Mt Gellibrand Wind Farm Bushfire Mitigation Plan



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

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1. Acknowledgments

MGWF has planning approval with permit number PL-SP/05/0257 (henceforth, Planning Permit) issued under the Colac Otway planning scheme.

It is a requirement of the Planning Permit under Section *s12(D)* that MGWF must prepare and review a wildfire and emergency prevention and response plan (henceforth, Bushfire Mitigation Plan or BMP). Under subsection s12(D)(i) of the Planning Permit the BMP must be reviewed and updated at least every five (5) years in consultation with the CFA.

This MGWF BMP was reviewed in consultation with the CFA: On the; 12

/ 10 / 2020

And with;

Mark Gunning LLB

CFA District 6 South
West Region
Commander – Northern Catchment



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2. Purpose

ACCIONA Energy has developed this Bushfire Mitigation Plan (BMP) as a requirement of Mount Gellibrand Wind Farm (MGWF) Planning Permit and to support MGWF's Environmental Management Plan (EMP) and Emergency Response Plan (ERP).

ACCIONA Energy recognises that there are uncontrolled risks of fire ignition that have the potential to initiate bushfires from electrical assets associated with the Mt Gellibrand Wind Farm including the equipment within the wind turbines, kiosks and the substation. The objective of this BMP is to mitigate these uncontrolled risks during the operational and maintenance activities of MGWF.

3. Scope

ACCIONA Energy owns and operates MGWF. The wind farm is located in the volcanic plains of western Victoria approximately 25km East of Colac, on predominantly cleared pastoral grazing land used for sheep and cattle farming.

The key assets located at the Mt Gellibrand Wind Farm include:

- 2, 80MVA 33kV/66kV oil filled Power transformers located at the substation. The transformers convert the generated 33kV to 66kV and to export power into Powercor's distribution network;
- 44, AW3150 wind turbines generators (WTG) that have a nominal generating capacity of 3 MW. All WTGs have a hub height of 87.5m and a rotor diameter of 125m;
- 44, 12/33kV, oil filled kiosk transformers located adjacent to each WTG. The kiosk transformers connect the WTG to the 33kV reticulation collection system;
- 4 met masts (87.5m height); and
- Operation and maintenance (O&M) facility.

All key assets of MGWF are powered via an electrical reticulation installed underground.

4. Objective

The primary objective of ACCIONA Energy's BMP is to mitigate fire ignition risks in operational and maintenance activities through the:

- Elimination of ignition sources; and
- Maintaining the separation of potential ignition sources and any flammable material.

Specifically, the BMP provides a management framework for MGWF to:

- Reduce the risk of fires and power interruptions;
- Protect the health and safety of the local community and workers;
- Ensuring safe clearances are achieved and maintained; and
- Minimising the environmental impacts of these mitigation activities.

5. Definitions

Term	Definition
ACCIONA Energy	Acciona Energy Australia Global Pty Ltd
Act	*Electricity Safety Act 1998*
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".
CFA	Country Fire Authority
ECO	Emergency Control Organisation
ELCMP	Electric Line Clearance Management Plan
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESV	Energy Safe Victoria
FDP	Fire Danger Period declared as per s4 of the CFA Act 1958
HSEQ	Health Safety Environment Quality
IA	Internal Audit
Minimal	Of a minimum amount, quantity, or degree; negligible
MGWF	Mt Gellibrand Wind Farm
Regulations	*Electricity Safety (Bushfire Mitigation) Regulations 2013*

6. 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

7. Description of Mt Gellibrand Wind Farm

7.1. General Description

MGWF is located in a rural area that is predominantly used for grazing (sheep and cattle). There is no forest within the Mt Gellibrand Wind Farm itself apart from isolated trees and shelterbelts however the Otway's forest is located within the region.

7.2. Infrastructure

7.2.1. Wind Turbines

The wind turbines comprise of a rotor and nacelle mounted on tall, tapered steel towers 87.5m above the ground.

The electrical generator itself is located within the nacelle at the top of the tower and the stator operates at 12 kV. 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 WTG's high voltage switchgear are 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 tower of a WTG, the fire is most likely to be contained within the tower itself. A fire in the nacelle is unlikely, however should a fire occur in the nacelle, it is possible to become a fire ignition source to the external area surrounding the wind turbine.

7.2.2. Kiosks

All 44 turbines are connected to step up 12/33kV kiosk transformers located adjacent to each turbine. The kiosk consists of the transformer and 33kV protection switchgear. The transformer and switchgear are installed into a metallic enclosure known as the kiosk.

The kiosks are oil filled, fan cooled and ventilated. Ignition of fire from the transformers is possible but unlikely to spread if fully enclosed and insulated with SF6 gas. The kiosks are fully self-bunded and should contain and major oil leak.

