RE Future

Mumblin Wind Farm

Application for Planning Permit

Appendix K – Fire Risk Assessment

October 2025

Mumblin Wind Farm

ADVERTISED PLAN

Risk Management Plan (including Fire Safety Study)

May 2025

FIRE RISK Consultants

Cover photo –View of the typical landscape surrounding the proposed Mumblin Wind Farm (Fire Risk Consultants)

Document history and date

Revision	Date	Description	By	Review	Approved
V1 - DRAFT	24/6/2022	Initial draft following assessment of available information and site visit.	M Potter & FRC Project Team	FRC Peer Review Team	G Taylor Managing Director
V2 - Final	21/7/2022	Final draft following feedback from client.	M Potter & FRC Project Team	FRC Peer Review Team	G Taylor Managing Director
V3 – Final	15/8/2024	Final draft – updated with new layout and CFA requirements.	M Potter & FRC Project Team	FRC Peer Review Team	G Taylor Managing Director
V4 – Final	14/03/2025	Final– updated with new layout and CFA requirements.	M Potter & FRC Project Team	FRC Peer Review Team	G Taylor Managing Director
V4.1	5/05/2025	Final– Minor mapping updates.	M Potter & FRC Project Team	FRC Peer Review Team	G Taylor Managing Director

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Any fire safety work, including but not limited to planned burning, back burning and/or fire suppression, on any property or building is specifically excluded from this report.

*Where the term **"Bushfire prevention and mitigation related activities"** (or words to that effect) are used, this is to be defined as the clearance of vegetation in accordance with the Victorian State Government guidelines, including clearing and maintenance of existing fire breaks and/or fire access for fire fighters under electricity pylons and properties that have been constructed to Australian Standard AS3959 and/or the National Construction Code.*

Contents

1 Executive Summary

The Mumblin Wind Farm proposes to develop an eight turbine Wind Energy Facility located to the south of Terang and to the west of Cobden. To assess the risk of fire, this Risk Management Plan has been developed to consider fire risk associated with bushfire and a fire starting within the infrastructure.

This Risk Management Plan follows the guidance provided by CFA in their *Design Guidelines and Model Requirements: Renewable Energy Facilities 2023.* It also includes the assessment of bushfire risk in accordance with the Clause 13.02 of the Corangamite Planning Scheme.

The assessment of bushfire risk has identified a landscape that has been impacted by bushfires in both 1983 and 2018. These bushfires occurred under elevated fire danger conditions and resulted in bushfires travelling long distances under a north westerly influence. The 1983 bushfire was then influenced by a strong south westerly wind change that saw the fire increase in size considerably. The Clause 13.02 assessment has provided a range of mitigation treatments that aligns with the CFA Guideline.

The assessment of fire risk within the Wind Energy Facility including the nacelle, substation and office compound identifies the low risk associated with these types of developments. This situation in addition to the mitigation treatments outlined within the CFA Guideline ensures a high level of fire safety in a Wind Energy Facility.

The outcome of the risk assessment has recommended a range of mitigations to manage fire risk including:

- Installation of eight static water supply tanks of a minimum of 45,000 litres each spread across the development that complies with AS2419.
- Provision of fire breaks around the base of the wind turbines and the substation and office compound.
- Installation of smoke detection and fire suppression systems within the nacelle.
- Provision of access roads including overtaking bays for the development.
- Ongoing maintenance programs for the life of the project in accordance with the relevant Standards or manufacturer specifications.

The outcome of the risk assessment has indicated that the development can occur in this landscape and not increase the risk of fire to the surrounding community or other infrastructure.

2 Introduction

Fire Risk Consultants have been engaged by RE Future to develop a Risk Management Plan (RMP) for the proposed Mumblin Wind Farm located to the south of Terang. The Mumblin Wind Farm development will result in eight wind turbine generators that will generate approximately 60MW.

The site is located approximately 10 kilometres to the south of Terang and eight kilometres to the west of Cobden. The development is occurring in farming properties. The landscape is primarily grassland associated with paddocks for both stock grazing and crop growing. There are isolated areas of treed vegetation that mainly reflects a woodland environment due to the reduced fuels under the tree canopies.

This RMP is required to achieve compliance with the CFA Guideline - *Design Guidelines and Model Requirements: Renewable Energy Facilities 2023* (CFA Guideline). The CFA Guideline outlines the purpose and need for a Risk Management Plan (RMP). The client has engaged with CFA prior to the preparation of this plan, and they will be reengaged once the plan has been approved by the design team. The RMP has been developed to provide sufficient information for CFA to make an informed decision. It is expected for the Planning Permit to require a Fire Management Plan (FMP) and Emergency Management Plan (EMP) as per the requirements of the CFA Guidelines.

The RMP has been prepared following an assessment of the site and analysis of supplied information from the client in relation to the design, commissioning and operation of a Wind Energy Facility. As per the CFA Guideline, this report also aligns with NSW Planning's *Hazardous Industry Planning Advisory Paper 2: Fire Safety Study Guidelines (2011)*. The various requirements outlined within the Advisory Paper have been included within this report where it relates to the proposal.

3 Project Overview

This development includes a Wind Energy Facility that when completed will have a capacity of approximately 60MW.

When completed the project will include:

- A Wind Energy Facility of eight wind turbine generators spread over approximately 22 km².
- Office compound
- Switchyard.
- Access roads providing connections from the existing Public Roads and the towers.
- Static water supplies for firefighting purposes.
- Asset Protection Zones around the towers.
- Detection and suppression systems installed within the Nacelle.

4 Existing conditions assessment

4.1 Site description and location

The Wind Energy Facility is spread over approximately 22 km² and is located to the south of Terang and west of Cobden. The project involves the construction, commissioning and operation of eight wind turbine generators (see Figure 1) and associated infrastructure including a substation top the east of the development and a works/office compound.

The development occurs to the north and south of Cobden – South Ecklin Road and to the east and west of Curdies – Leichfield Road. The Cobden- South Ecklin Road is a major road between the Cobden township and Timboon-Terang Road.

The location of the wind turbines is within grassland areas that are associated with farming activities. There are isolated patches of treed vegetation that is for either stock shelter or as small privately owned Plantations. Figure 2 outlines the location of the Wind Energy Facility in relation to the surrounding landscape.

Figure 1 - Mumblin Wind Farm overview

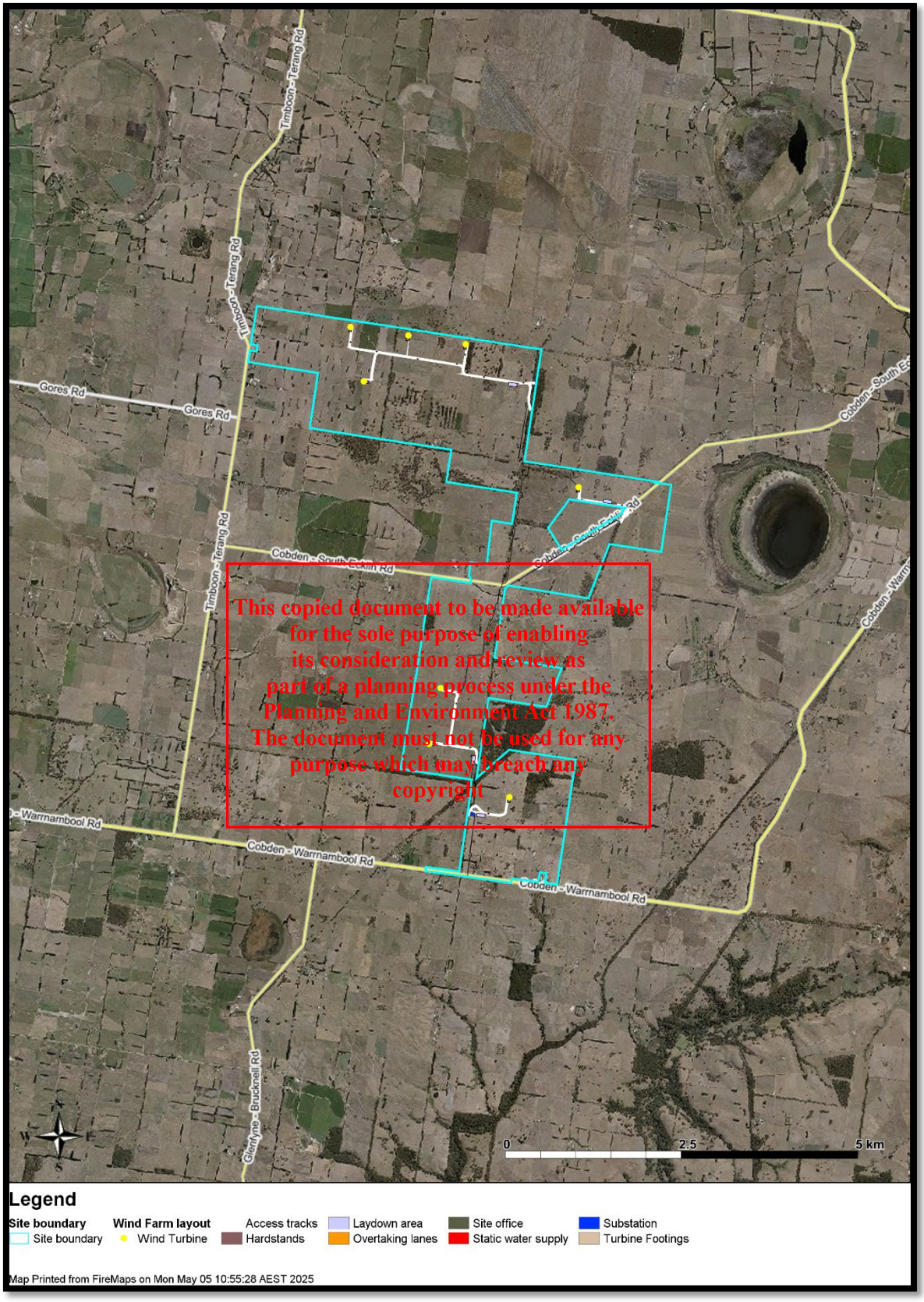


Figure 2 – Mumblin Wind Energy Facility - site and surrounds

4.2 Risk indicators

The following information has been obtained and provides relevant information that informs the analysis of risk. This information is primarily related to the existing bushfire risk that exists in the surrounding area.

4.2.1 Bushfire Management Overlay

The Bushfire Management Overlay (BMO) is a Planning Scheme Overlay that is provided within the Corangamite Planning Scheme. It is reliant on areas of a municipality being identified as at risk from bushfire.

The criteria to determine if a BMO should be implemented includes:

- Criteria 1: Vegetation type and size
    - Forest, woodland, scrub, shrubland, mallee and rainforest vegetation that is 4 hectares or more in size.
- Criteria 2: Ember buffer
    - A 150m buffer is applied from the edge of vegetation identified in Criteria 1.
- Criteria 3: Extreme risk inclusions
    - Areas that fire authorities have advised may be subject to extreme landscape bushfires.

Figure 2 outlines the location of the BMO in relation to this development. The BMO covers small areas of the development footprint. Two (1 and 15) of the towers are just inside the BMO and following an assessment of the bushfire risk, they will likely be exposed to less than 12.5 kW/m². This is due to the treed vegetation being classified as Woodland in the surrounding landscape. See Appendix 1 for the site photos that indicates the typical vegetation.

The fragmentation of the Bushfire Management Overlay is unlikely to support an elevated landscape risk assessment outcome. There are several landscape features that will likely slow or stop bushfires spread. These include changes in vegetation types and the surrounding road network.

