electrical faults Vandalism 	20 to 25 years	December 2017 to December 2037/2042
All phases - Worker behaviour (eg smoking)		

2.4.1 Activity descriptions

Comments relevant to environmental management are provided on activities below. Design activities and off-site manufacturing activities are not included.

Site preparation

- Preparatory works on local access roads and entry points from local roads to Project area.
- The mobilisation and subsequent demobilisation of all plant & personnel to carry out the works.
- The establishment of site facilities (including site offices, mess rooms, sanitary facilities, first aid room, power, phone, water and workshop containers).
- Construct a plant and equipment area.

Construction of access tracks and crane hard stands at turbine sites and the substation

- Install and maintain sediment control measures & stormwater drainage in accordance with the track design to minimise the works impact on the site.
- Construct and maintain new access tracks, crane working pads and turn around areas.
- Maintain and upgrade (construct intersections & turnaround areas if required) existing access roads.
- Respread topsoil and reseed and landscape surrounding areas in accordance with the rehabilitation protocols (Flora and Fauna Sub-plan).
- Operate to Australian standards for Material Compliance & Compaction Testing for aggregates, fill and earthworks.
- Temporarily fence off open excavations. Reinstate gates & fences as required by the final design for access tracks.

Wind turbine foundations and turbine erection

- Excavate 70 footing areas and remove all loose material, place blinding concrete, build formwork and install reinforcing steel in accordance with the design requirements and inspected by a qualified structural engineer.
- Conduct geotechnical monitoring during the foundation preparation, level and survey the foundation insert, and drill for earthing.
- Install and orientate tower base section and finalise height datum, complete reinforcement placement, install conduits and pour concrete.
- Install geo-fabric and sealant prior to backfilling. All backfilling is to be carried out in accordance with the industry standard and codes of practice for compaction.
- Excavate and install met mast foundations.

Erect the wind turbines

- Install the sections of the tower followed by nacelle and assembled rotor

Substation and 132kV transmission line

- Include pad footings as required for the control room and services buildings as set out in the Contractor's final design.
- Install 33kV/132kV transformer and switchyard structures
- Install gravel material to meet code requirements. Install fencing, gates and signage to comply with electrical safety standards.
- Undertake vegetation clearing to provide safe electrical clearances from 132kV transmission line and to allow installation of poles and conductors.

Electrical works

- Undertake trenching in soil and rock for over 40km of 33kV cabling between turbines and the substation. Ensure all cable routes are properly signed and registered with the “Dial before you dig” register in NSW at all entrances to the site.
- Install all 33kV cabling and backfill trenches. Restore and stabilise ground surface.
- Install permanent LV power to the substation and temporary LV power to the site amenities area.
- Provide all general arrangement drawings for line work, line termination structures and insulators, control room, switch room drawings, protection drawings, cable schedules, and cable routes.

Site rehabilitation

- Site rehabilitation will involve removal of temporary facilities and stabilisation and revegetation of disturbed land. Disturbed areas that are not required for the operating phase of the project will be returned to a condition similar to that prior to the construction works. However, revegetation will consider the need for clearances from site office buildings, electrical equipment, transformers, overhead powerlines and any communications facilities.

Transition from construction to operations

- A review of the bushfire risks will be undertaken prior to commencement of full wind farm operations and as necessary management measures will be established for the operational phase of the WRWF Stage 1 project. RFS will be consulted regarding the risks present and the proposed management of those risks.

3 CONTRACTOR MANAGEMENT

All Construction activities for the WRWF Stage 1 construction must be undertaken in accordance with the DPE approved Construction Environmental Management Plan (CEMP). The EPC contractor who is also acting as the Principal Contractor will develop project management plans based around the CEMP and Health and Safety legislation. These will be the main documents for the project. The BOP contractors will base their project plans on the CEMP and the EPC Health and Safety management plans. There will be however only one Site Emergency Evacuation Plan which will be developed by the Principal Contractor, with input from all subcontractors.

The CEMP requires preparation of activity related **Environmental Work Method Statements (EWMS)**.

The BOP EWMS documentation is to be supplied to the WRWFPL Site Construction Manager prior to works being undertaken and endorsed by the DPE approved Environmental Representative (ER). WRWFPL's EPC management team will be responsible for verifying whether the contractor documents satisfy the following requirements:

1. Are consistent with the CEMP framework and sub-plans
2. Adequately address the environmental risks of the activity

Full details of contractor management processes are contained in the CEMP. The requirements of this Bushfire Risk Management Plan are applicable for all activities.

