

Codrington Wind Farm

Bushfire Mitigation Plan

Pacific Hydro

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1. Overview

The Codrington Wind Farm Bushfire Mitigation Plan has been developed with the objective to identify possible electrical causes of fire and to reduce of the likelihood and consequences of these through the implementation of various preventative measures.

The Plan has been produced to fulfil the requirements of the Electricity Safety (Bushfire Mitigation) Regulations 2003 (Version 003) whereby a new plan must be prepared and submitted to Energy Safe Victoria before the 1st July of each year.

The land on which Yambuk Wind Farm is established consists of a network of water ways that make up Lake Yambuk and grassed pastures used predominantly for low density sheep and cattle grazing. There are trees within the boundaries of the wind farm however there are none in close proximity to the turbines. Given its coastal location the southern boundary of the wind farm does consist of low lying dune scrub/grasses.

Pacific Hydro recognises that there are multiple 'at risk' electrical assets located at the Codrington Wind Farm (CWF) where a fire could originate from, including;

- The wind turbine nacelle,
- The(kiosk) Integrated Grid Connection Transformer and Switchgear adjacent to each wind turbine,
- Power Factor Correction Yard
- The Codrington Wind Farm (COD) Main Substation

There is no overhead line under the control of Pacific Hydro Ltd at this site. The only 66kV line jumpers exist between the 66kV Isolator and 66kV/22kV Transformer. All the other cables are buried underground.

Further description of these assets and there management can be found in Section 3 & 4.

2. Contact Information

(a) The name, address, and telephone number of the specified operator:

Pacific Hydro Pty Ltd
Level 11, 474 Flinders Street
Melbourne, Victoria, 3000

Phone: (03) 8621 6000

(b) The person responsible the preparation of this plan is:

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(c) The person responsible for carrying out the plan is:

Mr. Shaun Blackie
Wind Farm Supervisor
Pacific Hydro Pty Ltd
Level 11, 474 Flinders Street
Melbourne, Victoria, 3000

Phone: (03) 8621 6000

Mobile: 0400 673 999

(d) In case of an emergency contact should be made with:

Mr. Shaun Blackie
Wind Farm Supervisor
Pacific Hydro Pty Ltd
Level 11, 474 Flinders Street
Melbourne, Victoria, 3000

Phone: (03) 8621 6000

Mobile: 0400 673 999

3. Description of Assets

3.1 Wind Tower (including Nacelle)

The wind towers are approximately 50 metres high and comprise of a fully enclosed thick walled steel cylinder. The towers are tapered and approximately 4 metres in diameter at the base.

The nacelle on top of the tower contains the electrical generator and includes lubricating and hydraulic oils

In the unlikely event that a fire was initiated within the tower, the fire should be contained within the tower itself. A significant failure of the wind turbine has the potential to initiate a fire. There are electrical, thermal, speed and vibration interlocks that shutdown the wind turbine before a failure has the potential to develop. In the unlikely event that a fire was initiated in the nacelle there is a potential for debris to fall and initiate a grass fire.

3.2 (Kiosk) Integrated Grid Connection Transformer and Switchgear

The 690V/22kV high voltage step up transformer and the switchgear is fully enclosed with a SF6 insulant is located on a concrete foundation adjacent to the base of each tower.

The likelihood of ignition of fire from the transformer is minimal and mostly limited to overheating or electrical breakdown within the unit.

3.3 Codrington Wind Farm Power Factor Correction (PFC) Yard

The COD wind farm Power Factor Correction Yard is contained within a fenced enclosure and it is also fully covered with crushed rock. Reactors and Capacitor banks are installed in the Yard. This Power Factor Correction Unit is connected with the main substation through an underground cable. Ignition of fire from this PFC unit is possible but it is unlikely to spread, and is likely to be limited to overheating or electrical

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breakdown within the units. Therefore, the danger of the fire from these Capacitor Banks and Reactors is minimal.

3.4 Codrington Wind Farm Main Substation

The main substation is contained within a fenced enclosure and is fully covered with crushed rock. There is one main step up 22/66kV, 20 MVA Substation transformer and one 22kV/415V Auxiliary Transformer . These are filled with large quantity of oil. The Main 22kV/66kV, 20MVA substation transformer has been enclosed in fence and separated to industry Standards from the AuxiliaryTransformer to prevent fire spreading between the Transformers and the building.

Both transformers have been mounted on concrete footings and surrounded with wall bunding to stop spreading of oil or fire. Ignition of fire from these transformers is possible but it is unlikely to spread, and is likely to be limited to overheating or electrical breakdown within the units. The area in the vicinity of the transformers is covered in crushed rock, minimizing the possibility of igniting any flammable material.

The overhead lines within the main substation are the 66 kVout going conductors (HV Busbar) from HV side of the main transformer. The conductors' length within the substation is in the order of 10 metres and have been spaced so that the conductors cannot clash. The area under and in the vicinity of the 66 kV conductors is covered in crushed rock, minimizing the possibility of igniting any flammable material. The high voltage switchgear used is fully enclosed with a SF6 insulant. The other components inside the substation buildings such as batteries, battery chargers and capacitors are fully enclosed and the likelihood of fire is minimal.