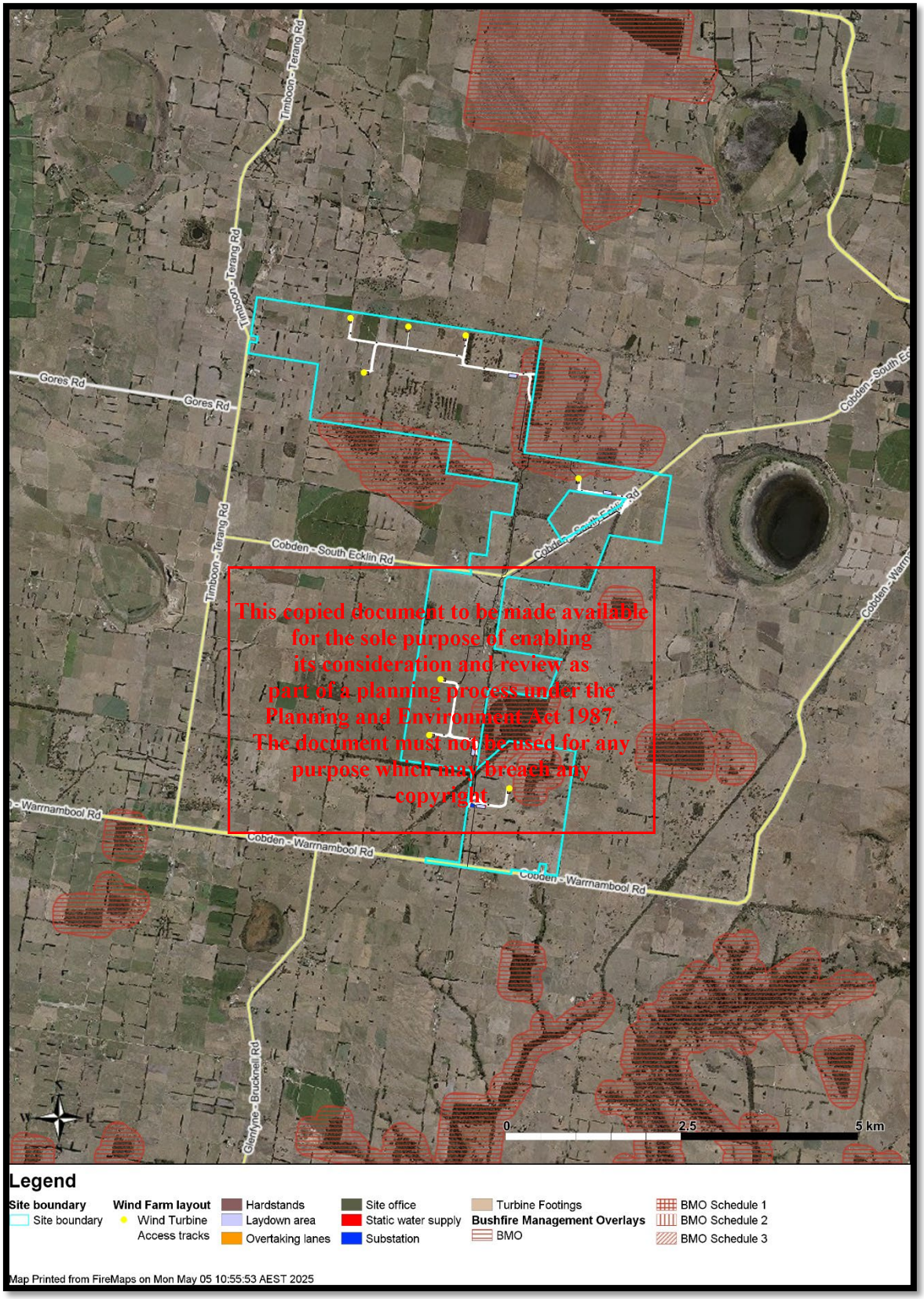


Figure 3 - Bushfire Management Overlay in relation to the development site

4.2.2 Bushfire Prone Area

Bushfire Prone Areas (BPA) are areas that are subject to, or likely to be subject to, bushfires. The Minister for Planning has determined that specific areas are designated BPAs for the purposes of the building control system. Specific bushfire construction standards apply in designated bushfire prone areas in Victoria.

These bushfire construction requirements are aimed at improving bushfire protection for residential buildings. The creation of the BPA map fulfils one of the 67 recommendations made by the Victorian Bushfires Royal Commission.

A minimum construction standard applies to new residential buildings, schools, childcare centres, hospitals, aged care facilities, industrial buildings and associated buildings in designated Bushfire Prone Areas.

Landowners are required to build to a minimum Bushfire Attack Level of 12.5 in these areas as outlined within AS3959:2018 *Building in bushfire prone areas*. The entire project area is within a BPA. The existence of the BPA will trigger the need to respond to Clause 13.02 of the Planning Scheme. Refer to Section 4.1.

4.2.3 Municipal Fire Management Plan[1]

Across the three municipalities of Corangamite, Surf Coast and Colac Otway, there is a single Strategic Fire Management Plan. This plan recognises the similar hazard areas across the three municipalities including grassland areas and large areas of Public Land.

The Plan provides an overview of the bushfire risk to the communities within the three municipalities and includes Elingamite North which is the locality where most of the wind turbines are. The risk to the Elingamite North locality is primarily grassfires and this is demonstrated through the low likelihood ranking. The potential for this area to be impacted by embers is also considered very low and unlikely. This is consistent with the grassland dominating the surrounding landscape which is not likely to generate embers.

The plan doesn't articulate mitigation activities for the local risk. It does outline the role that agencies including CFA and Forest Fire Management Victoria are undertaking in educating communities and ensuring various treatments have been implemented including roadside slashing, private land vegetation management and community education programs.

4.2.4 Safer Together assessment[2]

The South West Bushfire Management Strategy was developed to reflect the region's unique environments and communities. The strategy was developed through a regional planning process

[1] Corangamite Municipal Fire Management Plan -https://www.corangamite.vic.gov.au/Council/Publications/Plans-Strategies-A-Z/Strategic-Fire-Management-Plan

[2] Barwon South West Bushfire Management Strategy 2020 - https://www.safertogether.vic.gov.au/__data/assets/pdf_file/0024/493530/DELWP_BushfireManagementStrategies_2020_BarwonSouthWest_rr.pdf

that was guided by the knowledge and priorities of experts, stakeholders and community members from the Region.

The Barwon South West Bushfire Management Strategy 2020 is the result of an analysis of bushfire risk across the Region. The Strategy indicates the threat of grassfires however it does not provide any additional strategies to reduce the risk other than those already undertaken.

4.2.5 Bushfire history

An analysis of bushfire history in the area surrounding the proposed Wind Farm indicates bushfire activity. According to the data provided by DELWP (Figure 4), some areas of this development has been impacted by bushfire in the past.

The most recent bushfire occurred on 17 March 2018. This bushfire occurred late in the bushfire season however due to the elevated temperatures and strong gusting north westerly winds, when the bushfire started on the eastern side of Terang it quickly spread in a south easterly direction. The bushfire impacted on a small area on the western edge of the bushfire.

In 1983 the Cudgee-Ballangeich bushfire impacted on the southern section of the development area. This occurred under a south westerly wind influence. The bushfire was influenced by hot and gusty north westerly winds that pushed the bushfire towards the south east. After a south westerly wind change, the bushfire travelled towards the east.

Both of these bushfire events are indicative of the types of bushfire behavior that can occur under elevated fire danger conditions.

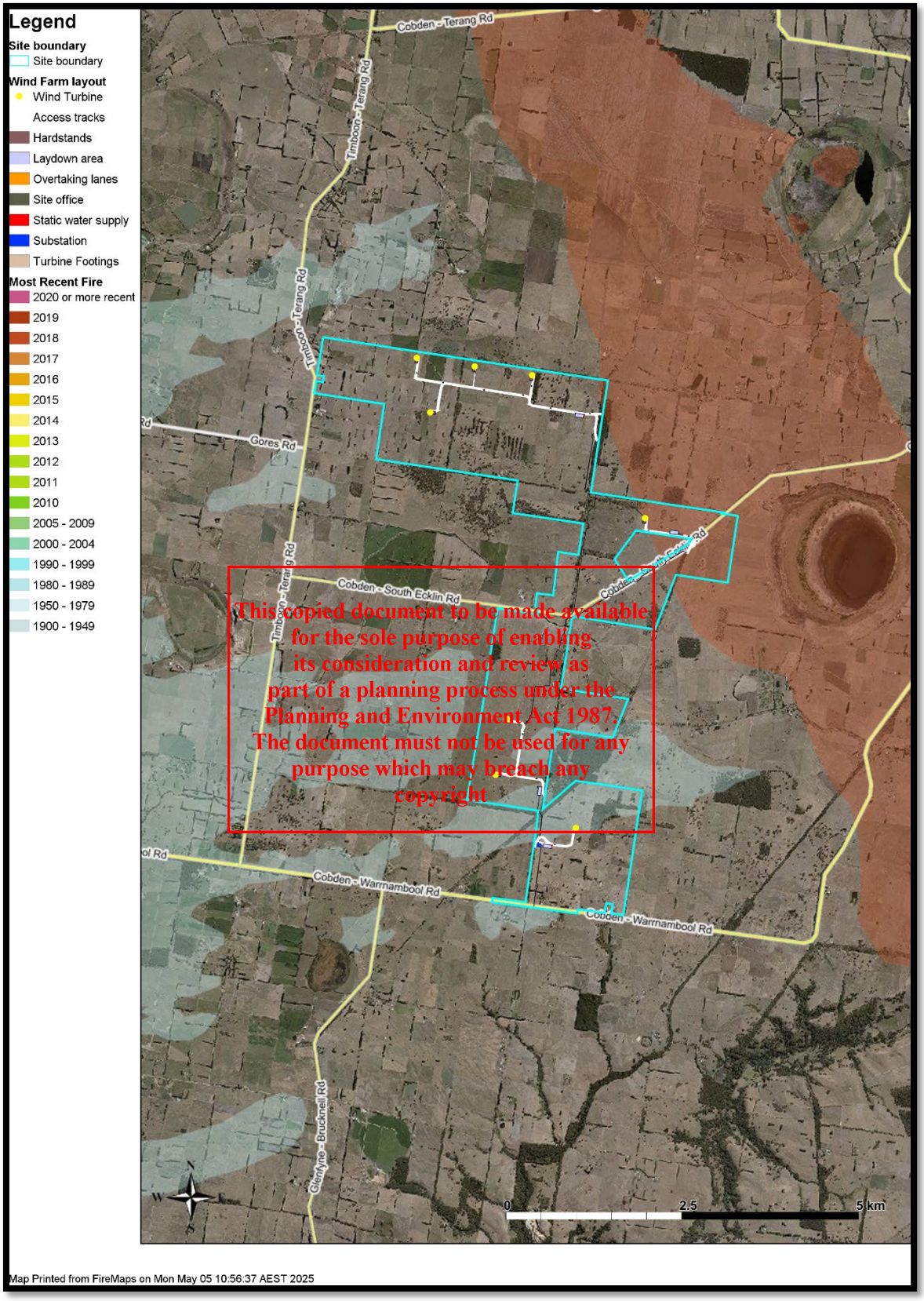


Figure 4 - Bushfire history with the approximate location of the Wind Farm.

4.2.6 Surrounding vegetation

The vegetation within and surrounding the proposed Wind Energy Facility is primarily exotic pasture/grassland and treed native vegetation. Figure 5 provides an overview of the vegetation within and surrounding the development.

The treed vegetation areas are predominantly used for stock grazing or as a shelter belt. The treed areas close to the Wind Energy Facility are all managed under the tree canopy. Appendix 1 includes several photos that show the low fuel loads that are present under the tree canopy.

The surrounding grassland areas are primarily used for stock grazing. Depending on the time of the year that a bushfire occurs, it will be influenced by the farming activities that are occurring. The paddocks may have limited feed on them, or they could have heavy grass loads. This will result in a highly fragmented landscape where it is likely for multiple opportunities for firefighters to undertake suppression activities.

