



**Watta Wella Renewable
Energy Project**

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**Risk Management Plan
(including Fire Safety
Study)**

May 2025

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Cover photo – View of the typical landscape within and surrounding the proposed Project. Photo taken 13/4/2023 (Fire Risk Consultants)

Fire Risk Consultants
PO Box 12, Glengarry VIC 3854
0487 790 287
www.fireriskconsultants.com.au

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*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.*

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Executive Summary

The Watta Wella Renewable Energy Project (the Project) is proposed to be developed at Joel Joel which is approximately 16 kilometres to the east of Stawell. The Project covers approximately 4,850 hectares across 11 landholdings.

The Project involves the construction of up to 45 wind turbine generators (WTGs) and a battery energy storage system (BESS).

To assess the risk of fire in relation to the Project, this Risk Management Plan (RMP) has been developed to consider risk associated with bushfire and a risk of fire starting within the proposed Project Area. The RMP follows the guidance provided by CFA in their *Design Guidelines and Model Requirements: Renewable Energy Facilities 2023* (CFA Guideline). It also includes the assessment of bushfire risk in accordance with Clause 13.02-1S (Bushfire Planning) of the Northern Grampians Planning Scheme.

The Project Area has not experienced large bushfires in the past. In the surrounding landscape large bushfires have occurred. These bushfires have burnt through vegetation which is similar to the Project Area. The type of vegetation (primarily grassland) whilst supporting fast spreading bushfires under elevated fire danger conditions, will burn at a much lesser intensity when compared to fires in forested areas.

The assessment of fire risk in this report has resulted in the recommendation of a range of mitigation treatments that align with the CFA Guideline including:

- Installation of static water supply tanks spread across the Project including the BESS area that complies with the CFA Guideline and AS2419.1:2021 Fire hydrant installations (AS2419.1).
- Provision of fire breaks around the base of the wind turbines, BESS, substations and the operations and maintenance areas of a minimum of 10 metres.
- Installation of smoke detection and fire suppression systems within the nacelle.
- Installation of fire safety systems within the BESS enclosures that is based on the manufacturer specifications and results of fire testing undertaken in accordance with UL9540A.
- Provision of access tracks of a minimum of four metres in width with overtaking bays provided with a width of six metres every 600 metres.
- Ongoing maintenance programs for the life of the Project in accordance with the relevant Standards or manufacturer specifications.

This report also contains an assessment of fire risk within the Project Area including the wind turbine nacelle, the substations and the BESS which identifies fire risk associated with these types of developments is low. This low risk in addition to the implementation of the recommended mitigation treatments will ensure a high level of fire safety.

The outcome of the risk assessment has indicated that the Project can occur in this landscape and not increase the risk of fire to surrounding communities, farming assets and other infrastructure.

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1 Introduction

Fire Risk Consultants have been engaged by Umwelt (Australia) Pty Ltd on behalf of RES Australia Pty Ltd (RES) to develop an RMP for the proposed Watta Wella Renewable Energy Project (the Project).

The Project is located in the Northern Grampians Shire in western Victoria, approximately 16 kilometres to the northeast of Stawell. The Project consists of up to 45 wind turbine generators (WTGs), a battery energy storage system (BESS), and associated infrastructure including substations, access tracks, underground cabling, and transmission powerlines. The WTGs will be designed with an anticipated turbine height tip of up to 255 metres.

This Risk Management Plan (RMP) is required to achieve compliance with the CFA Guideline - *Design Guidelines and Model Requirements: Renewable Energy Facilities 2023* (the CFA Guideline). The CFA Guideline outlines the purpose and need for an RMP. Engagement occurred with CFA on 23rd May 2023, prior to the preparation of this plan. The engagement occurred directly with the 'Specialist Risk and Fire Safety Unit' based at CFA headquarters. This engagement did not identify a need to engage with any other areas of CFA, and we will continue to review this in conjunction with CFA's Specialist Risk and Fire Safety Unit. CFA engagement will again occur once the plan has been approved by the Project design team. The engagement with CFA involved providing them with an overview of the development as recommended by the CFA Guideline. CFA did not indicate any issues with the proposed Project and indicated that they were comfortable with the design that they had been shown. CFA advised that they would provide a formal response once the RMP had been submitted to them for review.

