Gunning Wind Farm Bushfire Mitigation Plan

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** This document has been verified by the IMS Coordinator and meets review and approval requirements.*

1. Purpose

Acciona Energy Global SA and Acciona International SA (Acciona Energy) has developed this Bushfire Mitigation Plan (BMP) to support its Environmental Management Plan (EMP) and Emergency Response Plan (ERP).

The overall objective of this BMP is to minimise the risk of bushfires as a result of the operation of the Gunning Wind Farm. It includes the controls Acciona Energy employs to mitigate bushfire risk.

Acciona Energy recognises that there is a risk of fire ignition from electrical assets associated with the Gunning Wind Farm including the equipment within the wind turbines, kiosks and the substation.

2. Scope

Acciona Energy's Australia-based subsidiary operates the Gunning Wind Farm. This wind farm is located approximately 35km north-east of Gunning on privately owned property, which is predominantly cleared pastoral grazing land, used for sheep farming.

The key assets located at the Gunning Wind Farm include:

- 31 wind turbines:-
  - Model AW1500 – rated at 1.5MW with a combined total maximum power generation capacity of 46.5MW
  - Towers - approximately 80m high, with a base diameter of 4.5m and a top diameter of 2.4m
  - Blades – 3 per tower, 37m long
  - Nacelle – approximately 8m long and 4m high.
- Substation - with a transformer, nominally 50 megavolt ampere (MVA), 12,000 to 132,000 volts for transmission to the Essential Energy electricity network.
- Operations and maintenance facility.

3. Objective

The primary objective of Acciona Energy's BMP is to eliminate fire ignition risks in all our operations through the:

- Elimination of ignition sources, and
- Maintenance of the necessary separation between potential ignition sources and any flammable material.

Specifically, the BMP provides a management framework for the Gunning Wind Farm to:

- Reduce the risk of fires and power interruptions
- Protect the health and safety of the local community
- Ensure safe clearances are achieved and maintained, and
- Minimise the environmental impacts of our mitigation activities.

4. Definitions

Term	Definition
Acciona Energy	Acciona Energy Australia Global Pty Ltd
Act	*Electricity Supply Act 1995*
AER	Australian Energy Regulator
BMP	Bushfire Mitigation Plan
Bushfire	A generic term for an unplanned fire which includes grass fires, forest fires and scrub fires. Used interchangeably with "wildfire".
NSW RFS	New South Wales Rural Fire Service
EMP	Environmental Management Plan
ERP	Emergency Response Plan
HSEQ	Health Safety Environment Quality
Regulations	*Electricity Supply (General) Regulations 2014* Electricity Supply (Safety and Network Management) Regulations 2014
CS1	Collector Station 1

5. Responsibilities

Position	Responsibilities
Business Area Leader	• Ensuring that bushfire mitigation activities are resourced and completed • Requirements in this plan a regularly reviewed as per document control and internal audit processes
Site Manager	• Ensuring that bushfire mitigation monitoring and compliance activities are performed

6. Description of Gunning Wind Farm

6.1. General Description

Gunning Wind Farm is located in an area that is predominantly used for grazing (sheep and cattle). There is no forest within the Gunning Wind Farm itself however the wind farm property is flanked by large areas of natural bushland and pockets of natural shade trees areas.

6.2. Infrastructure

Wind Turbines

The wind turbines comprise a rotor and nacelle mounted on tall, tapered steel towers approximately 84m above the ground.

The electrical generator itself is located within the nacelle at the top of the tower and generates power at 12 kV AC. Other control and utility circuits also operate within the nacelle but at lower voltages. A large mechanical gearbox and hydraulic circuits with their associated hydraulic fluids and lubricating greases and oils are also located within the nacelle.

The wind turbine's high voltage switchgear is located at the door ground level and is fused and insulated with SF6 gas.

The likelihood of fire ignition from the wind turbine is minimal. In the unlikely event of a fire within the wind turbine tower the fire should be contained within the tower itself. A fire in the nacelle is also unlikely but, should it occur, a nacelle fire may not be contained within the nacelle and would then become a fire ignition source to the area surrounding the wind turbine.