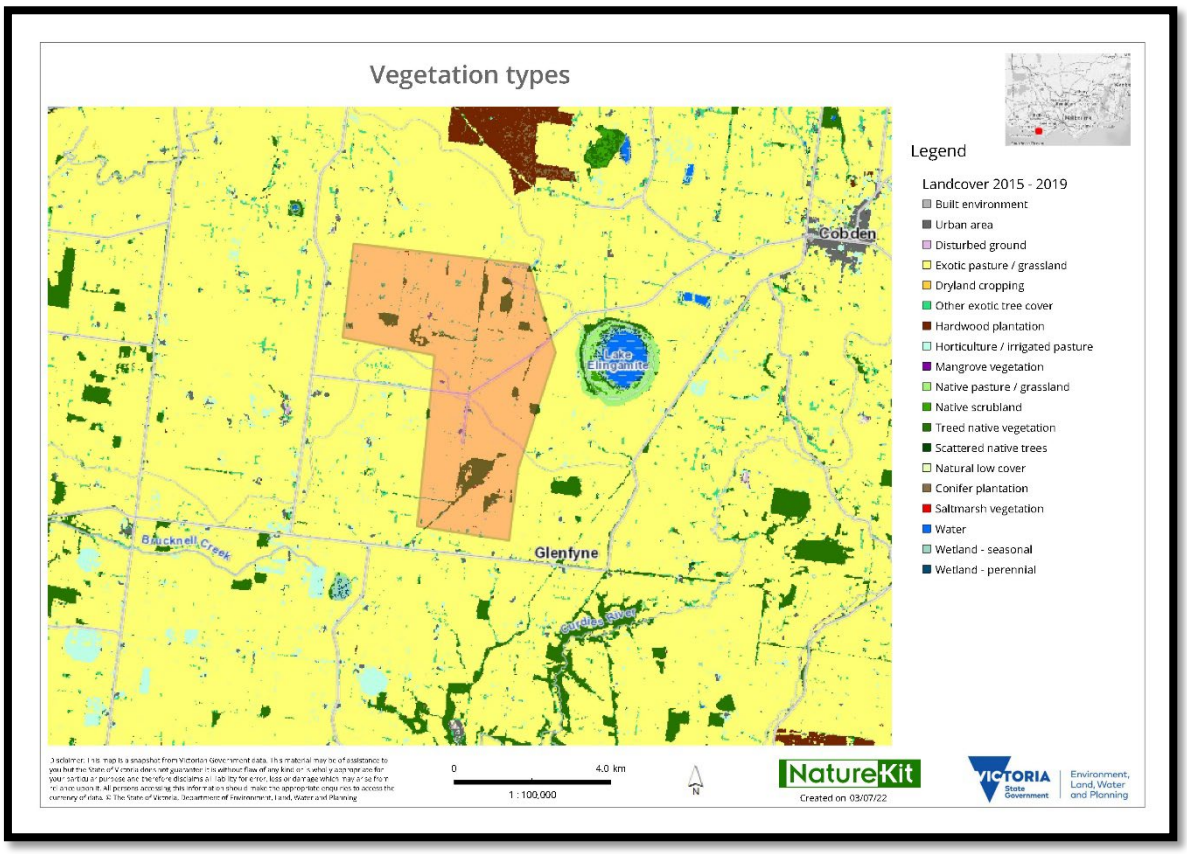


Figure 5 - Vegetation types

5 Risk assessment process

To effectively assess the fire risk associated with the proposal, this report is structured to assess risk using the following frameworks:

- Clause 13.02 – Bushfire Planning –Wellington Planning Scheme[3]
- Assessment against the requirements of the CFA Guideline *Design Guidelines and Model Requirements: Renewable Energy Facilities 2023*
- Risk assessment that meets section 5 of the CFA Guidelines.

The risk assessment provides the opportunity to pull of the information together and make any additional recommendations that may be required to reduce risk to an acceptable level.

5.1 Clause 13.02 – Bushfire planning assessment

Clause 13.02 of the Corangamite Planning Scheme plans to strengthen the resilience of settlements and communities and prioritise protection of human life through several objectives. However, it should be noted the Proposal does not introduce new settlements into the landscape. The assessment has been undertaken within the context of a Wind Energy Facility.

5.1.1 Bushfire hazard assessment

Elevated bushfire behaviour in south east Australia is often dominated by strong and gusty north westerly winds followed by a south westerly change that normally occurs in the afternoon or early evening. These conditions have historically caused the loss of life and property and are usually associated with elevated fire danger warnings issued by the fire agencies.

Table 1 below outlines the hazard assessment relating to the proposed development. Figures 5 and 6 provide an overview of the likely bushfire scenarios within the surrounding area. The assessment has identified the presence of the north westerly and south westerly bushfire impacts. It is acknowledged that bushfires may approach from other directions however the treatment of the risk from these aspects will be sufficient to offset bushfire approach from other directions.

[3] https://planning-schemes.app.planning.vic.gov.au/Wellington/ordinance/13.02

Table 1 - Assessment against Clause 13.02

Bushfire hazard type	Conditions	Likely Scenario	Considerations
The site for the development	Once completed, the Wind Energy Facility will be required to comply with conditions that includes the management of vegetation around the base of the turbine towers during the fire danger period. During construction, there is a risk of a fire igniting and spreading through unmanaged vegetation. During the construction phase, the surrounding properties will still be used for farming activities including stock grazing.	A bushfire starting on the property is a possibility. Bushfires that are started by lightning, arson or other human caused events could burn through the Wind Farm development. The access track network and vegetation management around the base of the turbine towers will limit bushfire spread under elevated fire danger conditions. The treed vegetation surrounding the development may generate increased bushfire behaviour. This is not expected to increase the radiant heat near the turbine towers. During construction, any works that is occurring near unmanaged grassland has the potential to start a bushfire and leave the property.	During the construction phase, all vegetation within 100 metres of works areas is to be managed during the fire danger period with all grassland less than 100mm in height. When the fire danger conditions are elevated (Code Red or Catastrophic), the Emergency Management Plan will outline procedures to close the site during the construction phase. The CFA Guideline requires the provision of vegetation management surrounding the base of the turbine towers. The access roads will be provided during the construction phase and maintained for the life of the project.
Neighbourhood (400 metres) and local conditions (one kilometre)	Within one kilometre of the development, the surrounding landscape is predominantly grassland that is used for agricultural purposes. The surrounding road network provides access and egress opportunities and	Under strong wind conditions a bushfire can travel quickly across the landscape. Grassfires are heavily influenced by the quantity of fuels within the paddocks and the wind strength. Roadsides will contribute to bushfire spread due to the unmanaged fuels and the presence of trees that will	The provision of access roads and vegetation management around the base of the turbine towers will limit the impact of a fire on development. The managed areas will also significantly limit the chances of a bushfire starting at the because of maintenance activities or other activities that may cause a bushfire.

	can, under lower bushfire conditions, be used as a fire break.	likely generate short distance embers attack. The treed areas will unlikely increase the bushfires intensity due to the management of ground fuels.	
Landscape conditions (10 kilometres)	The landscape surrounding the development site consists of primarily grassland. There are isolated areas of Public Land and treed areas that may contribute to the development of embers. The landscape is similar from either the north west or south west aspects. Farming areas dominate the landscape for more than 10 kilometres surrounding the development.	The likely bushfire behaviour which will result in the greatest intensity and risk to the development will be from the north west or south west. This is consistent with historical bushfires in the surrounding landscape. The most destructive grassfire in this area is under elevated bushfire conditions where the northwesterly wind influence is present through the day followed by a south westerly wind change. The presence of the surrounding road network and the high level of vegetation fragmentation will influence bushfire behaviour. Isolated areas of treed vegetation will likely result in embers being generated and start new fires ahead of the main fire front.	The protection of the turbine towers from bushfire spread and to prevent a fire spreading from the base of the turbine tower is required by the CFA Guideline. The provision of access roads will increase the ability for firefighters to access the areas surrounding the wind turbines.

5.1.2 Bushfire Hazard Landscape Assessment

Figure 6 and 7 outlines the outcome of the bushfire hazard landscape assessment. The assessment identifies the two likely scenarios that may occur in relation to the Wind Energy Facility. Both scenarios are consistent in that the likely bushfire impact on the development is from either the north west or south west. Table 2 provides a description of each of the scenarios contained within Figure 6 and 7.

Table 2 - Bushfire scenarios

Scenario	Description
A	A bushfire that approaches from the north west is likely to be under elevated bushfire conditions. Traditionally a north westerly wind influence is associated with elevated fire danger days. The bushfire will be influenced by the availability of fuel and due to the surrounding landscape being dominated by farming activities, the available bushfire fuels are likely to be highly fragmented. Other landscape features including the surrounding road network will also provide opportunities to slow or stop bushfires spreading in the local area. The isolated areas of treed vegetation may generate embers that will cause some spot fires to ignite ahead of the bushfire front.
B	A bushfire that approaches under a south westerly wind influence usually occurs after a north westerly wind has been influencing the weather conditions. The wind change can occur after a bushfire has been burning for some time under the north westerly influence. Depending on the location of the bushfire, the entire western and southern side of the Wind Energy Facility can come under threat at the same time. As the bushfire travels through the treed areas and roadsides, it will likely generate embers that will land on or around the development and start new fires ahead of the bushfire front. The fragmented vegetation that is associated with farming activities will influence bushfire behaviour. The road network will also contribute to slowing or stopping the bushfire spreading.

