Gunning Wind Farm
Bushfire Mitigation Plan



CONTROL

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RECORD OF CHANGES

REV.	DATE	DESCRIPTION
01	04/03/2020	Initial release
02	27/10/2020	Minor amendments – references to legislation updated
03	20/12/2024	Minor amendments. Template updated.
04	29/06/2026	Annual review.

CONTENTS

TITLE	PAGE
1. PURPOSE	2
2. SCOPE	3
3. OBJECTIVE	3
4. DEFINITIONS	4
5. RESPONSIBILITIES	4
6. DESCRIPTION	4
6.1. GENERAL DESCRIPTION	4
6.2. INFRASTRUCTURE	4
7. BUSHFIRE PREVENTION STRATEGIES AND PROGRAMMES	5
8. OPERATIONAL CONTINGENCY ARRANGEMENTS	8
8. FIRE INVESTIGATION	8
9. COMPLIANCE AND MONITORING OF THE PLAN	9
10. RELATED DOCUMENTATION	9
APPENDIX B – GUNNING WIND FARM COMPOUND EMERGENCY DIAGRAM	11
APPENDIX C – GUNNING WIND FARM SUBSTATION CS1 EMERGENCY DIAGRAM	12
APPENDIX D – GUNNING WIND FARM SITE ACCESS FROM GURRUNDAH ROAD	13

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1. PURPOSE

The purpose of this Plan is to summarise the Bushfire Mitigation activites that occur on the Gunning Wind Farm. Acciona Energia has developed this Bushfire Mitigation Plan (BMP) to support its Operational Environmental Management Plan (OEMP) and Emergency Response Plan (ERP).

The overall objective of this BMP is to reduce the risk of bushfires arising from 'at risk' electrical assets supporting the Gunning Wind Farm. It details the preventative and mitigative controls Acciona Energia employs to manage this risk.

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:

- Reduction 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 interruption.
- Reduce risks to the local community, and
- Reduce the environmental impacts of our mitigation activities.

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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
General Manager, Southern Operations	• Ensuring that bushfire mitigation activities are resourced and completed. • Requirements in this plan are regularly reviewed as per document control and internal audit processes
Gunning Windfarm SiteManager	• Ensuring that bushfire mitigation monitoring and compliance activities are performed

6. DESCRIPTION

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 depth to protect the cable and warn any ground disturbance activities of the presence of the cable. The cables themselves are insulated, armoured and shielded.

The likelihood of fire ignition from an appropriately buried underground power cable 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 transformer 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 Wind Farm.

7. BUSHFIRE PREVENTION STRATEGIES AND PROGRAMMES

Introduction

This BMP, outlines 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)

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- 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 reduce the likelihood of fire ignition hazard include:

- Substations, Switching Stations and the wind turbine sites were considerate of the 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 are inspected every month and wind turbine sites inspected every 6 months by a competent Acciona employee. It is likely however that inspection 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 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.

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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 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).
- Rainwater tank is normally full at the substation and provides water to the emergency shower and eye wash station and 1 external water tap.

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;

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- 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 activate the Gunning Emergency Response Plan.

The site may be able to continue to be operated remotely. 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.

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 will not be permitted (except where a NSW Rural Fire Service Total Fire Ban Exemption is sought and approved).

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

8. FIRE INVESTIGATION

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:

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  - 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.

9. 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 Gunning Windfarm Site Manager
- Reviews or recommendations by Regulators
- Audit findings
- Incidents and Investigations
- Changes in legislation, standards or industry practice, and
- Operational Changes.

10. RELATED DOCUMENTATION

CODE	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
PLN03_PAU01_GAE07006	Emergency Response Plan Operations and Maintenance
PLN17_PAU01_GAE07016_GWF	GWF Operational Environmental Management Plan (OEMP)
	Service installation Rules NSW

NOTE*: Complete the table with the documentation, legislation, regulations, etc. that is relevant to the document.*

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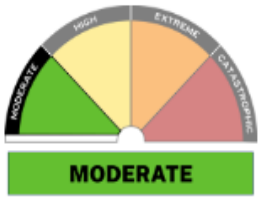
APPENDIX A – FIRE RATINGS EXPLAINED

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.



Plan and prepare.

- Stay up to date and be ready to act if there is a fire.