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

7.2.3. Underground Power Cables

The wind farms internal electrical reticulated system is underground, operating a 12kV connection from turbine internal switchgear to kiosk transformer and then at 33kV from the kiosk to one main 33/66kV substation.

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 considered improbable as the cables are fully buried, as only a mechanical break into a live conductor (e.g. when digging) could act as an unlikely fire ignition source.

7.2.4. Substation and Control Building

The Substation collects the underground cables from the transformer kiosks to a single point so that it can be stepped up to a higher voltage (66 kV) and then connected to the switching station.

The main substation has (2) power transformers each rated at 75MVA and step upthe voltage from 33kV to 66kV and connect to the PowerCor Network. The main substation also has one switch building, which has separate, adjoining rooms for the 33kV indoor switchgear, the AC/DC power supplies and control equipment and an additional room to be used and accessed only by the network utility owner, PowerCor.

The substation includes fully bunded foundations, pumping and oil/water separator facilities.

The high voltage switchgear within the transformer yard is fully enclosed and insulated with SF6 gas and lightning protection.

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

7.2.5. Overhead Power Lines

There are no overhead power lines under the scope of the MGWF operations.

8. Bushfire Prevention Strategies and Programmes

8.1. Introduction

This BMP provides specific strategies and programmes to mitigate ignition sources for the prevention of bushfires caused by the operation of the Mt Gellibrand 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).
- Staff and/or visitors smoking in vegetated areas

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 vegetation, packaging, rubbish and other work materials as a requirement of work permits.
- Substation, the Switching Station inspected at a minimum every 3 months and wind turbine sites inspected every 6 months by a competent Acciona employee.
- 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 remain on access tracks
- Access control areas strictly enforced
- Smoking is prohibited on site
- ACCIONA Energy will routinely engage with the local Country Fire Authority and Victorian State Emergency Service to familiarise emergency service providers with the wind farm site and its various assets, and to assess and implement the most relevant and applicable mitigation strategies.

8.2. Wind Turbines

The surrounds of all turbines will be kept clear of flammable substances. This will be achieved by a fuel reduction area surrounding three (3) metres of all WTG's foundations.

The fuel reduction area must be covered with crushed rock to inhibit vegetation and provide clear demarcation of the fuel reduction area. Additionally:

- Pre and post prolific vegetation growth period inspections are undertaken for all wind turbines and hard stands. These inspections are carried out in accordance with MGWF's EMP and Pest Plant Control Procedure. These inspections will determine if additional actions are required to manage vegetation.
- The wind turbines are located on land that is predominantly used for grazing. The grass is kept short by the livestock;
- The WTG hard stand to be periodically sprayed with herbicide to limit vegetation
- 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).

8.3. 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 safe systems of work. Additionally:

- 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.

8.4. Substation

The transformer bunds within the Substation will be kept clear of flammable substances, except where required during maintenance activities e.g. transformer oil replacement or top up. Additionally:

- All Substation plant and equipment must be maintained in good working condition.
- The Substation yard must be covered with crushed rock for electrical safety and to inhibit vegetation growth;
- Maintaining a reduced fuel load area around the exterior perimeter of the fence. Achieved by a combination of herbicide spraying and mechanical methods within one (1) meter and four (4) meters of the exterior fence respectively.
- Substation screening vegetation has been planted with sufficient clearance to perimeter fences.
- Aerial conductors are correctly designed, installed and maintained to prevent line slap.
- Lightning protection poles are installed to prevent strikes inside the switchyard.
- Substation must be inspected at a minimum three (3) times annually to ensure:
    - The yard is clear of vegetation and other flammable objects and (e.g. packaging, rubbish, etc). Flammable objects must be removed and disposed of correctly as soon as reasonably practicable. Excessive vegetation will be controlled by spraying; and
    - Overhead rack structures, gantries and cross members are free from any animal nesting
- At the completion of any work undertaken within the Substation, personnel must inspect the yard and remove any flammable objects.

8.5. Fire Fighting Equipment

Basic firefighting equipment provided to contain or extinguish small fires. The equipment to be provided by ACCIONA:

- Fire Pump Trailer, that is inspected monthly and serviced pre and post FDP.
- service vehicles must carry extinguishers as per AS1851. During the FDP 20 litres knap sack must also be carried.
- Rakehoe's and/or shovels and rakes to be externally mounted to service vehicles during FDP.
- The substations will hold (as a minimum): One 5 kg ABE powder-type, stored pressure fire extinguisher.

The firefighting equipment listed above is to be regularly inspected and maintained in an operational condition.

8.6. 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.

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.

9. Operational Contingency Arrangements

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

9.1. 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 and if safe to do so, evacuate site. The evacuation procedure is covered in the Mt Gellibrand Emergency Response Plan.

The site will be operated remotely, via the Control Room. Instructions to the MGWF 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.