4. Preventative Strategies

In accordance with Regulation 5, Section (h) and in line with Pacific Hydro's plan objectives the strategies to be adopted for the prevention of fire ignition from overhead lines, substations and wind turbines are detailed in this section.

4.1 Wind Tower (including Nacelle, Integrated Grid Connection Transformer and Switchgear)

The Tower bases and kiosk transformers adjacent to the bases of the turbine are routinely maintained at yearly intervals. Weed spaying is performed on as needed basis.

4.2 Substations/Switchyards

Quarterly housekeeping inspections are performed by Pacific Hydro personnel of substations and transformers to ensure they are clear of vegetation. In addition prior to the Declaration of the Fire Danger Period (DFDP) action shall be undertaken to ensure that:

- There is no vegetation growing within the Wind Farm Substation and Switchyard (eg, weed spraying).
- The Substation guttering is checked and cleared of all debris, and
- The area around the CHWF Substation and 66kV BGR Switchyard shall be slashed if required to minimize the amount of flammable material within 5 metres of the Substations.

As soon as practicable after the declaration of the fire danger period an audit shall be undertaken to ensure the substations are clear of any vegetation and that the surrounds of all substations remain clear of any significant vegetation for a distance of 5 metres from the structures.

The substation equipment has additional routine maintenance performed in accordance with the sites Maintenance Plan which has activities such as inspection, thermal imaging, service and refurbishment that vary from monthly to 25 yearly intervals.

5. Works Program

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In accordance with Regulation 5, Section (i) the routine preventative strategies previously mentioned for the Wind Tower, Substations/Switchyards and overhead line are recorded as individual works in the Maintenance Plan and tracked through the use of Pacific Hydro's computerised maintenance management system WTG Service.

There is no overhead line under the control of Pacific Hydro Ltd at this site.

6. Operations at High Risk Times

6.1 In the event of fire

In the event of fire which prevents the safe operation of any of the assets the substation will be isolated to minimise further ignition sources.

6.2 During a Total Fire Ban

During a time of total fire ban Codrington Wind Farm and the associated infrastructure will operate in accordance with normal operating practices.

6.3 During the Fire Danger Period

The Codrington Wind Farm will be operated in accordance with normal operating practices during the Fire Danger Period.

Early in December or before the DBFP, the bushfire mitigation actions will be audited by the Pacific Hydro Wind Farm Supervisor, referred to in Section 2 (c) of this document, to ensure that they have been carried out in accordance with this plan.

7. Investigations

Electrical faults are recorded on Pacific Hydro's Field Incident Report. For faults or incidents requiring investigation, Pacific Hydro's Defect Reporting and Root Cause Analysis processes are utilised. These processes ensure that incidents are properly investigated and actions taken to reduce their likelihood of re-occurring.

8. Public Awareness of the Plan

Pacific Hydro is responsible for processes and procedures for enhancing public awareness in relation to mitigation of bushfire danger.

The approved Bushfire Mitigation Plan is available at Pacific Hydro's Website for the general public. They can also get a copy of Bushfire Mitigation Plan at the responsible persons office.

9. Performance Measures

The work shall be reviewed annually as initiated by the computerised maintenance management system. Performance is monitored by the closure of maintenance work orders related to bushfire mitigation by the 1st December or before the DBFP each year, whichever is earlier.

The Pacific Hydro Bushfire Index is calculated as follows:

Bushfire Index = *Number of outstanding works* ÷ *Total works required*

Works include all routine asset maintenance and vegetation clearance scheduled and remedial works.

The bushfire index for all Pacific Hydro sites is sent to Energy Safe Victoria before the 1 December each year.

The current 'outstanding works' program/s for Codrington is as follows:

- There are no outstanding/overdue works for this site.

The 'works required' include:

- There is nothing required for completion.

Therefore:

Bushfire Index = $0 \div 0 = 0$

There is no overhead line under the control of Pacific Hydro Ltd at this site.

10. Prescribed Times of Inspection

In accordance with Regulation 7 of the Act:

- All serviceable poles are inspected within 1 month of the prescribed time of 36 months
- All limited life poles shall be inspected within 1 month of their 2.5 year cyclic inspection date.

There is no overhead line under the control of Pacific Hydro Ltd at this site.

11. Prescribed Form of Notice of Inspection

For the purposes of section 83B(2) of the Act, the prescribed period within which notice to the occupier of the land is to be given before inspection of a private electric line is carried out will be between 21 and 45 days notice before the inspection.

There is no overhead line under the control of Pacific Hydro Ltd at this site.

12. Pacific Hydro's Policy on Assistance Provided to Fire Control Authorities

Pacific Hydro will allow access to and assist fire control authorities in the investigation of fires at or near our electrical assets.