4 CONSULTATION WITH THE RFS

4.1 CONSULTATION UNDERTAKEN TO DATE

Consultation requirements span the full operational life of the project including construction and operational phases. Consultation with the NSW RFS commenced during the EIA phase between Epuron and NSW RFS. Pre-construction consultation during 2015 has occurred with Superintendent Chris Wallbridge, Manager Northern Tablelands Team (Glen Innes).

Table 4-1: Consultation requirements undertaken to date

Stage of project	Consultation requirements
During Project Application period	<ul style="list-style-type: none"> On 01 August 2011, RFS advised DPE of its assessment requirements for the White Rock Wind Farm. These have been addressed by the Project Statement of Commitments.
Post Approval and pre-construction:	<ul style="list-style-type: none"> 28 September 2015. NSW RFS provided comment on the draft Bushfire Risk Management Plan.

Table 5-2 details the NSW RFS Fire Control Centre within the vicinity of the development. NSW RFS trucks are located at Glen Innes (4) and Inverell (4).

Table 4-2 Local NSW RFS fire control centre

Fire Control Centre	Address	Phone Number
Glen Innes Rural Fire Service	181 Bourke St Glen Innes NSW 2583	02 6732 7046
Inverell Rural Fire Service	52 Burtenshaw Rd Inverell NSW 2360	02 6732 7046

4.2 ONGOING CONSULTATION DURING CONSTRUCTION AND OPERATION

Prior to and during the construction phase of the White Rock Wind Farm, regular consultation with the local NSW RFS is proposed to ensure appropriate bushfire management and mitigation strategies are in place and to ensure familiarity with the project in the case of a bushfire occurring on site. The primary contact person for liaison is the White Rock Wind Farm Site Construction Manager and the Health Safety and Environmental Manager. The following consultation program will be implemented.

Table 4-3: Ongoing Consultation with RFS

Stage of project	Consultation requirements	Responsibility
Pre-construction	<ul style="list-style-type: none"> Submission of the final Bush Fire Risk Management Plan to DPE (as part of the CEMP) for approval by DPE 	WRWF Project Manager

Stage of project	Consultation requirements	Responsibility
Pre-construction	<ul style="list-style-type: none"> Copy of approved CEMP including Bushfire Risk Management Plan supplied to RFS once approved 	WRWF Project Manager
During Construction	<ul style="list-style-type: none"> Regular drills with RFS (6-monthly) Initial drill in first 3 months of site establishment. 	EPC Contractor's HS&E Representative
	<ul style="list-style-type: none"> Fire prevention inspections by RFS (6-monthly or as agreed with RFS) 	WRWFPL HS&E Representative
During Operation (pre operational confirmation of requirements)	<ul style="list-style-type: none"> Regular drills with RFS (5-yearly) Initial drill within 3 months of commencement of operations 	EPC Site Construction Manager and the Health Safety and Environmental Manager. On completion of the project this will be the operations manager
	<ul style="list-style-type: none"> Fire prevention inspections by RFS (5 yearly) Initial inspection within 3 months of commencement of operations 	Operations Manager and the Health Safety and Environmental Manager. On completion of the project this will be the operations manager

Fire Drills and Fire Prevention Inspections

The local RFS would be invited on an as-needs basis to assist in the running of fire drills during construction and operation. Greater attention to awareness and readiness will be given at start of the 'Bush Fire Danger Period' and prior to Bush Fire Risk increasing.

During construction, the EPC contractor's HS&E representative would be responsible for arranging fire drills at least every 6 months or more frequently if warranted. These operations would test and measure:

1. Site preparedness for fire emergencies including but not limited to the availability and location of suitable fire-fighting agents, access and egress and fire warden training. Due to the extent of the site and northern and southern entry points, fire-fighting equipment will be available at both locations. Fire extinguishers will also be provided in construction and operations vehicles.
2. The site emergency evacuation procedures, including staff awareness of emergency protocols.
3. Consultation and communication protocols with emergency services.

5 RESPONSIBILITIES

Project responsibilities are outlined in Section 4 of the CEMP. Responsibilities specific to Bushfire Risk Management are detailed below.