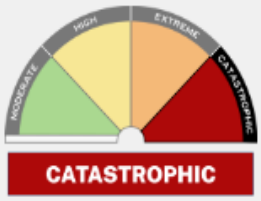
Be ready to act.

- There's a heightened risk. Be alert for fires in your area.
- Decide what you will do if a fire starts.
- If a fire starts, your life and property may be at risk. The safest option is to avoid bush fire risk areas.



Take action now to protect your life and property.

- These are dangerous fire conditions.
- Check your bush fire plan and ensure that your property is fire ready.
- If a fire starts, take immediate action. If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts.
- Reconsider travel through bush fire risk areas.



For your survival leave bush fire risk areas.

- These are the most dangerous conditions for a fire.
- Your life may depend on the decisions you make, even before there is a fire.
- Stay safe by going to a safer location early in the morning or the night before.
- Homes cannot withstand fires in these conditions.
- You may not be able to leave, and help may not be available.

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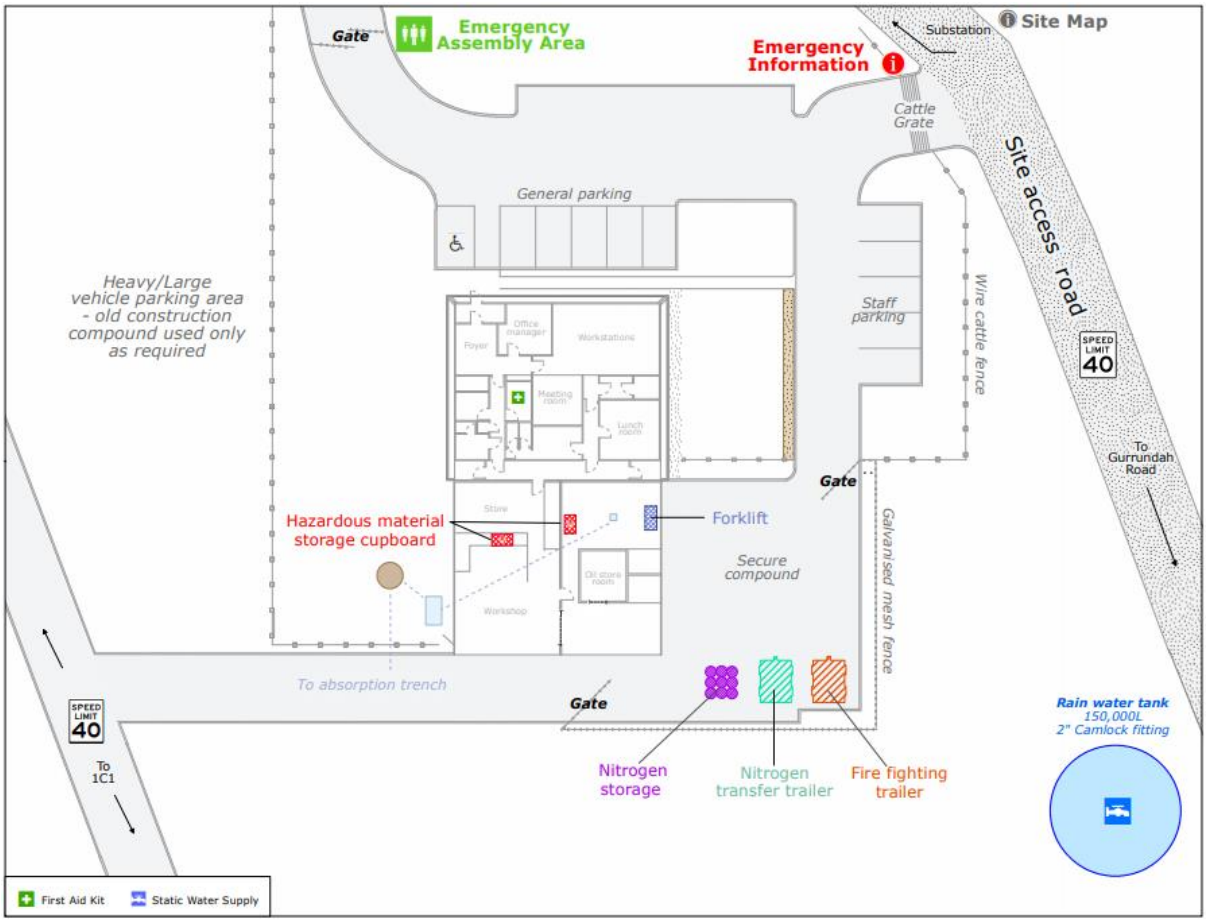
APPENDIX B – GUNNING WIND FARM COMPOUND EMERGENCY DIAGRAM