Underground Power Cables

The wind farms internal electrical reticulated system is underground, operating a 12kV connection from turbine internal switchgear to the wind farm Substation Collector Station 1.

The underground power cables are buried in trenches. Protective plates and warning tapes are laid at various depths to protect the cable and warn any ground disturbance activities of the presence of the cable. The cables themselves are heavily insulated, armoured and shielded.

The likelihood of fire ignition from the underground power cables is almost not plausible as only a mechanical break into a live conductor (e.g. when digging) could act as a fire ignition source.

Substation and Control Building

The Substation is the collection point where the wind farm wind turbine group underground cables are electrically protected by high voltage circuit breakers and relays.

The main substation has one power transformers each rated at 50MVA and voltage stepped up from 12kV to 132kV and then connected to the Essential Energy Network. The main substation also has one switch room building with internal adjoining rooms for the 12kV indoor switchgear, the AC/DC power supplies, protection and control, metering and communications equipment.

The substation includes fully bunded foundations, pumping and oil/water separator facilities for the main transformer.

The 132kV high voltage circuit breaker A1D within the transformer yard is fully enclosed and insulated with SF6 gas. The switchyard also has lightning protection equipment.

Control and equipment is fully enclosed and the likelihood of fire ignition is minimal.

Overhead Power Lines

There are no overhead power lines under the scope of the Gunning Acciona Energy operations.

7. Bushfire Prevention Strategies and Programmes

Introduction

This BMP, provides specific strategies and programmes for the prevention of bushfires caused by the operation of the Gunning Wind Farm. This section lists the preventative strategies and programmes that Acciona Energy will adopt to mitigate the risk of bushfire. The works required for each strategy are outlined.

The strategies and programmes are guided by Acciona Energy's HSE Risk Management Procedure.

Acciona Energy has identified scenarios that could potentially pose a fire ignition hazard if not maintained/ controlled:

- Person(s) and/or equipment encroaching into the "No-Go Zone" of the Substation
- Vegetation growth within Substation (potentially encroaching on clearance zones)
- Catastrophic failure of the equipment within the Substation (e.g. transformer explosion, circuit breaker explosion etc.)
- Wind turbine fire, and
- Open air operational activities (e.g. vehicle exhausts welding, grinding and other hot works etc).

Mitigation strategies to minimise the likelihood of fire ignition hazard include:

- Designing Substation, the Switching Station and the wind turbine sites according to Australian Standards so as to have intrinsic fire mitigation strategies built into them.
- Substation, the Switching Station and the wind turbine sites kept clear of unnecessary flammable substances such as packaging, rubbish and other work materials as a requirement of work permits.
- Substation, the Switching Station inspected at every 6 months and wind turbine sites inspected every 6 months by a competent Acciona employee. It is likely however that inspection this frequency will occur sooner due day to day to operational activities.
- Restricting smoking to non-vegetated areas
- Hot works permits to restrict open air activities during periods of high risk
- Vehicle maintenance and operational requirements
- Physical barriers and controls to substation access
- Vehicles are to drive on access tracks
- Access control areas strictly enforced
- Acciona Energy will routinely engage with the local Rural Fire Service and local emergency services to familiarise these providers with the wind farm site and its various assets, and also assess and implement the most relevant and applicable mitigation strategies.

Wind Turbines

The surrounds of all turbines will be kept clear of flammable substances.

- A two metre surround for all turbine towers are covered with crushed rock to reduce the growth of vegetation and provide safe step and touch potentials. The reduced growth of vegetation is achieved by grass and weed spraying.
- The wind turbines are located on land that is predominantly used for grazing. The grass for grazing is kept short by the livestock.
- Each wind turbine is to be inspected yearly before the start of the fire risk period to ensure the crushed rock/gravel area is clear of vegetation and other flammable items (e.g. packaging, rubbish, oil containers, etc). Inspections are ongoing throughout the year as an event of day to day operational activities.
    - If items posing a fire risk are noted during such an inspection then arrangements must be made for their removal as soon as is reasonably practicable
- At the completion of any work undertaken in a turbine or tower, personnel are to visually inspect the crushed rock/gravel area and remove any flammable non-plant items (e.g. packaging, rubbish, oil containers, etc).
    - If items posing a fire risk are identified during such an inspection, then arrangements must be made for its removal as soon as is reasonably practicable
- The steel towers are approximately 5 m in diameter at ground level, thick walled (> 20 mm) and solidly bonded to a comprehensive earth-grid that is buried in the ground around the wind turbine and its foundation.