Table 5-1 Personnel with specific environmental responsibilities

Name	Organisation	Role	Responsibility	Authority
WRWF EPC management team	WRWF Pty Ltd (WRWFPL)	Executive/Senior management and strategic control	Responsible for providing the required resources to complete the required tasks and to facilitate company corporate support. Delegates to WRWF Project Manager – Owners Representative	Authority to limit and stop works. In the case of an emergency the Principal Contractor will take full control regarding the various work areas and delegating various tasks to subcontractors.
Tom Frood	WRWFPL	Project Manager – Owner’s Representative	Determining sequence and interaction of processes Ensure communications and reporting framework in place Ensure the goals of the BRMP are achieved Report incidents to ER and to agencies Ensure mitigation plans are appropriate and resourced Manage the operational RFS liaison	All aspects of the environmental performance of the project. Stop Work orders
Principal Contractor EPC Project Manager John Campbell	Goldwind Australia (GWA)	Principal Contractor EPC Manager	Report incidents to GWA senior management, the Owners Representative and ER. To ensure timely delivery of corrective actions Ensure BRMP is communicated and implemented Responsible for compliance with all applicable environmental legislation and contract obligations.	Authority to require environmental actions be undertaken. Reports to the WRWF PM OR Delegates to discipline managers Stop Work orders
Heather Tilley	Aurecon	Environmental Representative	Oversee the implementation of all environmental management plans and monitoring programs required under the planning approval, and advise the Proponent upon the achievement of these plans/programs;	Authority to require environmental actions to be undertaken.

Name	Organisation	Role	Responsibility	Authority
TBC	BoP Contractor Fulton Hogan	HS&E Representative	Responsible for the implementation and maintenance of BRMP during construction To report incidents to the Principal Contractor who will then follow the procedure for notifying, GWA senior management, the Owners Representative and ER. To implement corrective actions Monitor corrective actions Comply with regulations within BRMP Ensure training is delivered and appropriate	Implementation of stop work orders in the case of an emergency, and immediately report to the Principal Contractor
TBC	TransGrid	HS&E Representative	Responsible for the implementation and maintenance of BRMP during construction of substation and associated infrastructure To report incidents to the Principal Contractor who will then follow the procedure for notifying, GWA senior management, the Owners Representative and ER. To implement corrective actions Monitor corrective actions Comply with regulations within BRMP Ensure training is delivered and appropriate	Implementation of stop work orders in the case of an emergency, and immediately report to the Principal Contractor
EPC project management team, and BOP on site personnel	Dion Milstead	Onsite construction staff	Ensure goals of BRMP are implemented upon instruction Identify and proactively report incidents Receive training	Suggest Stop Work orders <i>(stop work permitted if action deemed unsafe)</i>

6 BUSH FIRE HAZARD ASSESSMENT

This plan:

- Identifies those activities that would be undertaken on site during the construction phase of the White Rock Wind Farm, that may present a bushfire risk; and
- Provides strategies for managing this risk.

The plan details protocols and strategies for coping with fires if they originate on site or in the event of an external wildfire threatening the wind farm or nearby properties.

Activities that would take place during construction of the White Rock Wind Farm and are potential bushfire hazards are summarised as follows:

- Hot work (welding, use of blow torch, angle-grinding etc.)
- Use of explosive power tools
- Use of vehicles (and other equipment with internal combustion engines)
- Use of flammable materials (refuelling, transformer oil etc)
- Blasting
- Smoking

(No burning of vegetative slash would be undertaken).

Potential threats arising from these activities include:

- Ignition of fire through the generation of sparks, use of naked flame etc
- Damage to White Rock Wind Farm Pty Ltd infrastructure through fire (smoke, radiant heat, flame contact, ember attack and ash)
- Damage to nearby properties or other assets in the event a fire could not be controlled
- Injury/fatality to personnel on site, emergency services personnel or the public.

6.1 RISK ASSESSMENT

A Risk Assessment was conducted for the main activities involved in the construction and operation of the wind farm, to ascertain those activities with a moderate/high risk of causing bush fires (0). The main risks are summarised below.

Activity and Impact	Risk Ranking
Construction	
Hot works associated with activities such as fencing, use of generators etc	High
Electrical fires from testing and commissioning	Medium
Worker behaviour (eg smoking)	Medium

Activity and Impact	Risk Ranking
Operation	
Routine maintenance works involving hot works, earthworks etc	High
Electrical faults	Medium
Vandalism	Medium

7 BUSHFIRE MITIGATION STRATEGIES

7.1 ASSET PROTECTION ZONES

In accordance with the Planning for Bushfire Protection (RFS 2006), the infrastructure to be installed during construction and operation fall into Building Code of Australia (BCA) Building Classes 5 to 8 and 10. The BCA does not provide for any bush fire specific performance requirements. As such, asset protection zones are not formally required to be defined for planning purposes.