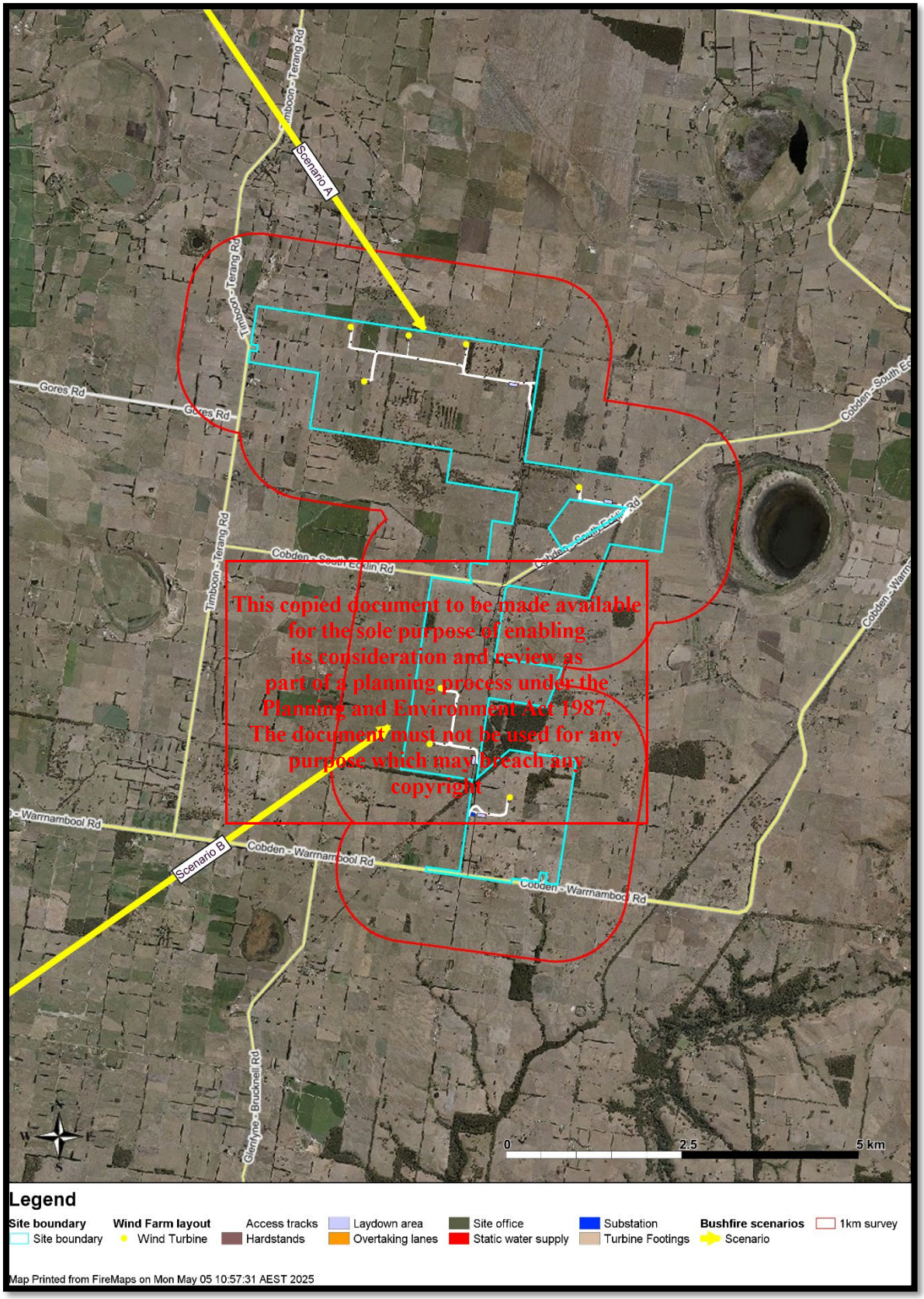


Figure 6 – One kilometre landscape assessment

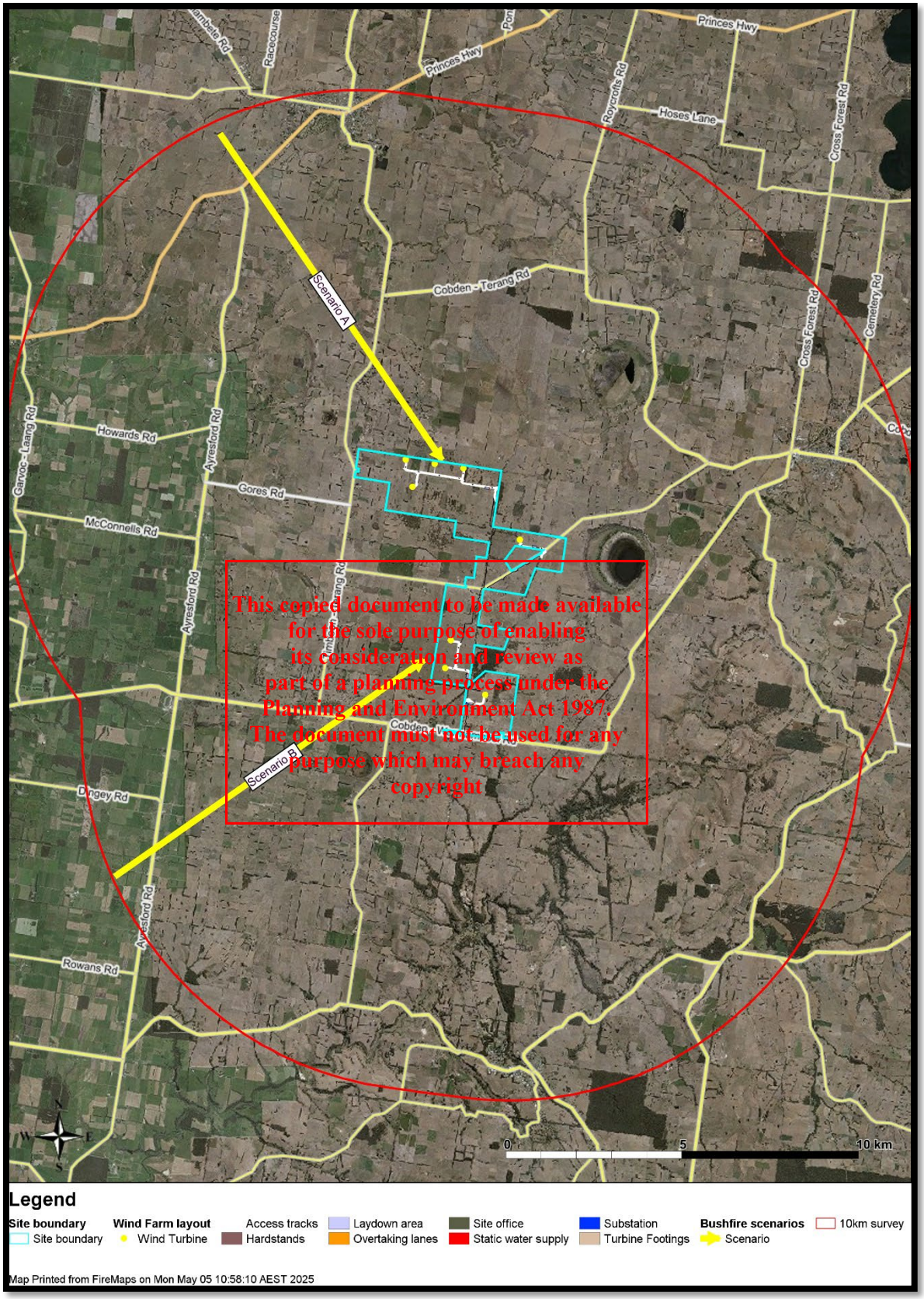


Figure 7 - 10 kilometre landscape assessment

Clause 13.02 Settlement Objectives are primarily related to settlement development of which it could be argued that a Wind Energy Facility does not meet these definitions. Regardless, an assessment of the project has been undertaken against the Settlement Objectives to allow for a detailed consideration of the project against the Clause 13.02 Policy.

Table 3 - Response to Clause 13.02 - Settlement Objectives

Settlement planning objectives	Project response	Achieved (✓ or ✗)
Directing population growth and development to low risk locations, being those locations assessed as having a radiant heat flux of less than 12.5 kilowatts/square metre under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	This project does not promote population growth and will only have people onsite during the construction phase and when undertaking maintenance during the operations phase. It is acknowledged that two turbine towers are within the Bushfire Management Overlay. Due to the separation distance from the woodland vegetation, they will be exposed to less than 12.5 kW/m².	✓
Ensuring the availability of, and safe access to, areas assessed as having a BAL-LOW rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009) where human life can be better protected from the effects of bushfire.	The development is within a short drive to Terang and Cobden. Depending on the location of the bushfire, there are several opportunities to leave the area safely and travel to an area deemed to be BAL LOW. This will be addressed within the Emergency Management Plan that is developed for the Wind Energy Facility.	✓
Ensuring the bushfire risk to existing and future residents, property and community infrastructure will not increase as a result of future land use and development.	The Wind Energy Facility will be provided with a range of protection measures that will ensure the bushfire risk to existing and future surrounding properties will not increase. These measures include: • Asset Protection Zone surrounding the base of each Turbine Tower. • Fire detection and suppression system installed within the Nacelle of each wind turbine. • Access road network to be developed and maintained to allow for access to each of the towers. • Provision of static water supplies to support firefighting operations.	✓

Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the implementation of bushfire protection measures and where possible reducing bushfire risk overall.	The fire protection measures required by the CFA Guideline ensures that there is no net increase in risk to existing and future residents. The site for the Win Energy Facility has been chosen to ensure separation from existing dwellings is achieved.	✓
Assessing and addressing the bushfire hazard posed to the settlement and the likely bushfire behaviour it will produce at a landscape, settlement, local, neighbourhood and site scale, including the potential for neighbourhood-scale destruction.	The bushfire risk has been assessed at the landscape level. This has identified the potential for long bushfire runs to occur from the north west and south west aspects. This development will not change the current expected bushfire behaviour in the landscape, it will likely reduce the risk in the surrounding areas due to the addition of an access track network and management around the base of the turbines.	✓
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement, local and neighbourhood basis.	The development of Wind Energy Facilities is required to occur in remote locations. This area has been chosen due to the low number of dwellings in the surrounding landscape. The CFA Guideline requirements is ensuring the management of risk is occurring based on the landscape bushfire risk.	✓
Not approving any strategic planning document, local planning policy, or planning scheme amendment that will result in the introduction or intensification of development in an area that has, or will on completion have, more than a BAL-12.5 rating under AS 3959-2009 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2009).	The development will achieve a less than BAL 12.5 rating when assessed against AS3959 through the provision of Asset Protection Zones around the infrastructure.	✓

5.1.3 Assessment against Clause 13.02 summary

The assessment against Clause 13.02 has identified that the development is within an area where the landscape bushfire risk is influenced by the potential for grassfires. However, it has been

designed to limit both the potential impact on the Wind Energy Facility and ensuring that fires won't leave the property and enter the surrounding landscape. As it is required to achieve the requirements outlined within the CFA Guidelines as a minimum, this will ensure that the settlement planning objectives are achieved.

5.2 Analysis against CFA Guideline

CFA have produced Guidelines that outline their requirements to address fire risk within renewable energy installations. Section 5 of the Guidelines outlines the process to analyse risk to enable the identification of hazards that may or can cause fires.

The CFA Guideline also specifies model requirements for renewable energy installations. Prior to the risk assessment being undertaken, it is important to assess the Wind Energy Facility project against these requirements. This will increase the effectiveness of the risk assessment.

The following table provides the model requirements from CFA's Guideline and how this project addresses the specific areas.

Table 4 - Response to CFA Guideline

Model requirement	Compliance	Requirement/Comments
Section 2 – consulting with CFA		
a) Where located within a Bushfire Prone Area, bushfire risk is addressed according to the Victoria Planning Provisions, Clause 13.02-1S (Bushfire Planning), through bushfire hazard identification and assessment (including a bushfire hazard site and landscape assessment). This assessment must include risks to the proposed technologies from the landscape (bushfire/grassfire).	✓	The Project is located within the Bushfire Prone Area and the bushfire risk has been assessed in accordance with Clause 13.02-1S. The assessment has identified the potential for bushfires to approach the development from either the northwest or southwest.
b) Address risks from proposed technologies through a comprehensive risk management process, documented in a Risk Management Plan.	✓	This assessment includes a risk assessment. Further detailed analysis will occur as the project progresses.
c) Indicate where the exact specifications of elements within the renewable energy facility will be determined during the detailed design phase, such as solar panel and wind turbine model/manufacturer and battery chemistry.	✓	Following the issue of a Planning Permit, the detailed analysis will include the specific manufacturer details.
d) Explicitly state that the following documentation will be prepared in accordance	✓	The three documents will be produced before development

Model requirement	Compliance	Requirement/Comments
with this guideline, in consultation with CFA, before development starts: • Risk Management Plan • Fire Management Plan • Emergency Management Plan		commences and will include consultation with CFA.
Section 3 – Risk Management Plan		
A Risk Management Plan must be developed for all renewable energy facilities.	✓	This assessment is based on the Risk Management Plan model that is outlined within the CFA Guidelines.
The Risk Management Plan must:		
a) Describe the infrastructure (natural and built), landscape, nature of operations and occupancy of the facility.	✓	This is included within this report and will be further assessed as the project progresses.
b) Describe the risks and hazards at the facility to and from the renewable energy infrastructure (including battery energy storage systems).	✓	This is included within this report and will be further assessed as the project progresses.
c) Specify and justify, in accordance with Section 4.2 of this guideline:		
• The location of the facility in the landscape, and the proposed infrastructure on-site.	✓	This is included within this report and will be further assessed as the project progresses.
• Emergency vehicle access to and within the facility that: ○ Includes site access points of a number suitable to the size and hazard of the facility (a minimum of two). ○ Provides access to renewable energy infrastructure, substations and fire service infrastructure.	✓	This is included within this report and will be further assessed as the project progresses.
• Firefighting water supply for the facility.	✓	This is included within this report and will be further assessed as the project progresses.
• A fire break width of 10m or greater, based on radiant heat flux (output) as an ignition source:	✓	This is included within this report and will be further assessed as the project progresses.