This RMP has been developed to provide sufficient information for CFA to make an informed decision on fire risk related matters and support a planning permit application under the Planning and Environment Act 1987. It is expected that the planning permit for the Project will include conditions that require a Fire Management Plan (FMP) and Emergency Management Plan (EMP) in accordance with the requirements of the CFA Guideline.

This RMP has been prepared following an assessment of the Project Area and analysis of supplied information from RES, in relation to the design, commissioning and operation of a wind farm and BESS. 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 Project.

1.1 Project Area

The Project is wholly located within the Northern Grampians Shire Council local government area (LGA) in Victoria's central west, approximately 220 kilometres northwest of Melbourne. The nearest urban centres are Stawell, approximately 16 kilometres south-west of the Project Area, and Ararat approximately 30 kilometres to the south of the Project Area (refer to Figure 1).

The Project is proposed to be developed on 150 land parcels and local road reserves, covering an area of approximately 4,850 hectares, of which approximately four percent is proposed to be disturbed by Project infrastructure (Project Area) once constructed. There are 11 landowners involved in the Project.

Refer Table 1 below for a breakdown of the key components within the Project Area. Figure 2 shows the context of the Project Area components. It is noted that the wind farm site accounts for the entire Project Area and overlaps with the BESS facility site. As such, the total area, number of land

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parcels and number of landowners of each key component does not equate to the total Project Area details.

Table 1 - Area, Land Parcels and Landowners for each component of the Project

Project Component	Area (ha)	Number of land parcels	Number of landowners
Wind Farm	4,850	150	11
BESS facility – located within the wind farm site	12	2	1
Project Area	4,850	150	11

A significant driver of the Project in this location is due to the planned Western Renewables Link transmission project and augmentation of the Bulgana Terminal Station located in the southeast portion of the Project Area (refer to Figure 2). Project infrastructure is proposed to be connected to the Bulgana Terminal Station via a transmission line from the wind farm and BESS substation respectively.

The Project Area locality is primarily classified as Farming Zone under the Northern Grampians Planning Scheme (the Planning Scheme) and has predominantly been cleared or modified by agricultural practices such as dryland mixed farming, sheep and cattle grazing and cropping. A total of two occupied rural dwellings are located within the Project Area boundary, as well as agriculture-related infrastructure such as sheds, fences and tracks intermittently spread throughout the Project Area. Farm holding sizes within the Project Area range between 1,000 and 3,000 hectares with the average within the broader region is 780 hectares. The Project Area does not contain areas of crown land, however there are crown land parcels bordered by the Project.

The Wimmera River, Six Mile Creek and Seven Mile Creek intersect with the Project. The Wimmera River loosely tracks the northern and eastern boundaries of the Project Area, with associated tributaries such as Seven Mile Creek, Six Mile Creek and many smaller drainage lines traversing through the Project Area. Most creeks within the Project Area are ephemeral. No Project infrastructure intersects with the Wimmera River. Some reticulation cables and access tracks associated with the wind farm are proposed to cross Seven Mile Creek and Six Mile Creek. In addition, the proposed overhead transmission line extends over Six Mile Creek at multiple locations.

Agricultural holdings are serviced by a local road network, primarily used by local residents and landholders. Local topography at the Project Area consists of foot slopes, terraces and rises of the Wimmera River valley, with deeply weathered landscape of undulating low hills and rises of sedimentary (Ordovician and Tertiary) origin rising above the alluvial (Quaternary) sediments in the drainage depressions and higher terrace. The terrain lies between 220 to 240 metres above sea level and is generally flat to moderately undulating, with several defined hillocks rising to between 20 to 50 metres above the underlying terrain. Proposed locations for wind farm turbines are generally positioned away from the flattest areas but have also been sited to avoid the steepest land. The proposed BESS facility is located on relatively low relief land, being supportive of the respective technologies.