7.2 GENERAL MITIGATION MEASURES - CONSTRUCTION

General strategies to be implemented during construction to mitigate the risk of bushfire are shown in Table 7.1 below.

Table 7.1 – General Mitigation measures in relation to Bushfire Risk Management

Mitigation Measure	Responsibility	Timing/Comment
The NSW RFS be provided with a contact point for the project, during construction and operation.	Site Construction Manager	Pre-construction establishment
Highlighting to all staff and contractors through an induction process to raise awareness of the potential hazards and to ensure controls are understood.	EPC Site Construction Manager/ EPC HS&E manager/supervisor	Induction
Designation of an onsite safety representative responsible for ensuring implementation of safeguards. This representative would also regularly consult with the local NSW RFS to ensure familiarity with the project and assist the RFS and emergency services as much as possible if there is a fire on-site during construction of the project.	EPC HS&E manager/site supervisor Cameron Butler/ Dion Milstead	Upon site establishment
Basic training of all staff in the use of fire-fighting equipment.	EPC HS&E manager/supervisor And BOP HS&E manager/supervisor TransGrid HS&E manager/supervisor	Induction will involve identifying all firefighting equipment and a review of the emergency response plan. With training taken place for the equipment as the project progresses.

Mitigation Measure	Responsibility	Timing/Comment
Appropriate fire-fighting equipment would be held on site to respond to any fires that may occur at the site during construction of the project. This equipment will include fire extinguishers, a 1000l water cart retained on site as a precautionary basis, particularly during blasting and welding operations. Equipment lists would be detailed in WMS's.	Contractors OH&S Representative	Upon site establishment Prior to the commencement of new activities
Conduct emergency preparation/response drills as detailed in Section 9.	Contractors OH&S Representative	At least 3-monthly
Preparation and compliance with job-specific Work Method Statements.	Contractors OH&S Representative	Prior to the commencement of each activity
All access and egress tracks on the site would be maintained and kept free of parked vehicles to enable rapid response for firefighting crews and to avoid entrapment of staff in the case of bush fire emergencies. Temporary blockages may be required during turbine construction. In such cases, alternative access arrangements would be identified and all staff working on site would be notified via the toolbox talk procedures.	Contractors OH&S Representative	As required
Permission has been sought, and obtained, from local property owners, to use dams on site as water sources in the event of fire.	Contractors OH&S Representative	Pre-construction
The use of a Hot Works Permit system to ensure a number of pre-requisites are satisfied prior to works commencing (refer to Safety Management Plan). Fire extinguishers would be present during all hot works.	Contractors OH&S Representative	As required
Where possible restrict the performance of Hot Works to specific areas (such as the Construction Compound temporary workshop areas).	Contractors OH&S Representative	As required
Adequate site communications to ensure a fire event is communicated quickly. Measures would include: <ul style="list-style-type: none"> • Use of mobile phones • Use of two-way radios • Fire Danger Warning signs located at the entrance to site compounds. 	Contractors OH&S Representative	As required

Mitigation Measure	Responsibility	Timing/Comment
No petrol vehicles in the construction area until after access tracks are complete and then only to be used on formed roads, no driving or parking off access tracks.	Contractors OH&S Representative	Upon site establishment Induction

7.3 SPECIFIC ACTIVITIES

Table 7-2 identifies the specific management strategies for the activities that would take place on site. Implementation of these safeguards would be the responsibility of White Rock Wind Farm Pty Ltd and all contractors that are engaged on site.

The carrying out of hot work procedures is the primary activity that may increase the risk of fire or explosion on site throughout the construction period. This involves activities such as welding, thermal or oxygen cutting, heating, grinding and the use of explosive power tools. Undertaking any activities that generate sparks or flames require the issue of a hot works permit and must be carried out in accordance with the controls attached to this permit. The permit would be issued by the Principal Contractor who will delegate authority to certain personnel. Specific details relating to the issue of a Hot Work Permit is outlined in the Safety Management System.