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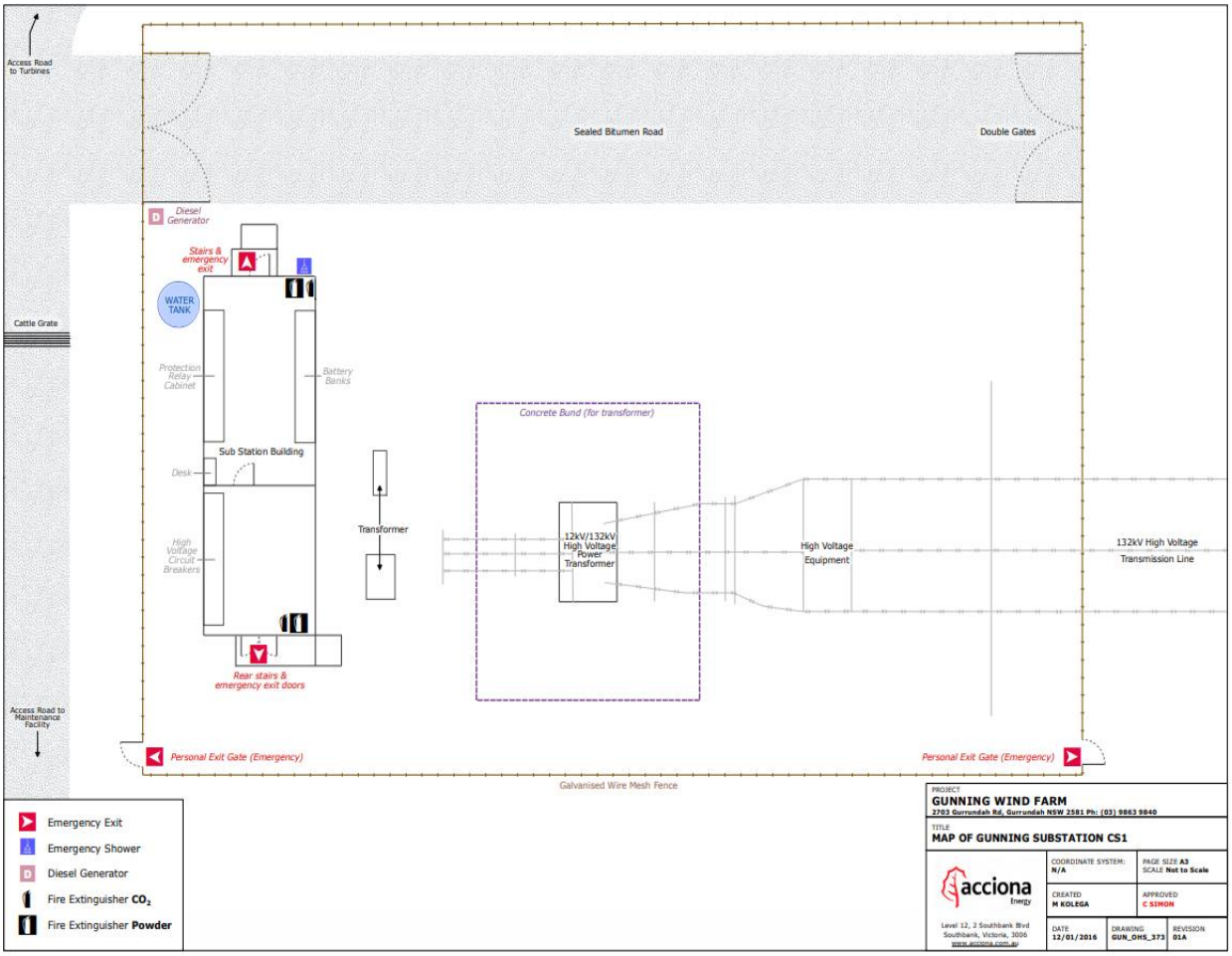
APPENDIX C – GUNNING WIND FARM SUBSTATION CS1 EMERGENCY DIAGRAM



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APPENDIX D – GUNNING WIND FARM SITE ACCESS FROM GURRUNDAH ROAD



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