Native vegetation within the Project Area has predominantly been cleared for agricultural use. Where present, the dominant native vegetation communities across the Project Area include Heathy Woodland, Box Ironbark Forest on the rises and Plains Grassy and Sedge Woodland in topographic

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depressions, with the majority of local drainage and creek lines being ephemeral and well connected, resulting in variable availability and quality for native vegetation along these systems.

Generally native vegetation communities on the Project Area demonstrate limited ecological value and are typically found as stands of trees scattered throughout paddocks, within roadside reserves and along creek lines and property boundaries. There are remnants of former forest and woodland, in particular along the creek lines (red gum and yellow box) and mid to lower slopes (grey box and red box) and yellow gum and ironbark on the shallowest soils on the steepest slopes at the Project Area. Given the intensive modification of the local landscape, the dominant vegetation at the Project Area predominantly includes a mix of exotic annual and perennial pasture and weed species.

1.2 Project Overview

1.2.1 Introduction

The Project involves a renewable energy facility comprising a wind farm, BESS facility and associated infrastructure. The Project would generate renewable energy through the construction and operation of up to 360-megawatt (MW) wind farm and a 400MW/1600MWh BESS.

Overhead transmission lines would connect the on-site Project substations to the existing AusNet-operated Bulgana Terminal Station. Electricity would then be exported to the transmission network via an existing 220 kV transmission line. The Project is reliant on the Western Renewables Link (WRL) project which will relieve congestion in the existing transmission line and unlock additional capacity for renewable energy projects in Western Victoria.

The Project is wholly located within the Northern Grampians Shire Council LGA in Victoria's central west, approximately 220 kilometres north-west of Melbourne. The nearest urban centres are Stawell, approximately 16 kilometres south-west of the Project Area, and Ararat approximately 30 kilometres to the south of the Project Area.

Table 2 below summarises the key components of the Project. Figure 2 shows the key components of the Project.

Table 2 - Summary of Project Components

Watta Wella Renewable Energy Project Key Components
Wind Farm
<ul style="list-style-type: none">Up to 45 wind turbine generators (WTGs) with a maximum capacity of approximately 360 MW and a turbine tip height of up to 255 m.
Battery Energy Storage System
<ul style="list-style-type: none">A BESS facility with a storage capacity of up to 400MW/1600MWh of storage capacity (4 hours at 400MW). The BESS facility site would cover approximately 12 hectares, which includes a BESS (0.58 hectares), substation utility area (1.38 hectares) and an operation and maintenance facility area (0.26 hectares). The remainder of the BESS facility site comprises civil benching, battering, and stormwater drainage. It is located north-east of Bulgana Terminal Station, to the east of Six Mile Creek within the Project Area boundary. The BESS may be established as a standalone development owned and operated separately to the wind farm however would be used for energy capture from the wind farm component.

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Overhead Transmission Lines

- An overhead 220kV connection from the wind farm substation and BESS substation to the existing Bulgana Terminal Station (approximately 1,300 metres in length for the transmission line from the BESS and 2,400 metres in length for the transmission line from the wind farm substation. The transmission route and length is pending final design detail of the Western Renewables Link project).
- There will be approximately up to 12 transmission towers required in total, requiring an area of approximately 17 by 17 metres each. Transmission towers would be between 30 metres and 60 metres high and span approximately 350 metres to 550 metres.

Electrical Reticulation

- Underground cabling for wind turbine reticulation within the Project Area connecting to the wind farm substation.
- DC and AC cabling for the BESS connecting between Power Conversion Systems and transformers respectively.