13. Management of this Plan

A number of processes and procedures are used by Pacific Hydro to manage this plan including:

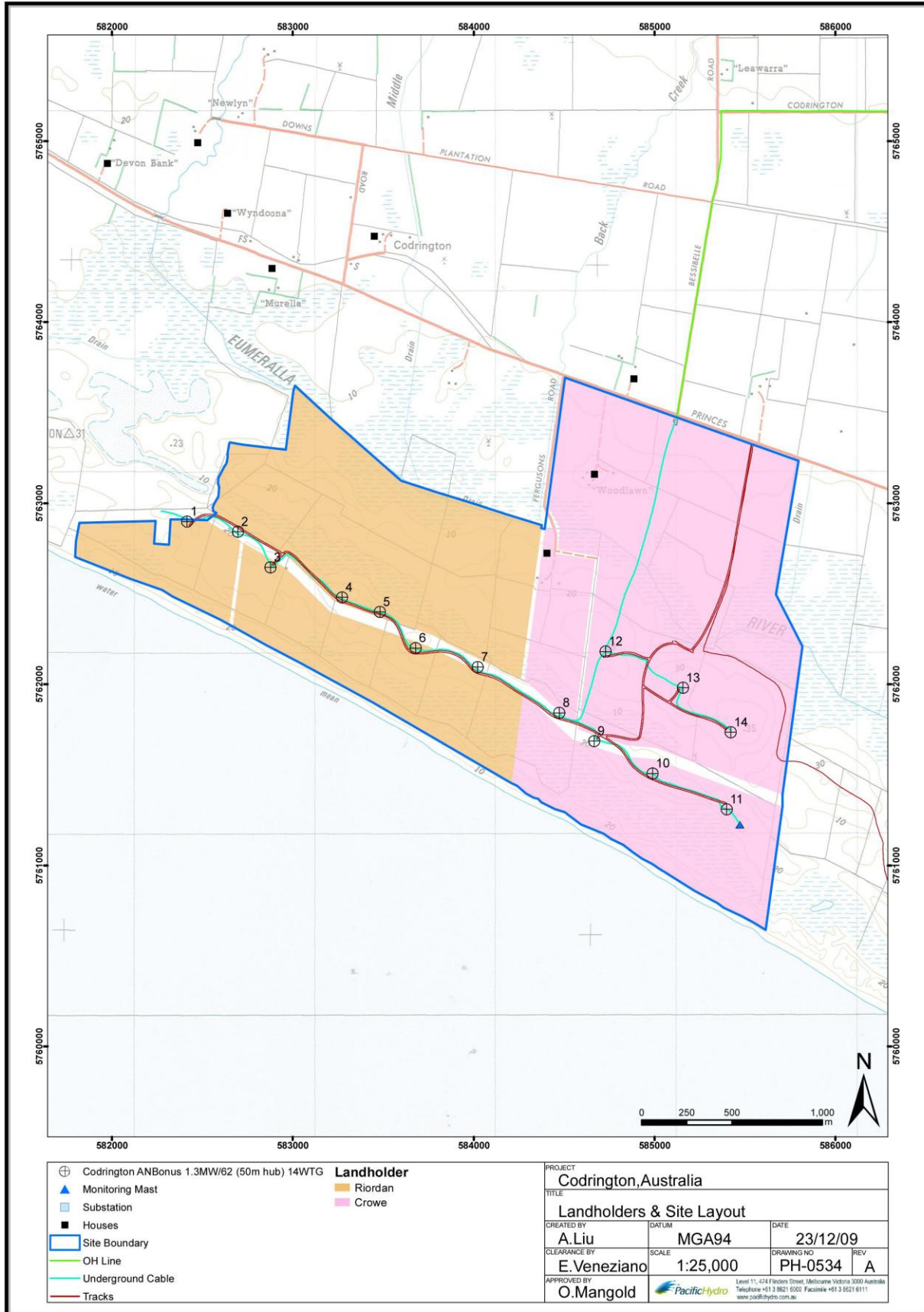
- Monitoring the implementation of the plan is performed by the computerised maintenance management system "WTG Service" which records the requirement for inspection and vegetation clearing listed in this plan.
- Auditing of this plan is performed at a maximum of 2 yearly intervals as part of Pacific Hydro's Health, Safety and Environment audit program.
- Identification of any deficiencies in the plan or the plan's implementation relies on the person's carrying out this plan to provide feedback to Pacific Hydro management.

- Monitoring and auditing the effectiveness of inspections carried out under the plan is performed by the “Maintenance Quality Assurance” procedure. Asset performance and condition audits are performed every 3 years by Pacific Hydro’s corporate operations team as part of the company’s asset management framework.
- Improvement to the plan and the plan’s implementation if any deficiencies are identified is performed via the “Change Management” procedure and annual reviews of this plan.
- Training necessary for persons assigned to perform functions under the plan is provided under the O&M agreement between Pacific Hydro and Powercor.
- Monitor and audit the competence of the persons assigned to carry out inspections under the plan is performed by the “Maintenance Quality Assurance” procedure and requirements under the contracted services.
- Outcomes from defect investigations are reviewed as part of the annual review of this plan and any learning’s are fed into this plan

14. Appendices

Appendix A: Codrington Wind Farm Site Layout showing the location of Turbines, the Underground lines and Codrington Substation. In accordance with Regulation 5, Section (g).

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