9.2. Communication with Landholders

The Chief Warden will alert landholders if a bushfire threatens the area. The emergency assembly point can be seen highlighted in Appendix B Mt Gellibrand Wind Farm Evacuation

Assembly map. Alternate evacuation points may be advised in consultation with the relevant lead authority and dependant on the incident type and location.

9.3. On Days with a Fire Danger Rating of Code Red

In the event of a Fire Danger Rating of Code Red being declared for the area, ACCIONA Energy will instruct staff to remain at the Mt Gellibrand Wind Farm Maintenance Facility, further controls will be implemented via risk assessment and in consultation with Fire Authorities. MGWF's ECO will be activated as per the MGWF ERP if required.

The site will be operated, via the Mt Gellibrand 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.

9.4. On Days Declared as a Day of Total Fire Ban

The operation of the Mt Gellibrand 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, in this case the relevant Section 40 permit must be obtained from CFA).

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

10. Fire Investigation

10.1. Bushfire Incidents or Near Misses

Following a bushfire event, including near miss events, in the footprint of Mt Gellibrand Wind Farm as shown in Appendix B, ACCIONA Energy will cooperate with the CFA and other emergency control authorities to investigate the cause of the fire. Following an event, ACCIONA Energy will in consultation with fire authorities:

- 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 Mt Gellibrand 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.

10.2. Assistance with Fire Investigation

ACCIONA Energy will provide assistance to fire control authorities when requested, including technical details relating to Wind Farm assets.

11. Compliance and Monitoring of the Plan

The primary mechanism for monitoring conformance with this plan will be through compliance inspections and the Internal Audit (IA) 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.

11.1. 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.

12. Related Documentation

Document Number	Document Title
PLN02_PAU01_GAE07006 r05	Mt Gellibrand Emergency Response Plan
	Mt Gellibrand Environmental Management Plan
PLN02_PAU01_GAE07006 r05	Emergency Summary Sheet
PAU01_GAE07021 r05	Non-Conformance Procedure

13. Record of Changes

Rev.	Date	Description
1	21/5/2018	Initial release
2	14/10/2020	Upgrade, review and consultation with CFA to transition from construction to operations as per planning permit requirements and inclusion of CFA acknowledgment register.

Appendix A – CFA Ratings Explained

The Fire Danger Rating predicts how a fire would behave if one started, including how difficult it would be to put out. The higher the rating, the more dangerous the conditions. The rating is your trigger to act, it is very important that readers do not confuse these ratings. This Appendix provides a brief explanation of rating system used by CFA.

	WHAT DOES IT MEAN?	WHAT SHOULD I DO?
CODE RED	These are the worst conditions for a bush or grass fire. Homes are not designed or constructed to withstand fires in these conditions. The safest place to be is away from high risk bushfire areas.	Leaving high risk bushfire areas the night before or early in the day is your safest option – do not wait and see. Avoid forested areas, thick bush and long, dry grass. Know your trigger – make a decision about: – when you will leave – where you will go – how you will get there – when you will return – what you will do if you cannot leave
EXTREME	Expect extremely hot, dry and windy conditions. If a fire starts and takes hold, it will be uncontrollable, unpredictable and fast moving. Spot fires will start, move quickly and will come from many directions. Homes that are situated and constructed or modified to withstand a bushfire, that are well prepared and actively defended, may provide safety. You must be physically and mentally prepared to defend in these conditions.	• Consider staying with your property only if you are prepared to the highest level. This means your home needs to be situated and constructed or modified to withstand a bushfire, you are well prepared and you can actively defend your home if a fire starts. • If you are not prepared to the highest level, leaving high risk bushfire areas early in the day is your safest option. • Be aware of local conditions and get information by listening to ABC Local Radio, commercial and designated community radio stations or Sky News TV, going to **cfa.vic.gov.au**, **emergency.vic.gov.au** or call the VicEmergency Hotline on 1800 226 226.
SEVERE	Expect hot, dry and possibly windy conditions. If a fire starts and takes hold, it may be uncontrollable. Well prepared homes that are actively defended can provide safety. You must be physically and mentally prepared to defend in these conditions.	• Well prepared homes that are actively defended can provide safety – check your bushfire survival plan. • If you are not prepared, leaving bushfire prone areas early in the day is your safest option. • Be aware of local conditions and get information by listening to ABC Local Radio, commercial and designated community radio stations or Sky News TV, going to **cfa.vic.gov.au**, **emergency.vic.gov.au** or call the VicEmergency Hotline on 1800 226 226.
VERY HIGH HIGH LOW-MODERATE	If a fire starts, it can most likely be controlled in these conditions and homes can provide safety. Be aware of how fires can start and minimise the risk. Controlled burning off may occur in these conditions if it is safe – check to see if permits apply.	• Check your bushfire survival plan. • Monitor conditions. • Action may be needed. • Leave if necessary.

Appendix B – Mt Gellibrand Wind Farm Evacuation Assembly Map