Model requirement	Compliance	Requirement/Comments
○ Around the perimeter of the facility. ○ Between any landscape buffer/vegetation screening and infrastructure.		
• The separation distance, based on radiant heat flux (output) as an ignition source, between: ○ Adjacent renewable energy infrastructure (e.g., between adjacent battery containers/enclosures). ○ Battery containers/enclosures and related battery infrastructure, buildings/structures, and vegetation.	✓	This is included within this report and will be further assessed as the project progresses.
• All other controls for the management of on and off-site hazards and risks at the facility (including all proposed battery energy storage system safety and protective systems).	✓	This is included within this report and will be further assessed as the project progresses.
d) Provide an evidence-based determination of the effectiveness of the risk controls against the identified hazards, including justification for the omission of any battery safety and protective system/s.	✓	This is included within this report and will be further assessed as the project progresses.
e) Form the basis for the design of the facility.	✓	The assessment outcomes is informing the design of the facility.
Section 4- Facility Location and Design		
Section 4.1 – Facility Location		
Planning applications for all renewable energy facilities proposed in high-risk environments must address the following:		
a) An assessment against policy at Clause 13.02-1S (Bushfire Planning) where the facility is located in a Bushfire Prone Area (BPA).	✓	This report includes an assessment against Clause 13.02. The assessment has identified the potential for bushfires to approach the development from either the northwest or southwest.

Model requirement	Compliance	Requirement/Comments
b) The impact of any ignitions arising from the infrastructure (solar panels, wind turbines, battery energy storage systems, electrical infrastructure) on nearby communities, infrastructure and assets.	✓	This report considers the impact and the likelihood of fires leaving the property. The Clause 13.02 assessment has considered this and has also been addressed within the risk assessment in Section 5.
c) The impact of bushfire on the infrastructure (eg. ember attack, radiant heat impact, flame contact).	✓	This report considers the impact of bushfire on the infrastructure. The Clause 13.02 assessment considered this.
d) Assessment of whether the proposal will lead to an increase in risk to adjacent land and how the proposal will reduce risks at the site to an acceptable level.	✓	The Clause 13.02 assessment has considered this and determined that there will be no increase in bushfire risk because of the development. The requirements including managing vegetation around the base of the turbine towers, detection and suppression systems installed within the wind turbine nacelle and provision of access roads supports the management of bushfire risk.
Section 4.2 – Facility Design		
Section 4.2.1 – Emergency vehicle (Fire Truck) access		
All facilities		
a) Construction of a four (4) metre perimeter road within the perimeter fire break.	✓	As outlined within the CFA Guideline, this is not required due to the nature of wind energy facilities.
b) Roads must be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes (e.g. no compacted earth).	✓	The access roads constructed for this development will be designed, constructed and maintained to ensure they can support the movement of vehicles up to 15 tonnes.

Model requirement	Compliance	Requirement/Comments
c) Constructed roads should be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface. Ensure any fencing along access routes allows for width of fire vehicles.	✓	All Access Roads will be a minimum of four metres wide.
d) The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres.	✓	The site is mainly flat with only small slopes present. There are no roads that will require assessment of the grade.
e) Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle.	✓	The site is mainly flat with only small slopes present. There are no roads that will require assessment of dips.
f) Roads must incorporate passing bays at least every 600 metres, which must be at least twenty (20) metres long and have a minimum trafficable width of six (6) metres. At least one passing bay must be incorporated where roads are less than 600 metres long.	✓	Passing bays have been included within the design of the Access Tracks for the site.
g) Road networks must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, battery energy storage systems and related infrastructure, substations and grid connection areas.	✓	The proposed access tracks will provide direct access to the base of all wind turbines, and other works areas.
h) Provision of at least two (2) but preferably more access points to each part of the facility. The number of access points must be informed through a risk management process, in consultation with CFA.	✓	As the development is a wind energy facility, there are numerous access points located throughout the development. The development is serviced by three access pints from Curdies – Leitchfield Road and one from Cobden – South Ecklin Road.
Wind Energy Facilities		
Constructed roads developed during the construction phase of facilities must be maintained post-commissioning and throughout the operational life of the facility,	✓	The access roads developed for the construction phase will be retained throughout the life of the project. This will provide

Model requirement	Compliance	Requirement/Comments
to allow access to each turbine for maintenance and emergency management purposes. The number and location of vehicle access points must be determined in consultation with CFA.		access for maintenance activities along with emergency vehicle access if required.
Section 4.2.2 Firefighting Water Supply		
All Facilities		
a) Water access points must be clearly identifiable and unobstructed to ensure efficient access.	✓	Static water supplies for the Wind Energy Facility will be located at the site access points. The final location of static water supplies will be determined in conjunction with CFA.
b) Static water storage tank installations must comply with *AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning*.	✓	The static water supply will be located within tanks that comply with AS2419.1:2021.
c) The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel.	✓	The static water tanks will be above ground.
d) The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.	✓	Site management will have an arrangement with a local water carrier to ensure static water supplies are refilled within 24 hours. This will be addressed within the Emergency Management Plan.
e) The static water storage tanks must be located at vehicle access points to the facility and must be positioned at least ten (10) metres from any infrastructure (solar panels, wind turbines, battery energy storage systems, etc.).	✓	Static water tanks will be located at the entrances to the access roads constructed for the wind turbine development. They will be located at least 10 metres from all infrastructure.
f) The hard-suction point must be provided, with a 150mm full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance.	✓	The static water tanks will be provided with a hard suction point and adapters that will allow for the typical firefighting

Model requirement	Compliance	Requirement/Comments
Adapters that may be required to match the connection are: 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters with a matching blank end cap to be provided.		appliances to access the water supplies.
g) The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel.	✓	The hard suction points will be accessible by firefighting appliances.
h) An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, eight (8) metres long and six (6) metres wide or to the satisfaction of the CFA.	✓	The tanks will be provided with access to allow firefighting appliances to access the hard suction point.
i) The road access and hardstand must be kept clear at all times.	✓	This requirement will be specified within site procedures and the Emergency Management Plan.
j) The hard-suction point must be protected from mechanical damage (eg. bollards) where necessary.	✓	Bollards will be provided to protect the static water tanks outlets from mechanical damage.
k) Where the access road has one entrance, a eight (8) metre radius turning circle must be provided at the tank.	✓	Turning provisions will be provided at the base of each wind turbine that will enable firefighting appliances to safely turn around.
l) An external water level indicator must be provided to the tank and be visible from the hardstand area.	✓	This has been included within the design.
m) Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank.	✓	This has been included within the design.
n) Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank (s).	✓	Signage will be provided at all property entrances that shows the location of the closest static water supply to that location.
Wind Energy Facilities		

Model requirement	Compliance	Requirement/Comments
a) The fire protection system for wind energy facilities must incorporate at least one static fire water storage tank of at least 45,000L effective capacity at each site entrance.	✓	The development will be provided with static water tanks at each site access point and will be located adjacent to Public Roads.
b) Additional static fire water storage tanks of at least 45,000L effective capacity must also be incorporated in facility design. The number and location of tanks is to be determined through a comprehensive risk management process (Risk Management Plan), in consultation with CFA.	✓	There have been no additional static water tanks identified for the WEF area.
c) Nacelles must be equipped with automatic fire detection, alarm and fire suppression systems.	✓	A fire detection (smoke/heat) and suppression (gas) system will be installed within the high risk electrical cabinets in the nacelle, with the details/design of this system to be determined during consultation with CFA. The systems will be monitored 24/7 by the onsite monitoring system and if activated, an alert will be sent to the site operator. The Emergency Management Plan will include procedures for alerting the CFA to a fire.
Section 4.2.3 Fire Detection and Suppression Equipment		
All Facilities		
Suitable fire detection and suppression equipment must be provided:		
a) For on-site buildings and structures, according to the requirements of the National Construction Code.	✓	Fire detection and suppression systems will be installed as per the NCC requirements. There are no buildings proposed that will exceed the requirements to provide this level of fire safety systems.
b) For storages of dangerous goods, according to the requirements of any Australian	✓	An assessment will be undertaken during the detailed design phase and any dangerous

Model requirement	Compliance	Requirement/Comments
Standards for storing and handling of dangerous goods.		goods compliance requirements will be included within the design.
c) For electrical installations, a minimum of two (2) suitable fire extinguishers must be provided within3m-20m of each PCU.	✓	Fire extinguishers will be installed as required.
d) In all vehicles and heavy equipment, each vehicle must carry at least a nine (9)-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or other firefighting equipment as a minimum when on-site during the Fire Danger Period.	✓	All vehicles and heavy equipment will carry the required fire extinguisher/s.
Section 4.2.5 – Fire Breaks		
A fire break must be established and maintained around:		
a) The perimeter of the facility, commencing from the boundary of the facility or from the vegetation screening inside the property boundary.	✓	A fire break will be provided around the base of each wind turbine. As there is no perimeter for this project, this requirement is not required.
b) The perimeter of control rooms, electricity compounds, substations and all other buildings onsite. *The width of fire breaks must be a minimum of 10m, and at least the distance where radiant heat flux (output) from the vegetation does not create the potential for ignition of on-site infrastructure.*	✓	The following infrastructure will be provided with a 10 metre wide fire break including: • Substations • O & M Facility • WTGs • Static water supplies
Wind Energy Facilities		
A fire break must be established and maintained around the base of wind turbines.	✓	All wind turbines will be provided with a fire break of 10 metres around the base of the turbine tower to ensure they will not exceed a radiant heat exposure where the infrastructure is likely to ignite. It is also acknowledged that the site operators through their

Model requirement	Compliance	Requirement/Comments
		regular inspection program will engage with landowners if the surrounding landscape becomes unmanaged through the life of the project.
Section 4.2.6 – Design Specific to Facility Type		
Wind Energy Facilities		
a) Wind turbines must be located no less than 300 metres apart.	✓	This has been included within the design.
b) Wind turbines must be provided with automatic shut-down, and the ability to be completely disconnected from the power supply in the event of fire.	✓	This requirement has been included within the project specifications. The SCADA system will be designed to enable either onsite operators or remotely operating to shut down single or multiple wind turbines.
c) Installed weather monitoring stations must be notified to the Civil Aviation Safety Authority (CASA) as per *CASA Advisory Circular AC 139.E-05 v1.1, October 2022* (as for all structures 110m or more above the ground).	✓	There are permanent weather masts being installed as part of the project. They will all be marked as per the CASA requirements.
d) All guy wires and monitoring towers must be clearly marked, even where marking is not required by CASA.	✓	This will be undertaken during the project.
Section 5– Facility Construction and Commissioning		
Section 5.1.4 – Emergency Management		
An Emergency Plan must be developed for the construction and commissioning phase, before development starts.	✓	An Emergency Management Plan will be developed for both the construction and operations phase.
Section 6 – Facility Operation		
Section 6.1 –Fire Management Plan		

Model requirement	Compliance	Requirement/Comments
A Fire Management Plan must be developed for the facility, in consultation with CFA, before development starts.	✓	A Fire Management Plan will be developed before development starts.
Section 6.2 1 –Fire Hazards and Risk Controls		
If your facility is at-risk of bushfire, prevention and preparedness activities must be detailed in the Fire Management Plan.	✓	The Fire Management Plan will include the ongoing maintenance requirements to manage the bushfire risk and its potential impact on the Project Site.
Section 6.2 2–Vegetation Management		
Facility operators must undertake the following measures during the Fire Danger Period:		
a) Grass must be maintained at or below 100mm in height during the declared Fire Danger Period.	✓	This requirement will be included within the Fire Management Plan for the areas surrounding the terminal station and the operations and maintenance area.
b) Long grass and/or deep leaf litter must not be present in areas where heavy equipment will be working, during construction or operation.	✓	This requirement will be included within the Fire Management Plan.
c) Restrictions and guidance must be adhered to during the Fire Danger Period, days of high (and above) fire danger and Total Fire Ban days (refer to www.cfa.vic.gov.au).	✓	This requirement will be included within the Fire Management Plan.
Section 6.2 4–Facility and System Monitoring		
Appropriate monitoring for facility infrastructure must be provided, to ensure that any shorts, faults or equipment failures with the potential to ignite or propagate fire are rapidly identified and controlled. Any fire must be notified to 000 immediately.	✓	In addition to the detection and suppression systems, the site will be provided with a SCADA system that will monitor the day to day operations of the Wind Energy Facility. The system includes a range of sensors that will detect faults and report them to the monitoring centre. The system is