Ancillary Infrastructure

- One temporary meteorological monitoring mast (met mast) and two permanent met masts.
- Potential on-site borrow pits to be used during construction (subject to further investigations and separate approval).

Temporary infrastructure

- Temporary infrastructure, including a concrete batching plant, laydown areas, construction site facilities and potentially onsite borrow pits (subject to further investigations and separate approval).

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1.2.2 Wind Farm

The wind farm site would cover an area of up to 4,850 hectares. Once operational, the total amount of land occupied by wind farm infrastructure would be approximately 67 hectares (approximately 1.4% percent of the total wind farm site). Land not needed for wind farm infrastructure would continue to be used for agricultural use such as grazing. Infrastructure to be constructed as part of the wind farm component of the Project is detailed below.

Wind Farm Generators

The Project would include up to 45 wind turbines, with each consisting of a foundation, tower, nacelle, rotor and transformer. Each turbine is made up of three blades to harness the wind and turn a rotor. The rotor is connected to a shaft within the nacelle which sits on top of the turbine tower. The nacelle houses a generator that converts mechanical energy into electricity and the wind turbine control systems. Each turbine would have a rated capacity between 4.5 MW and 8 MW, with a total wind farm capacity of up to 360 MW and annual production of approximately 959 GWh.

Each wind turbine would have a maximum hub height of 166 metres and maximum rotor swept area of 24,885 square metres, with a maximum tip height of up to 255 metres above ground level

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(AGL) and a minimum blade clearance from ground level would be 60 metres. The maximum blade length would be 89 metres. Each wind turbine would have a matte white, non-reflective finish.

The exact dimensions would be determined during detailed design of the Project depending upon selection of the turbine Original Equipment Manufacturer (OEM) and model. For the purposes of this planning permit application, the maximum parameters described above have been adopted allowing a 'conservative' assessment of the Project. There would be temporary and permanent hardstand areas at each turbine location, with a footprint of approximately 1.6 hectares, approximately 75% of which would be reinstated after construction and a turbine foundation of approximately 800 cubic metres, subject to refinement based on the dimensions of the final wind turbine model selected. The hardstand areas would include the foundation, laydown areas and crane pads. Following construction, the hardstand areas would be used for periodic maintenance of the wind turbines throughout the operational life of the Project.

Site Access and Internal Access Tracks

Internal access roads and access points from public roads enable construction access and delivery of materials and infrastructure components to the site, whilst also providing permanent access for operations and maintenance of the wind farm (refer Figure 2 for the location of access points and internal access tracks).

A total of four site access points from public roads are proposed for the Project. All access is off Landsborough Road with the two main entry points (north and south) located to the northeast of Joel Joel Nature Conservation Reserve (JJNCR). The remaining two access points off Landsborough Road are located southwest of JJNCR and west of the Wimmera River respectively.

These roads are all local roads managed by Northern Grampians Shire Council. Existing site access routes to land currently used for agricultural purposes would be utilised where possible to minimise the need for new site entrances. However, some public roads and intersections would need to be created or upgraded to facilitate delivery of Project components, particularly wind turbine blades. All site access points would be gated and have appropriate controls for clearing vehicles where required.

Approximately 48 kilometres of internal access tracks would be needed to provide access to each wind turbine and ancillary infrastructure associated with the Project. Internal tracks would provide access for operation and maintenance vehicles, as well as emergency vehicles and may be utilised by involved landowners for agricultural operations. Existing access tracks on land currently used for agricultural purposes would be used where possible. However, some roads and intersections would need to be created or upgraded.

1.2.3 Battery Energy Storage System

A BESS facility would be located in the eastern portion of the Project Area. The BESS facility would be independently connected to the Bulgana Terminal Station via a separate internal substation. The BESS facility will cover up to 12 hectares and is subject to further detailed design and procurement however, it is anticipated to consist of approximately 400 battery storage containers (approximately 12 metres in length), as well as approximately 132 containers for Power Conditioning Systems (PCS) with three battery storage containers connected to each PCS.