Table 7-2 Specific management strategies for activities to be undertaken at the site

Risk	Safeguard
Hot work (welding, use of oxy-acetylene cutting torches, angle-grinding, use of explosive power tools etc.)	<ul style="list-style-type: none"> SMS text notification systems to alert contractors of Total Fire Ban days. Basic training through staff and contractor induction processes to raise awareness of risk and ensure controls are understood. Only qualified personnel to use welding equipment. All hot works require a hot works permit. To ensure any risk of fire or explosion resulting from the hot works is eliminated, an area within a radius of two metres (standard exclusion zone) around the point where the hot works are being undertaken, including space above and below that area, would be clear of flammable debris including vegetation. Presence of 1000l water cart on site throughout hot works activities.
Vehicle use (and other equipment with internal combustion engines)	<ul style="list-style-type: none"> Confine vehicle access to designated tracks only. If it is necessary to detour from tracks, avoid driving vehicles through long grass, particularly on Total Fire Ban days. Maintaining vehicles and equipment in good working condition. Refuelling on site would occur for large plant and equipment. Refuelling would be of diesel only and would occur only on hardstand areas. Spill kits would be carried in all heavy machinery or placed around the work areas. If larger spills of oil or other hydrocarbons occur (greater than 20 litres), liaison with the NSW RFS and/or NSW Fire Rescue brigade would occur. Training in spill kit use would occur by the various contractors on carrying out their own induction or as near as possible to that date. All vehicles would carry a fire extinguisher.

Risk	Safeguard
Smoking	<ul style="list-style-type: none">Smoking is only permitted in certain areas such as the compound or hardstand areas. All cigarette butts must be disposed of in a proper manner and not simply thrown away, no smoking is permitted near fauna and flora.
Use of flammable materials	<ul style="list-style-type: none">Ensure appropriate storage and handling of materials.
Blasting	<ul style="list-style-type: none">Presence of firefighting equipment such as 1,000L water cart with pump and hose, knapsack spray filled with water and wet hessian bags on site throughout blasting operations.

8 EMERGENCY PREPAREDNESS AND RESPONSE

8.1.1 WRWF Emergency Response procedures

Emergency Response Procedures are documented in Annex M of the WRWF CEMP and should be consulted in the event of any emergency.

Some of the detail relevant to this BRMP is included in this Plan.

8.1.2 Agency Notification Requirements

Call 000 for off-site incidents if it presents an immediate threat to human health or property. Fire and Rescue NSW, the NSW Police and the NSW Ambulance Service are the first responders, as they are responsible for controlling and containing incidents. For all on site incidents project protocols must be followed at all times.

If the incident does not require an initial combat agency, or once the 000 call has been made, notify the relevant authorities in the following order:

- the Environment Protection Authority (EPA) - 131555
- the Ministry of Health via the local Public Health Unit – see www.health.nsw.gov.au/publichealth/infectious/phus.asp
- the WorkCover Authority - phone 13 10 50
- the local Council(s)
 - Glen Innes Severn Council
 - Inverell Council
 - Guyra Council
- Fire and Rescue NSW - 000

8.1.3 Emergency Contact Details

Table 8.1 provides emergency contact details. These will need to be confirmed at commencement of construction and operations and the BRMP updated as necessary to maintain suitable contact details.