Model requirement	Compliance	Requirement/Comments
		preprogramed to send alert messages and includes: • Over temperature • Under voltage warning • Power off fault • Voltage and current changes. These alerts are automatically transmitted to a monitoring centre. There are appropriate levels of back up communication systems installed in the event of power failures or other events that may interrupt the communications connections.
Section 6.2.5 – Maintenance		
All Facilities		
Inspection, maintenance and any required repair activities must be conducted for all infrastructure, equipment and vehicles at the facility. Maintenance must be in line with any relevant Australian Standards and the manufacturer's requirements.	✓	This requirement will be included within the Fire Management Plan.
Section 7 – Emergency Planning		
All Facilities		
An Emergency Plan must be developed specific to the facility, in conjunction with CFA, before development starts.	✓	An Emergency Management Plan will be developed prior to development commencing.
Section 8 – Provision of Emergency Information		
All Facilities		
An Emergency Information Book must be developed and available to emergency responders. Emergency Information Books must be located in Emergency Information	✓	An Emergency Information Book will be housed within an Emergency Information Container and located at strategic sites across the

Model requirement	Compliance	Requirement/Comments
Containers, provided at each vehicle entrance the facility.		development. The final location and number of Emergency Information Containers will be determined in conjunction with CFA.

6 Risk Assessment

6.1 Introduction

The risk assessment process involves identifying, analysing, evaluating and treating the identified risks. The overall risk assessment process requires a consistent approach and follows *AS ISO 31000:2018 Risk management – Guideline*s as incorporated into the National Emergency Risk Assessment Guidelines (NERAG). Figure 1 provides an overview of the risk assessment process as outlined within *AS ISO 31000:2018 Risk management – Guidelines*.

Risk management is the process of recognising risk and developing methods to both minimise and manage the risk. This requires the development of a method to identify, prioritise, treat (deal with), control and monitor risk exposures.

A risk assessment is a function of the likelihood of an adverse event occurring and the consequence of the event. A comprehensive risk assessment will identify potential risks and consequences and therefore assist with the development of mitigation actions.

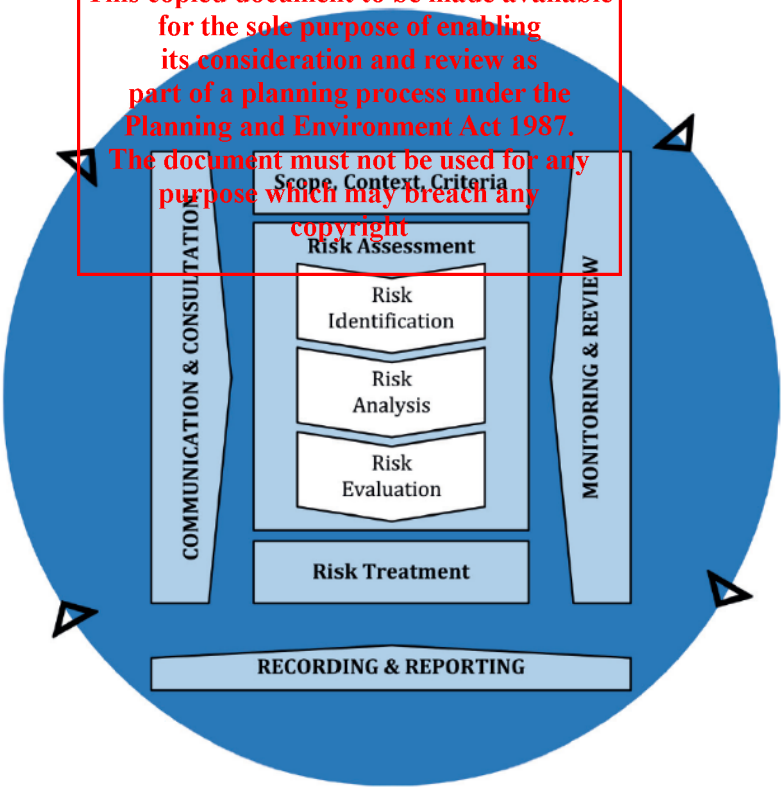


Figure 8 - Overview of AS/NZS ISO 31000-2018 risk management process

This report seeks to follow the steps outlined within the risk management guideline along with the process outlined within NERAG. The outcome of this assessment is a detailed understanding of hazards, the likelihood and consequence of a hazard becoming an emergency, and the treatments identified to manage this risk.

6.2 Context

The assessment of fire risk is a key requirement imposed on the development by CFA through their Guidelines. The CFA Guideline outlines the types of hazards that may need to be considered in relation to Wind Energy Facilities at the design, construction and operation phases.

6.3 Analysis of fire risk

Wind Energy Facility infrastructure is largely acknowledged as having limited potential to cause fires and is considered reasonably safe. There have been fires previously and these have been considered during the assessment of risk outlined within this report.

It is important the assessment of risk considers the various stages of the project including construction and the operations phase.

6.3.1 Assessment of fire risk during construction

The construction phase includes various stages including site works, construction of footings and the installation of the turbine towers. This stage also includes the commissioning of the technology and other systems including fire protection systems. This ensures the relevant connectivity is installed to ensure that all alerts and system messages are transmitted to an appropriate monitoring location.

The location of the development could mean that construction is occurring on elevated fire danger days. There is a risk of both causing a fire or being impacted by a fire.

6.3.2 Assessment of fire risk during operations

The operations phase follows the commissioning stage of the project, and the role of maintenance becomes critical to ensure that the system operates as it was designed, for the life of the development. The ongoing maintenance of the infrastructure and development is critical to ensure the ongoing management of fire risk.

All the system components are to be considered as critical as they all are contributing to the ongoing safe operations. The system components include monitoring connectivity, fire protection systems, vegetation management and other safety systems.

6.4 Risk identification

Through discussions with the client, review of various documentation and the consideration of previous fire history that involved Wind Energy Facilities, the following hazards have been identified:

Figure 9 - Hazard identification and description

Hazard	Description
Electrical hazards causing a fire	Electrical faults and/or hazards can be a key cause of fire in a Wind Energy Facility. A fault that occurred within the Nacelle is not easily accessed and operators would need to try and manage the fault remotely prior to a technician being able to access the Nacelle.
Fire causing spread to adjoining infrastructure on the property	A fire that has started in the development may spread to adjoining infrastructure or surrounding facilities. Rapid escalation of the fire size and complexity can create issues for onsite staff and contractors, firefighters and the community.
Fire causing offsite impacts	Any fire within the Wind Energy Facility can spread to adjoining properties most likely through vegetation connectivity. On elevated bushfire risk days the operation can start fires in the surrounding landscape that can threaten the community.
Offsite fire impacting on the site	A bushfire burning through the surrounding landscape can enter the property and threaten the infrastructure by potentially starting new fires.
Staff and firefighters	The response to a fire by staff, contractors or firefighters can be dangerous due to the various safety hazards associated with a fire in this type of infrastructure.

The above list may not be exhaustive however it is believed that it will allow the assessment of most hazards that may be encountered in a development of this type.

6.5 Risk analysis

The analysis of risk requires the consideration of the likelihood and consequence of an event occurring and measuring this against a predetermined matrix to enable the consideration of each risk both individually and collectively.

For this assessment, a 3 x 3 matrix has been developed that enables the effective consideration of risk and to enable a comparison between the outcome of the hazard assessment.

6.5.1 Likelihood

An assessment of the likelihood of a fire occurring at this development including the potential to impact on people and other infrastructure/property is a key part of the risk assessment. The following will be considered during the assessment of an event occurring:

- Potential for an unplanned fire to occur
- Potential for this ignition to develop and exhibit significant fire behaviour
- Potential for that fire to destroy assets
- Potential for people to be affected or threatened
- The potential for it to develop into a major fire.

Recommendations for mitigation actions in the area may be determined by a number of approaches depending on the level of assessed risk. Strategies to lower risk are provided to ensure the risk is managed to an acceptable level.

An assessment of likelihood considers factors such as:

- Sources of ignition
- Use of the property and/or surrounding area
- History of ignitions within similar infrastructure
- Ability to spread from the property.

Table 5 - Likelihood table

Likelihood scale frequency	Description
Very Likely	Almost certain and will definitely occur, and /or high level of recorded incidents, or there is a strong likelihood that the event will occur.
Likely	High probability it may occur; and/or some recorded incidents.
Unlikely	It is not expected to occur, but it is not impossible.

6.5.2 Consequence

Consequence refers to the potential damage that could result from a fire occurring in relation to people and assets. In assessing the possible consequences, the assessment considers a variety of hazard, exposure and vulnerability factors including:

- The likely number of people at the facility
- The proximity of other assets
- The location of surrounding properties and the type of activities
- Response capability if an event occurred.

The consequence scale refers to the potential impacts which could occur should a fire occur.

Table 6 - Risk assessment consequence table

Consequence scale	Description
Major	• Significant consequences that may include long term closure of the site, major damage or effect. • Loss of life and/or significant injuries that cause disability. • Major offsite impacts causing destruction of other assets or life loss.
Moderate	• Moderate loss of property with the facility operating again in the short term. • Medical treatment may be required but no fatalities or long term affects.

	• Localised damage that can be rectified. • Some environmental impact with short to long-term effects.
Minor	• Minor or negligible consequences or effects. • Isolated damage to property with no ongoing impact on operations. • First aid injuries with no hospitalisations required. • Impact on the environment with short term effects.

The risk rating table is used to combine likelihood and consequence to obtain a risk score. The risk score is used to aid decision making by determining which areas are at the greatest risk of a fire starting and spreading through the estate. Actions can be prioritised using this method to determine where risk mitigation works will occur.

Table 7 - Risk rating table

RISK RATING TABLE			
	CONSEQUENCE		
	Minor	**Moderate**	**Major**
LIKELIHOOD	Minor or negligible consequences or effects. Isolated damage to property with no ongoing impact on operations. First aid injuries with no hospitalisations required. Impact on the environment with short term effects.	Moderate loss of property with the facility operating again in the short term. Medical treatment may be required but no fatalities or long term affects. Localised damage that can be rectified. Some environmental impact with short to long-term effects.	Significant consequences that may include long term closure of the site, major damage or effect. Loss of life and/or significant injuries that cause disability. Major offsite impacts causing destruction of other assets or life loss.
Very Likely: Almost certain and will definitely occur, and /or high level of recorded incidents, or there is a strong likelihood that the event will occur.	Medium	Very High	Extreme
Likely: High probability it may occur; and/or some recorded incidents.	Medium	High	Very High
Unlikely: It is not expected to occur, but it is not impossible.	Low	Medium	High

The outcomes of the risk assessment are used to inform the recommendations. These are aimed at providing guidance to management to reduce the fire risk at the property.

6.5.3 Risk analysis worksheets

The following worksheets have assessed the hazards identified in section 5.4 and results in a risk classification along with strategies to lower risk if it is deemed required. The initial assessment of risk is based on the information that has been supplied to date. The development of additional strategies to lower risk are made as either there was no information provided that identified the treatment or further clarity is required to considered.