Underground Power Cables

Access to the area around all underground power cables will be restricted and any works in the vicinity of any cable will be controlled through a permit system.

- All underground cables are accurately surveyed and routes marked with delineator posts.
- Any work involving excavations is controlled by work permit system and procedures are in place to further control any work within 6.4 m of any underground cable route.

Substation

The transformer bunds within the Substation will be kept clear of flammable substances, except during maintenance periods being undertaken by work order permit. An example of this exception is during transformer maintenance for oil replacement or top up.

- The Substation yard is covered with crushed rock to reduce the growth of vegetation.
- A reduced fuel area, 4 m wide, is maintained around the exterior of perimeter fence. This is achieved by grass and weed spraying.
- Substation screening vegetation has been planted with sufficient clearance to perimeter fences.
- Conductors are spaced so that they cannot clash.
- Lightning protection poles are installed to prevent strikes inside the switchyard.
- Substation is to be inspected minimum 2 times per year to ensure the transformer yard is clear of vegetation and other flammable non-plant items (e.g. packaging, rubbish, etc).
    - If items posing a fire risk are noted during these inspections then arrangements are made for their removal as soon as is reasonably practicable.
- At the completion of any work undertaken within the Substation, personnel are required to visually inspect the yard and remove any flammable non-plant items (e.g. packaging, rubbish, oil containers, etc).
    - If items posing a fire risk are identified during these inspections then arrangements are made for its removal as soon as is reasonably practicable (i.e. before summer).
- Rain water tank is normally full at the substation and provides water to the emergency shower and eye wash station and 1 external water tap.

Fire Fighting Equipment

Firefighting equipment adequate to enable small fires to be extinguished is provided in all vehicles, temporary/ permanent buildings and the substation.

- Portable fire trailer (1000 litres, including petrol pump)
- All permanent site service vehicles will carry extinguishers in appropriate operational condition as per AS1851.
- Hand tools including rakes and shovels are available at the Maintenance Facility building.
- Maintenance facility - 150,000 litre water tank accessible for firefighting.
- The substations will hold (as a minimum): One 5 kg ABE powder-type, stored pressure fire extinguisher.

Training

Firefighting is only to be attempted by personnel after they have reported the fire and then only if it is safe to do so in a “first response” to control and/ or extinguish the fire.

Personnel shall have completed the following training, which shall be refreshed every 2 years.

- ‘Fire Awareness’ training which comprises of the following competencies:-
    - Legislation;
    - Risks & hazards;
    - Fire combustion and fire spread;
    - Fire extinguishing;
    - Fire prevention;
    - Firefighting equipment in a wind turbine;
    - Fire extinguisher usage
    - Scenario-based practice exercise.

- Compare identified defects with the known defects and reassess the priority of the known defects.

8. Operational Contingency Arrangements

This section sets out the way in which the wind farm will be operated or maintenance activities undertaken in various contingencies.

In the Event of a Bushfire

In the event of a bushfire in the area, Acciona Energy will, where appropriate, bring all staff back from the wind farm site to the Maintenance Facility, assess the risk in consultation with emergency services information and potentially send them home (i.e. evacuate the site). The procedure is covered in the Gunning Emergency Response Plan.

The site will continue to be operated remotely, via the Control Room. Instructions to the Gunning Wind Farm by emergency services, including the evacuation of site, shutdown and de-energisation of plant will be automatically redirected to the Control Room.

Electric safety devices, such as line, transformer and turbine protection relays, will ensure that the plant is shut down in the event of smoke or flames interfering with the wind farm.