Table 8.1 – Emergency Contact details

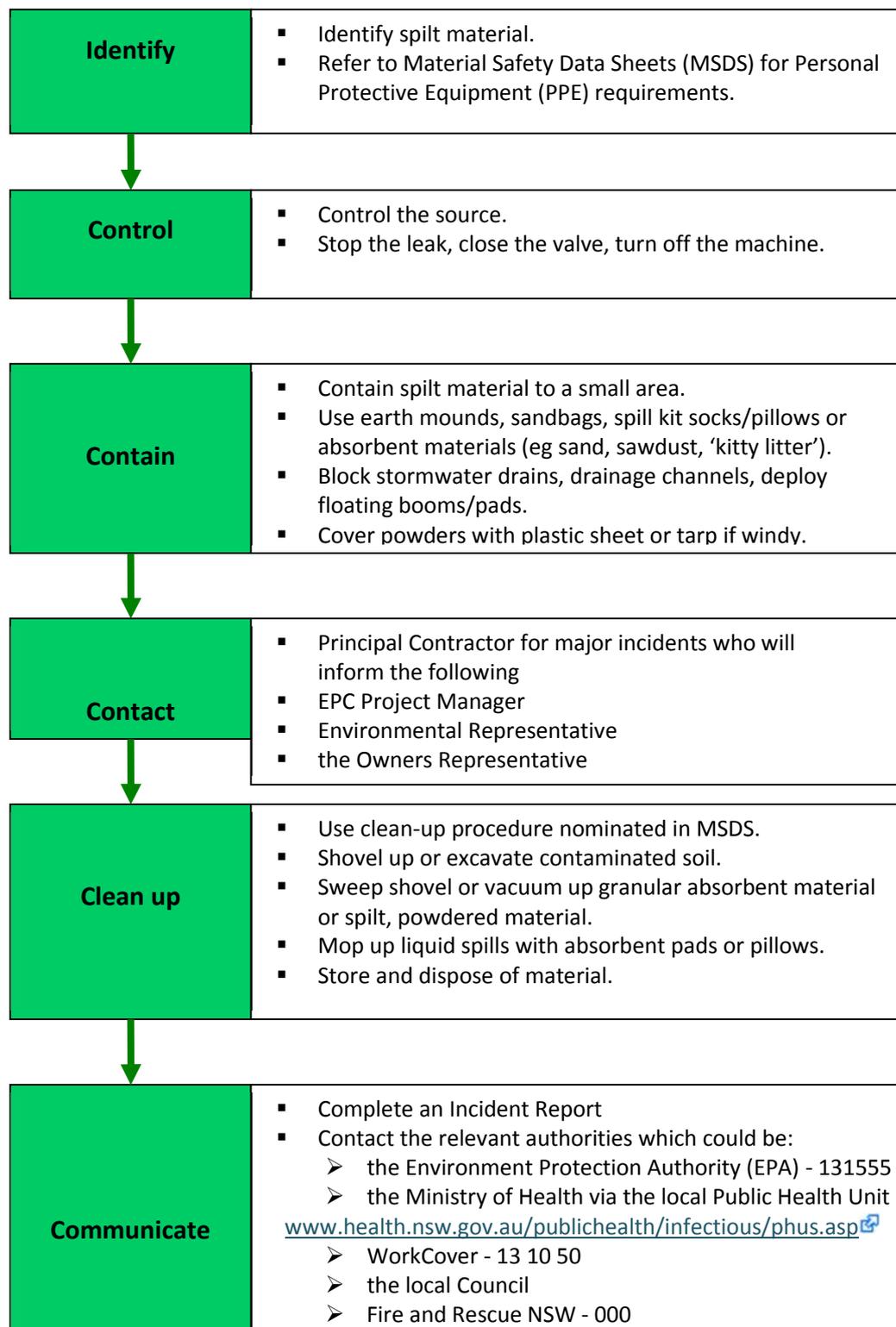
Name	Organisation	Role	Phone	Mobile
Emergency Services	Ambulance Police Fire Brigade VRA	-	000	000
	Rural Fire Services		02 6732 7046	
Emergency Services	State Emergency Services	-	132 500	132 500
	NSW EPA	-	131 555	131 555

Name	Organisation	Role	Phone	Mobile
	Glen Innes Severn Shire Council	-	(02) 66730 2350	
	Inverell Shire Council	-	(02) 6728 8288	
	NSW Works Cover	-	13 10 50	13 10 50
Tom Frood	WRWF PTY LTD	Owner's Representative		0488 005 342
John Campbell	Goldwind Australia	EPC Project Manager		0400 924 077
TBA	Fulton Hogan	Principal contractor/EPC Site Construction Manager		
TBA	TransGrid	Principal contractor /TransGrid Site Construction Manager		
Cameron Butler	Goldwind Australia	HS&E manager		
Dion Milstead	Goldwind Australia	HS&E supervisor		
TBA	Goldwind Australia	Installation and Logistics Manager		
Ronan Creedon	Goldwind Australia	Civil engineer		
TBA	Goldwind Australia	Site office admin		
Heather Tilley	Aurecon	Environmental Representative	(02) 9465 5471	0438 105 866
Jeff Bembrick	Goldwind Australia	Development Compliance Manager		049915665
TBA	BOP contractor Fulton Hogan	Environmental compliance officer (SCECO)		
TBA	Grid connect contractor TransGrid	Environmental compliance officer (SCECO)		
	NSW Works Cover	-	13 10 50	13 10 50

8.1.4 Spill Control Procedure

The Spill Control Procedure to be applied for WRWF Stage 1 is shown in Figure 8.1.