Table 8 - Risk assessment - Electrical hazards causing a fire

RISK	Electrical hazards causing a fire
CAUSE	Electrical faults and/or hazards can be a cause of fire in Wind Turbines. Hazards may include faults, loss of remote monitoring systems, internal short circuits and overheating. The substation due to the presence of electrically charged equipment may, due to a fault or other cause catch fire.
LIKELIHOOD	Likely
JUSTIFICATION	There is a history of fires within Wind Energy Facilities including substations. Available data does not indicate that this is widespread. Modern nacelles are fitted with smoke detection and suppression systems and other safety systems to either prevent a fault from occurring or to automatically commence shut down procedures if required. They will also send alerts to site operators. Fires usually occur within the Nacelle which is located at the top of the tower and is where the turbine is located. These areas are difficult to access and rely on trained technicians being available. The turbine and associated equipment will be maintained as per the manufacturer's specifications.
CONSEQUENCE	Minor
JUSTIFICATION	A fire is unlikely to occur in more than one turbine due to the separation between the towers. A loss of a single turbine will not impact on business operations. Due to the remoteness of the infrastructure, they will unlikely cause issues that will impact on surrounding people or property. If the multiple layers of protection fail or are not able to suppress the fire, then it is highly likely for the entire nacelle to be destroyed in the fire. This is a highly unlikely scenario. The multiple layers include: • Smoke detection and fire suppression system. • Monitoring systems that detect faults. • Electrical system manufactured and installed in accordance with the relevant Standards.
RISK RATING	Medium
STRATEGY TO LOWER RISK	The requirements outlined within the response to the CFA Guideline will be sufficient to ensure the risk is maintained as medium and does not increase. Other requirements that will further reduce the risk include: • Development of an Emergency Management Plan that includes in addition to that required by CFA and AS3745:

	○ A system to communicate effectively between the monitoring centre and the onsite staff and contractors. ○ Provision of 24/7 technical expert contact details for the fire brigade to contact in the event of an emergency or threat of an emergency. • Developing a procedure that requires a technician to be deployed to the site when the site monitoring communications are down. • The site monitoring system will indicate the early stages of a fault or emergency event and provides the ability to commence shut down procedures remotely from the site.
RESIDUAL RISK	Low (unlikely/minor)

Table 9 - Risk assessment - Fire causing spread to adjoining infrastructure on the property

RISK	Fire causing spread to adjoining infrastructure on the property
CAUSE	A fire that starts within a nacelle may spread to adjoining infrastructure.
LIKELIHOOD	Unlikely
JUSTIFICATION	A fire that starts within a nacelle may drop burning materials to the ground and depending on the weather conditions, may spread to an adjoining turbine tower or other infrastructure. Due to the separation between the infrastructure this is highly unlikely to occur.
CONSEQUENCE	Minor
JUSTIFICATION	The consequence of a fire affecting adjoining areas of the plant is likely to be minor due to the provision of fire breaks around the base of the turbine towers and the substation and office compound. The existing road network along with the proposed access roads will assist with slowing or stopping fire spread between the turbine towers and other infrastructure.
RISK RATING	Low
STRATEGY TO LOWER RISK	Due to the low rating, no additional strategies are required to be implemented beyond compliance with the CFA Guideline as outlined in Section 4.
RESIDUAL RISK	Low

Table 10 - Risk assessment - Fire causing offsite impacts

RISK	Fire causing offsite impacts
CAUSE	Any fire within the Wind Energy Facility can spread to adjoining properties most likely through vegetation connectivity. These types of fires would occur on elevated fire danger days during the summer months.
LIKELIHOOD	Unlikely
JUSTIFICATION	The compliance with CFA Guidelines requires a range of mitigation strategies implemented including: • Provision of a fire break surrounding the Wind Energy Facility infrastructure. • Static water supplies for firefighting purposes is scattered through the development. • The monitoring system provides for early notification of a fault and will have the ability to remotely shut down the site if required.
CONSEQUENCE	Minor
JUSTIFICATION	The Clause 13.02 assessment has identified the limited risk for a fire to spread from the site into the surrounding landscape. The creation of fire breaks surrounding the wind turbines and the substation and office compound will reduce the potential for a fire to leave the infrastructure. The surrounding landscape is well managed due to farming operations. This will assist with reducing the potential for bushfires to leave the site and impact on the surrounding community.
RISK RATING	Low
STRATEGY TO LOWER RISK	The site Emergency Management Plan will include a procedure for contacting the Municipal Fire Prevention Officer (MFPO) if the vegetation on adjoining properties becomes a fire risk. The MFPO may, following an assessment issue a Notice requiring the vegetation to be managed. Any vegetation growth on the property will be managed and removed. During the fire danger period, additional inspections will occur to ensure that all weeds and other vegetation is removed from the fire break and other areas.
RESIDUAL RISK	Low

Table 11 - Risk assessment - Offsite fire impacting on the site

RISK	Offsite fire impacting on the site
CAUSE	A bushfire burning through the surrounding landscape can occur in the area and threaten the infrastructure by potentially starting new fires.
LIKELIHOOD	Unlikely
JUSTIFICATION	The Clause 13.02 assessment has identified the surrounding landscape as having the potential for supporting a bushfire. It identifies two major fires that occurred in 1983 and 2018 which impacted on parts of the development site. The municipal fire management planning process does not identify this area as having a significant impact on property survivability due to the lack of vegetation that would support large scale ember impact. The provision of a firebreak and other managed areas will limit the ability for a bushfire to impact on the property.
CONSEQUENCE	Minor
JUSTIFICATION	Due to the separation between the wind turbines and other infrastructure, the possibility of multiple turbine towers being impacted by a bushfire is reduced. The provision of fire breaks around the base of the towers will ensure a bushfire cant directly impact on the structure.
RISK RATING	Low
STRATEGY TO LOWER RISK	Prior to construction commencing, an Emergency Management Plan will be developed that includes the requirements for vacating the site when the fire danger is elevated during both construction and operations phases of the project.
RESIDUAL RISK	Low

Table 12 - Risk assessment – Staff and firefighters

RISK	Staff and firefighters
CAUSE	The response to a fire by staff, contractors or firefighters can be dangerous due to the various safety hazards associated with a fire in this type of infrastructure.
LIKELIHOOD	Likely
JUSTIFICATION	There is the potential for firefighters and/or staff and contractors to be present during an emergency event and not being familiar with the site and the infrastructure. The CFA Guideline does impose a variety of controls onto the management of the site through the Emergency Management Plan and how CFA interacts with the site if they are called to a fire.
CONSEQUENCE	Moderate
JUSTIFICATION	The provision of an Emergency Information Container that will include the Emergency Management Plan, site plans and contact details for technical specialists will ensure responding firefighters seek information prior to entering the property. The local CFA brigades will be provided the opportunity to tour the facility regularly.
RISK RATING	High
STRATEGY TO LOWER RISK	In all cases a technician will be dispatched to the site to review any faults or alerts that may if not checked, cause a fire. Any faults that are sent to the monitoring centre will be assessed and a technician deployed to make an initial assessment. The Emergency Management Plan will include a requirement to engage with the responding firefighters early to ensure they are aware that a technician is on their way and that entry to the site can wait until they arrive unless there is a life or property protection emergency. The Emergency Information Container that is required by the CFA Guidelines will provide detailed contact information for responding firefighters to seek specialist advice prior to accessing the property.
RESIDUAL RISK	Medium

7 Conclusion

The assessment of risk for the wind energy Facility has identified that this development can occur safely providing the requirements outlined within this Risk Management Plan are implemented.

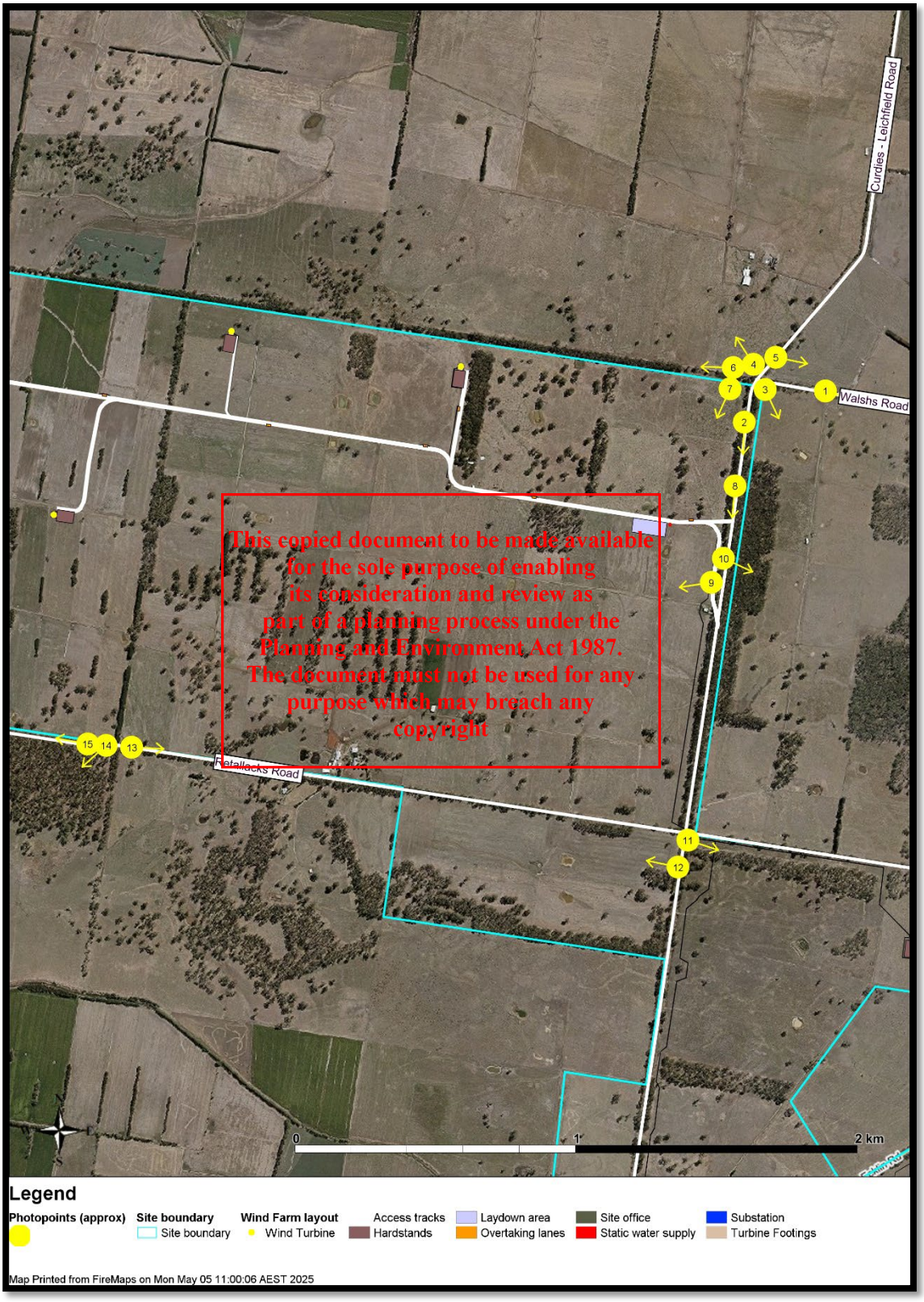
This report acknowledges the bushfire risk in the surrounding landscape, and it has demonstrated how the design will reduce the potential for fire to either enter or leave the property.