Communication with Landholders

The Chief Warden will alert landholders if a bushfire threatens the area. Known evacuation paths are highlighted in Appendix B Gunning Wind Farm Evacuation Route.

On Days with a Fire Danger Rating of Catastrophic Fire Risk Danger

In the event of a Fire Danger Rating of Catastrophic being declared for the area, Acciona Energy will instruct staff to remain at the Gunning Wind Farm Maintenance Facility.

The site will be operated, via the Gunning SCADA system. Instructions by emergency services, including the evacuation of site, shutdown and de-energisation of plant will be undertaken at site if safe to do so.

Electric safety devices, such as line, transformer and turbine protection relays, will ensure that the plant is shut down in the event of smoke or flames interfering with the wind farm.

On Days Declared as a Day of Total Fire Ban

The operation of the Gunning Wind Farm will continue as normal during days of Total Fire Ban. However maintenance activities will be altered such that:

- Vehicle travel will be confined to defined access tracks, and
- Hot works are not permitted (except where required in emergency circumstances such as catastrophic plant failure, and fire risk-controlled Maintenance Facility workshop area).

Mitigation procedures described in this BMP ensure that all facilities can be operated and maintained without significantly increasing the risk of starting a bushfire.

9. Fire Investigation

Bushfire Incidents or Near Misses

Following a bushfire event, including near miss events, in the area of Gunning Wind Farm, Acciona Energy will cooperate with the NSW RFS and other emergency services to investigate the cause of the fire. Following an event, Acciona Energy will:

- Identify the cause/source of the potential ignition
- Investigate and document:
    - The circumstances leading up to the potential ignition;

- Reasonably practicable changes that can be made that will mitigate similar events recurring:
  - To the design of the item of plant involved in the potential ignition (e.g. intrinsic design changes, clearance requirements, vegetation control requirements etc), and/or
  - To the operations and maintenance procedures that led to the potential ignition, and

- Implement the appropriate combination of plant/procedural changes that will mitigate similar events recurring.
- Where applicable - Identify and document where firefighting efforts were hindered by the operation of the Gunning Wind Farm, and
- Based on an analysis of that hindrance, implement changes to:
  - operations and maintenance plans, and/or
  - design to reduce the impact on the firefighting effort in future fires.

Assistance with Fire Investigation

Acciona Energy will provide assistance to fire control authorities investigating bushfires in the vicinity of the Gunning Wind Farm, including technical details relating to Wind Farm assets.

10. Compliance and Monitoring of the Plan

The primary mechanism for monitoring conformance with this plan will be through compliance Inspections and Internal audit program.

Upon the identification of non-conformances or where further actions may be necessary, items will be managed as per Acciona Energy's Non-Conformance Procedure.

Identifying Deficiencies and Revising the Plan

This BMP shall be reviewed if there are significant changes or deficiencies in this BMP identified by a variety of means such as:

- Regular review of this BMP by the Site Manager
- Reviews or recommendations by Regulators
- Audit findings
- Incidents and Investigations
- Changes in legislation, standards or industry practice, and
- Operational Changes.

11. Related Documentation

Document Number	Document Title
	Electricity Supply Act 1995 Electricity Supply (General) Regulation 2014 Electricity Supply (Safety and Network Management) Regulation 2014
GAE07006	Emergency Control
PAU01_GAE07006	Emergency Management Procedure
PLN15_PAU01_GAE07006_GWF	Gunning Emergency Response Plan
na	Gunning Environmental Management Plan
	Service installation Rules NSW