Figure 8.1 – Spill Response Procedure



9 AUDIT AND REVIEW

This BFRM plan will be audited during the construction and operation phases of the project as detailed in Table 9.1 below. The auditor will be selected based on appropriate experience in:

1. Identifying fire risks and hazards on construction projects
2. Experience in undertaking audits of fire management plans and systems

Table 9.1 Proposed audit timing

Stage	Audit Purpose	Responsible Person	Frequency
Construction	Implementation of construction-phase bush fire management measures	WRWF Principal Contractor	Annually
Operation	Implementation of operation-phase bush fire management measures	WRWF owners representative/asset manager	5-yearly

This plan will be reviewed periodically and at least after each audit.

APPENDIX A - RELEVANT STATEMENT OF COMMITMENT

Extract from WRWF Statement of Commitments 2011

Item 38 – Bushfire

Prepare a Bushfire Management Plan as part of the Construction Environmental Management Plan. The Rural Fire Service and NSW Fire Brigade would be consulted in regard to its adequacy to manage bushfire risks during construction, operation and decommissioning. The plan would as a minimum include:

- Flammable materials and ignition sources brought onto the site, such as hydrocarbons, would be handled and stored as per manufacturer’s instructions.
- During the construction phase, a 1000l water cart would be held onsite.
- The Substations will be constructed, operated and will be the property of Transgrid the following requirements need to be designed and implemented by Transgrid. Concrete bund with a capacity exceeding the volume of the transformer oil, are to contain the oil in the event of a major leak or fire. The facilities would be regularly inspected and maintained to ensure leaks do not present a fire hazard, and to ensure the bund area is clear (including removing any rainwater).
- Workplace health and safety protocols would be developed to minimise the risk of fire for workers during construction and operation.
- Fire extinguishers would be stored onsite in the control building and within the substation building.
- Shut down of turbines would commence if components reach critical temperatures or if directed by the RFS in the case of a nearby wildfire being declared (an all-hours contact point would be available to the RFS during the bushfire period). Remote alarming and maintenance procedures would also be used to minimise risks.
- Overhead transmission easements would be periodically inspected to monitor regrowth of encroaching vegetation

APPENDIX B - RISK ASSESSMENT PROCEDURE

B1 - METHODOLOGY

The level of fire risk is determined by using a combination of likelihood and consequence. Table B-1 shows the process used for determining each of these factors using a risk analysis matrix. This matrix indicates which class a risk would lie in. The risk is then evaluated for potential treatment by the use of controls, the hierarchy of controls is shown in table B-2. . When the residual risk is evaluated a decision on whether to proceed is made using the guidelines set out in table B-3

For further details please refer to HSE-PRC-0017 HSEQ Risk Management Procedure.

Risk Assessment Matrix

				Consequence									
				People	Reputation	Business Process & Systems	Financial	Insignificant	Minor	Moderate	Major	Catastrophic	
				Injuries or ailments not requiring medical treatment.	Minor injury or First Aid Treatment Case.	Serious injury causing hospitalisation or multiple medical treatment cases.	Life threatening injury or multiple serious injuries causing hospitalisation.	Death or multiple life threatening injuries.					
				Internal Review	Scrutiny required by internal committees or internal audit to prevent escalation.	Scrutiny required by external committees or ACT Auditor General's Office, or inquest, etc.	Intense public, political and media scrutiny. Eg: front page headlines, TV, etc.	Assembly inquiry or Commission of inquiry or adverse national media.					
				Minor errors in systems or processes requiring corrective action, or minor delay without impact on overall schedule.	Policy procedural rule occasionally not met or services do not fully meet needs.	One or more key accountability requirements not met. Inconvenient but not client welfare threatening.	Strategies not consistent with Government's agenda. Trends show service is degraded.	Critical system failure, bad policy advice or ongoing non-compliance. Business severely affected.					
				1% of Budget	2.5% of Budget	> 5% of Budget	> 10% of Budget	>25% of Budget					
									1	2	3	4	5
Likelihood	Probability:	Historical:		Almost Certain	M	H	H	E	E				
	>1 in 10	Is expected to occur in most circumstances	5	Likely	M	M	H	H	E				
	1 in 10 - 100	Will probably occur	4	Possible	L	M	M	H	H				
	1 in 100 - 1,000	Might occur at some time in the future	3	Unlikely	L	L	M	M	H				
	1 in 1,000 - 10,000	Could occur but doubtful	2	Rare	L	L	L	M	M				
	1 in 10,000 - 100,000	May occur but only in exceptional circumstances	1		L	L	L	M	M				

Table B-1– Risk analysis matrix

Risk Evaluation, treatment and Tolerability

Risk evaluation is a process that is used to compare risk analysis results with risk criteria in order to determine whether or not a specified level of risk is acceptable or tolerable.