The BESS will have a rated power of up to 400 MW and capacity to store up to 1600 MWh of dispatchable energy. The BESS will store energy for use during periods of high demand and provide

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additional grid stability services. The BESS component is proposed to be surrounded with security fencing per Australian standards and design guidelines. A firebreak of at least 10 metres would be established and maintained around the perimeter of the BESS facility in accordance with the CFA Guideline. Access to the BESS facility will be provided from Landsborough Road via a new access track which also services the wind turbines and substation.

The final connection configuration for the BESS is subject to further commercial and technical assessment by RES.

1.2.4 Project Connection

The wind farm and BESS facility will have independent connections to the Bulgana Terminal Station. Separate connection infrastructure (such as a substation, transmission lines and connection transformers) are required to facilitate an independent connection.

Transmission Line

Both the wind farm and BESS facility will require a new overhead transmission line to connect the Project to the existing transmission network at Bulgana Terminal Station (refer to Figure 2). It is expected that the connection voltage will be 220 kV. The Bulgana Terminal Station is planned to be upgraded as part of the AusNet Western Renewables Link Project due to be completed in 2027.

The proposed indicative overhead transmission alignment has been selected to ensure it extends within land associated with the Project. The final route will be dependent on the detailed design of the Western Renewables Link project and associated upgrade of the Bulgana Terminal Station. The route will also be subject to agreement with AEMU and AusNet.

The details of the proposed transmission line for the wind farm and BESS facility are outlined in Table 3.

Table 3 - Proposed Transmission Lines

Project component	Proposed length	Location
Wind Farm	Approximately 2.4 kilometres	The transmission line associated with the wind farm would extend east from the wind farm substation (located to the northeast of JJNCR) then divert south to Bulgana Terminal Station.
BESS facility	Approximately 1.3 kilometres	The transmission line associated with the BESS facility would extend south before connecting into Bulgana Terminal Station.

The transmission tower construction would depend on a number of environmental and regulatory factors and would be subject to development during the detailed design phase. It is likely that transmission towers would be either a monopole or steel lattice construction whilst ensuring spacing requirements are met based on the connection voltage. Towers would be designed and constructed to meet relevant electricity design regulations and standards, ensuring minimum distances are

maintained between conductors, transmission towers, the ground and any objects that may travel beneath. It is anticipated that the transmission towers would be between 30 metres and 60 metres high and span approximately 350 metres to 550 metres. To reduce environmental impacts, shorter or longer span distances would be considered as part of detailed design.

1.2.5 Common Infrastructure

The following provides details regarding infrastructure that would be utilised by each key Project component (wind farm and BESS facility).

Temporary Infrastructure Components

The construction-related infrastructure listed below will be established for the construction phase of the Project only, after which they will be decommissioned and land rehabilitated.

Several concrete batching plants are proposed for the construction of the Project. These batching plants would be used for the construction of foundations for the wind turbine, inverters and BESS foundations where required.

A temporary construction compound would be established during the construction of the Project and is proposed to be located to the north of Vineyard Road, approximately 1.7 kilometres north of the JJNCR. The compound would be approximately 3.97 hectares, with structures up to approximately 3 metres high and would be fenced. The compound would contain cleared construction laydown areas, a site office, car parking, storage, amenities, a workshop and storage of construction machinery and materials.

Potential for on-site temporary borrow pits to provide approximately 400,000 cubic metres of sub-base material for the construction of roads, hardstand areas and other infrastructure, depending on the quality of the material. The inclusion of borrow pits within the Project Area is subject to further detailed investigations and associated approvals would be sought separately under the *Mineral Resources (Sustainable Development) Act 1990 (Vic)* and *Planning and Environment Act 1987 (Vic)* (P&E Act).