12. Record of Changes

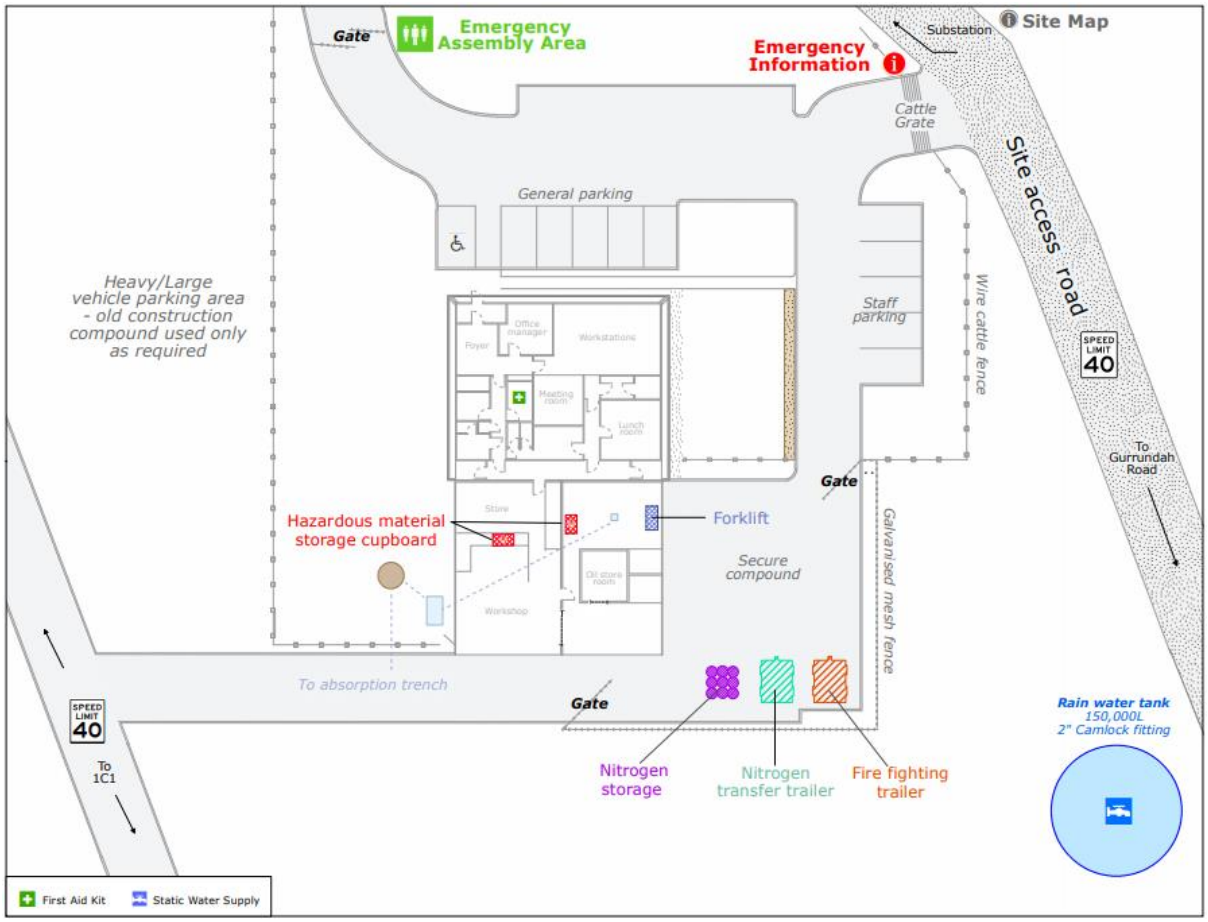
Rev.	Date	Description
r01	4/3/2020	Initial release
r02	27/10/2020	Minor amendments- references to legislation updated