Risk treatment may involve selecting and implementing one or more treatment options to affect the level of risk. This is performed in conjunction with tools such as the hierarchy of control to provide a structure to select the most effective control measures and eliminate or reduce the risk.

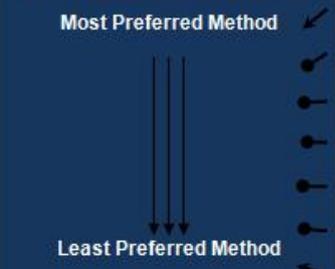
Hierarchy of Control	
	High order controls have direct impact on hazards.
Most Preferred Method  Least Preferred Method	1. Eliminate e.g. Changing the work processes to eliminate the Hazard.
	2. Substitute e.g. Replacing a hazard with a less hazardous agent.
	3. Modify e.g. Changing the way work is done or not exposed to the hazard.
	4. Isolate e.g. Using barriers to stop people getting near the hazard.
	5. Engineer e.g. Installing walkways and work platforms for work at height.
	6. Administrate e.g. Using procedures, permits, and policies.
	7. Provide PPE e.g. Giving employees protective equipment for the hazard.

Figure B-2: Hierarchy of Control.

When considering appropriate control measures the consultation group must consider human factors and behaviours to prevent workers taking short cuts.

The GOLDWIND Risk Tolerability Guideline defines the acceptability of residual risk after treatment. The criteria can often define how risks are to be reported, reviewed and who is the acceptance decision-maker.

Work only to proceed under the following guidelines.	
Risk Tolerability	
EXTREME Unacceptable	Do not start activity. Detailed research and planning required for Department Manager approval.
HIGH Undesirable	Do not start activity – Notify Department Manager of supervision in place. Manager/Supervisor must confirm that existing procedures and controls are up to date and actionable by all workers.
MODERATE Tolerable	Managed locally. Manager/Supervisor must confirm that existing procedures and controls are up to date and actionable by all workers.
LOW Acceptable	Use Caution –Proceed direct with activity. Confirm that procedures and controls are up to date and actionable.

Figure B-3: GOLDWIND Risk Tolerability Guideline

B2. - RISK REGISTER

Table B-5 Risk register for the proposed activities

Activity and Impact	Risk assessment		
	Probability	Consequence	Risk Ranking
Early works <ul style="list-style-type: none"> Hot works associated with activities such as fencing, use of generators etc Sparks from earthworks and general machinery use 	3 – Possible	2 - Minor	Medium
	1 – Rare	1 - Insignificant	Low
Civil Construction <ul style="list-style-type: none"> Sparks from earthworks Hot works including welding, grinding etc Worker behaviour (eg smoking) 	1 – Rare	1 - Insignificant	Low
	3 – Possible	2 - Minor	Medium
	3 – Possible	2 - Minor	Medium
Turbine foundations <ul style="list-style-type: none"> Sparks from earthworks Hot works including welding, grinding etc Worker behaviour (eg smoking) 	1 – Rare	1 - Insignificant	Low
	3 – Possible	2 - Minor	Medium
	1 – Rare	2 - Minor	Low
Transgrid site preparations <ul style="list-style-type: none"> Sparks from earthworks Hot works including welding, grinding etc Worker behaviour (eg smoking) 	1 – Rare	1 - Insignificant	Low
	3 – Possible	2 - Minor	Medium
	1 – Rare	2 - Minor	Low
Transgrid connection <ul style="list-style-type: none"> Hot works associated with activities such as welding, use of generators etc Electrical fires from testing and commissioning 	3 – Possible	2 - Minor	Medium
	1 – Rare	3 - Moderate	Low
Turbine installation <ul style="list-style-type: none"> Hot works including welding, grinding etc 	3 – Possible	2 - Minor	Medium

Activity and Impact	Risk assessment		
	Probability	Consequence	Risk Ranking
<ul style="list-style-type: none"> Worker behaviour (eg smoking) 	1 – Rare	2 - Minor	Medium
Commissioning <ul style="list-style-type: none"> Electrical faults 	2 – Unlikely	3 - Moderate	Medium
Operation <ul style="list-style-type: none"> Routine maintenance works involving hot works, earthworks etc 	3 – Possible	3 - Moderate	Medium
<ul style="list-style-type: none"> Electrical faults 	1 – Rare	3 - Moderate	Medium
<ul style="list-style-type: none"> Vandalism 	1 – Rare	3 - Moderate	Medium