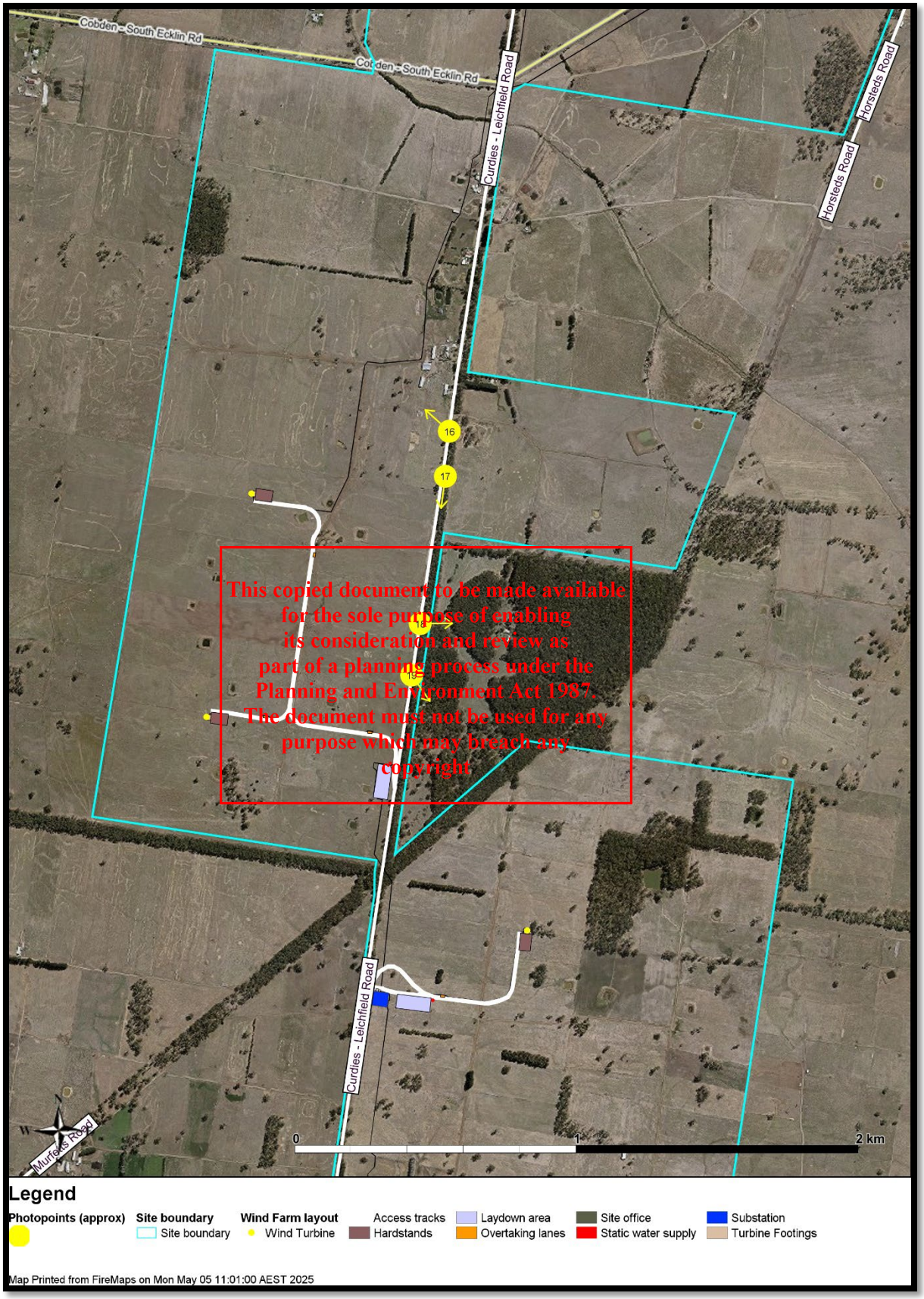
The assessment of fire history in relation to Wind Energy Facilities identifies limited examples of where these systems have caused fires. There is no doubt that a wind turbine can present fire risks if not designed, constructed, commissioned and operated effectively. The importance of following design requirements and committing to the ongoing maintenance of the system is critical to reduce fire risk.

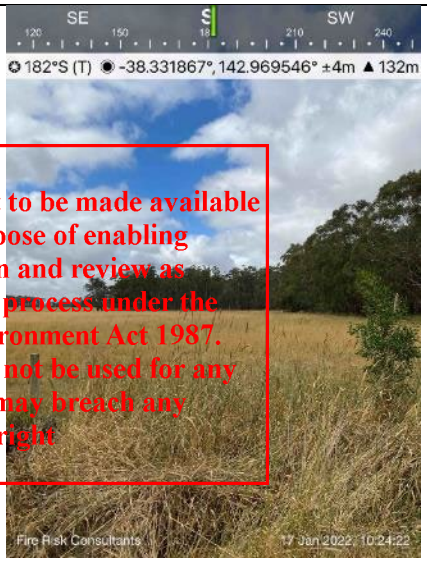
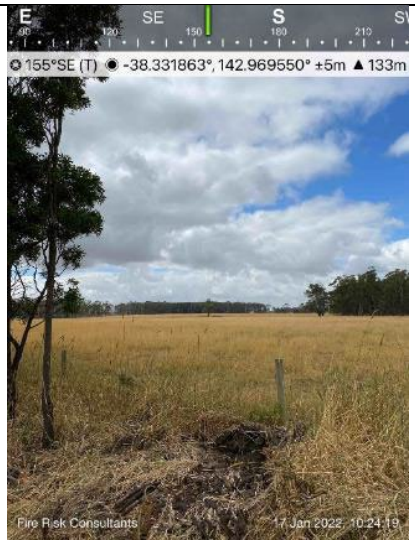
The additional requirements imposed on the development by the CFA Guideline and this Risk Management Plan will strengthen the management of fire risk. In addition to this, following the issue of a Planning Permit, the development of a Fire Management Plan and Emergency Management Plan that meets the requirements of the CFA Guideline will assist with managing the risk of fire.

The results of this assessment should provide confidence that the operator of the Wind Energy Facility will introduce systems, procedures and maintenance programs to ensure fire risk is managed.

Appendix A – Site photos

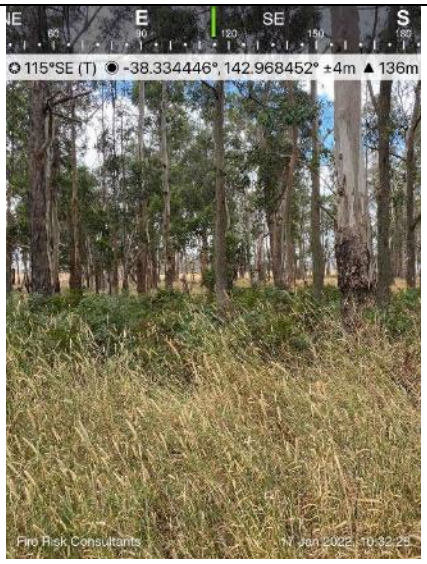
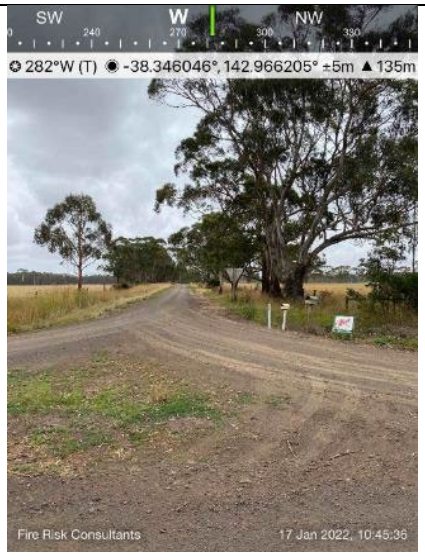


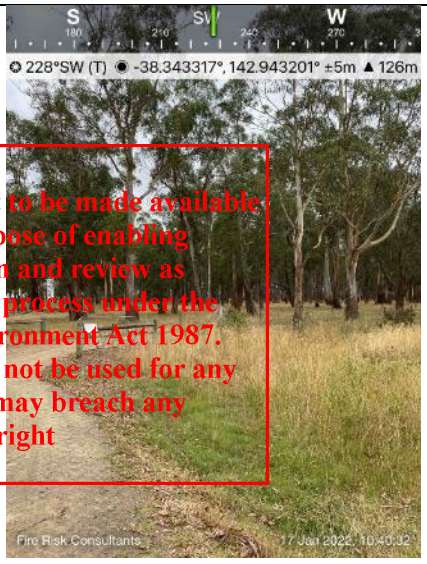
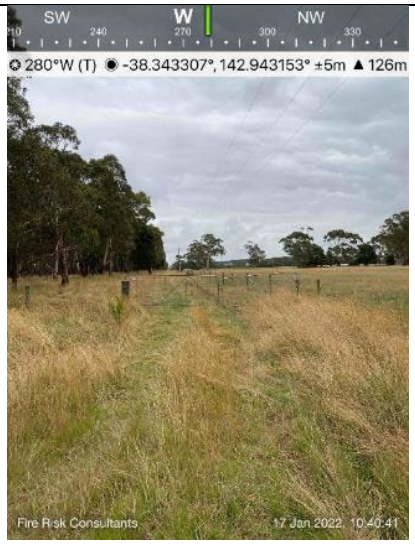


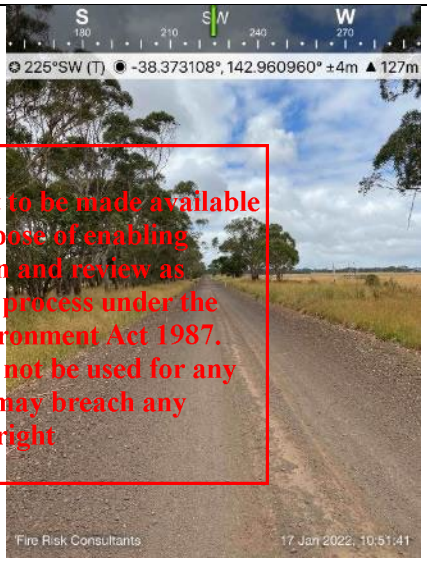
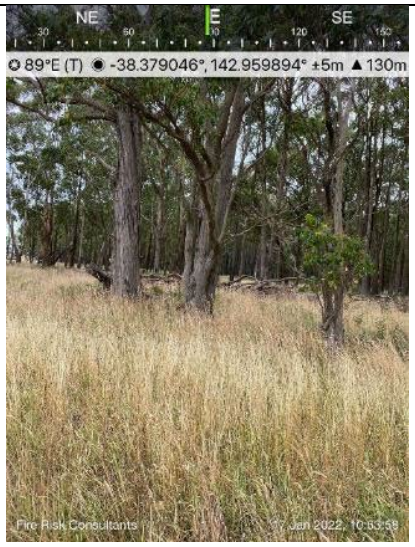
1 Narrow roadside vegetation on Walshs Road to the east of Curdies-Leichfield Road.	
2 Typical vegetation near the intersection of Walshs Road and Curdies-Leichfield Road.	
3 Typical vegetation near the intersection of Walshs Road and Curdies-Leichfield Road.	

4 Typical vegetation near the intersection of Walshs Road and Curdies-Leichfield Road.	
5 Looking along Walshs Road.	
6 Typical vegetation along the road reserve to the east of Curdies-Leichfield Road.	

7 Looking south along Curdies-Leichfield Road from Walshs Road.	
8 Looking south along Curdies-Leichfield Road.	
9 Typical vegetation to the west of Curdies-Leichfield Road.	

10 Typical vegetation on the east of Curdies-Leichfield Road. Extensive grass growth on the roadside with limited vegetation undergrowth.	
11 Entrance to the road reserve opposite Retallacks Road.	
12 Intersection of Retallacks Road and Curdies-Leichfield Road.	

13 Looking easterly along Retallacks Road.	
14 Entrance to the private property at the end of Retallacks Road. Also shows the typical treed vegetation in the local area.	
15 Looking west along the Retallacks Road reserve. The road reserve is not available for public access.	

16 Typical vegetation to the west of Curdies-Leichfield Road.	
17 Looking south along Curdies-Leichfield Road.	
18 Typical treed vegetation to the east of Curdies-Leichfield Road.	

19 Typical treed vegetation to the east of Curdies-Leichfield Road.