Appendix A – CFA Ratings Explained

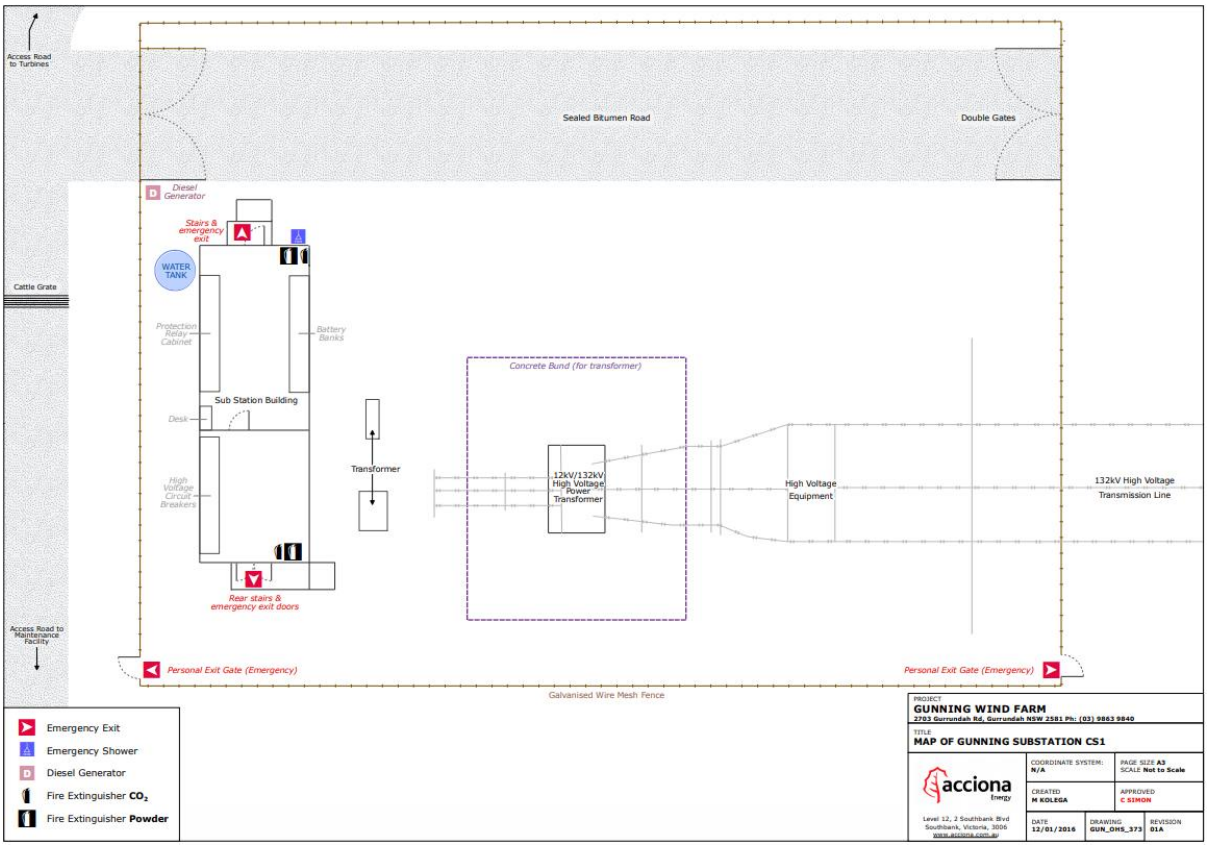
The NSW RFS provides a variety of ratings according to different contexts. It is important that readers do not confuse these ratings and assessments. This Appendix provides a brief explanation of some of the ratings provided by the RFS.

FIRE DANGER RATING	WHAT YOU SHOULD DO
CATASTROPHIC	For your survival, leaving early is the only option. Leave bush fire prone areas the night before or early in the day – do not just wait and see what happens. Make a decision about when you will leave, where you will go, how you will get there and when you will return. Homes are not designed to withstand fires in catastrophic conditions so you should leave early.
EXTREME	Leaving early is the safest option for your survival. If you are not prepared to the highest level, leave early in the day. Only consider staying if you are prepared to the highest level – such as your home is specially designed, constructed or modified, and situated to withstand a fire, you are well prepared and can actively defend it if a fire starts.
SEVERE	Leaving early is the safest option for your survival. Well prepared homes that are actively defended can provide safety – but only stay if you are physically and mentally prepared to defend in these conditions. If you're not prepared, leave early in the day.
VERY HIGH HIGH LOW MODERATE	Review your bush fire survival plan with your family. Keep yourself informed and monitor conditions. Be ready to act if necessary.

Appendix B – Gunning Wind Farm Compound Emergency Diagram



Appendix C – Gunning Wind Farm Substation CS1 Emergency Diagram



Appendix D – Gunning Wind Farm Site Access from Gurrundah Road


1D1
SUBSTATION
1C1
Site access from Gurrundah Rd
1C2
O&M
FACILITY
1C3
1C4