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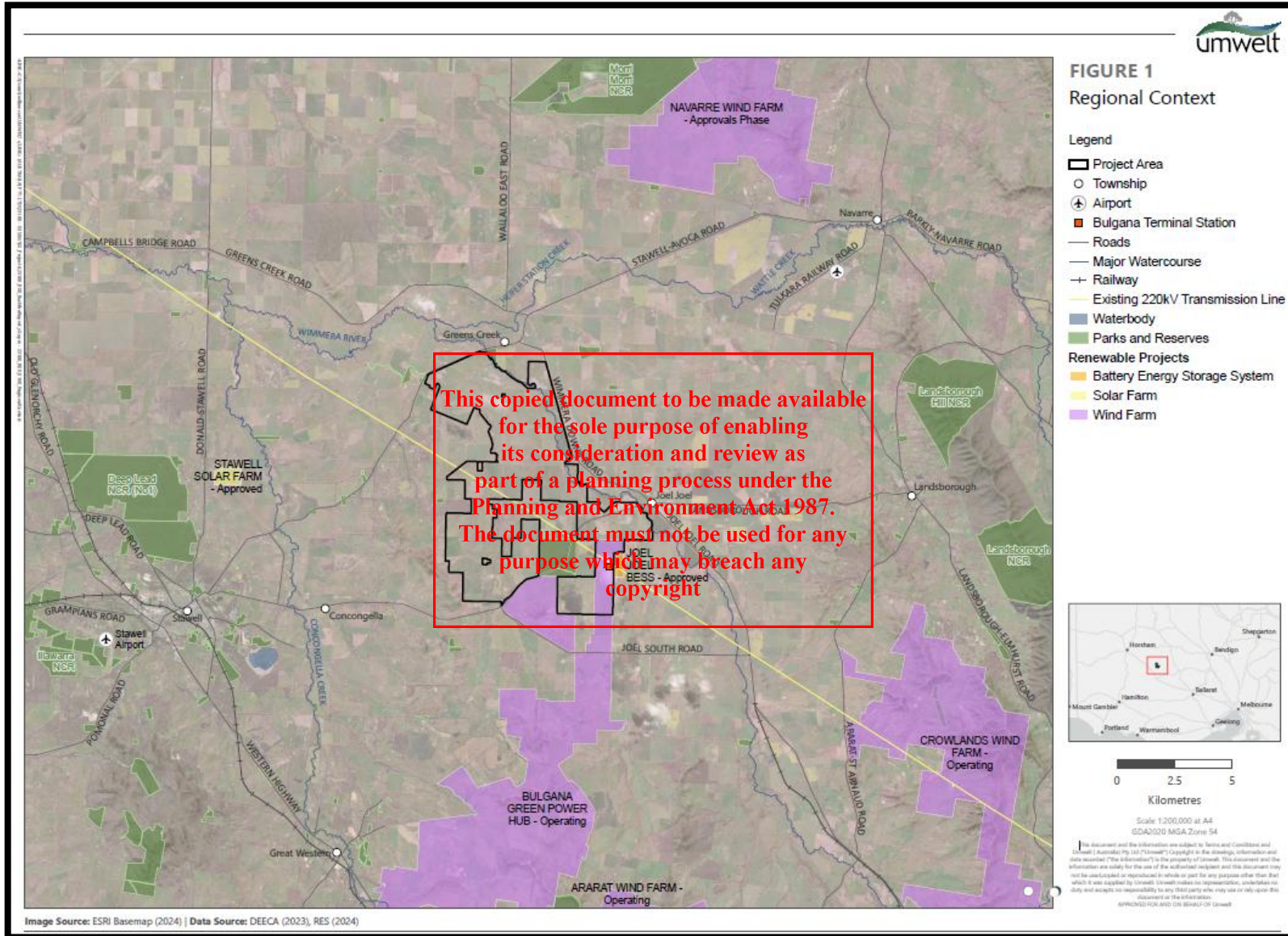


Figure 1 – Regional context of the Watta Wella Renewable Energy Project.

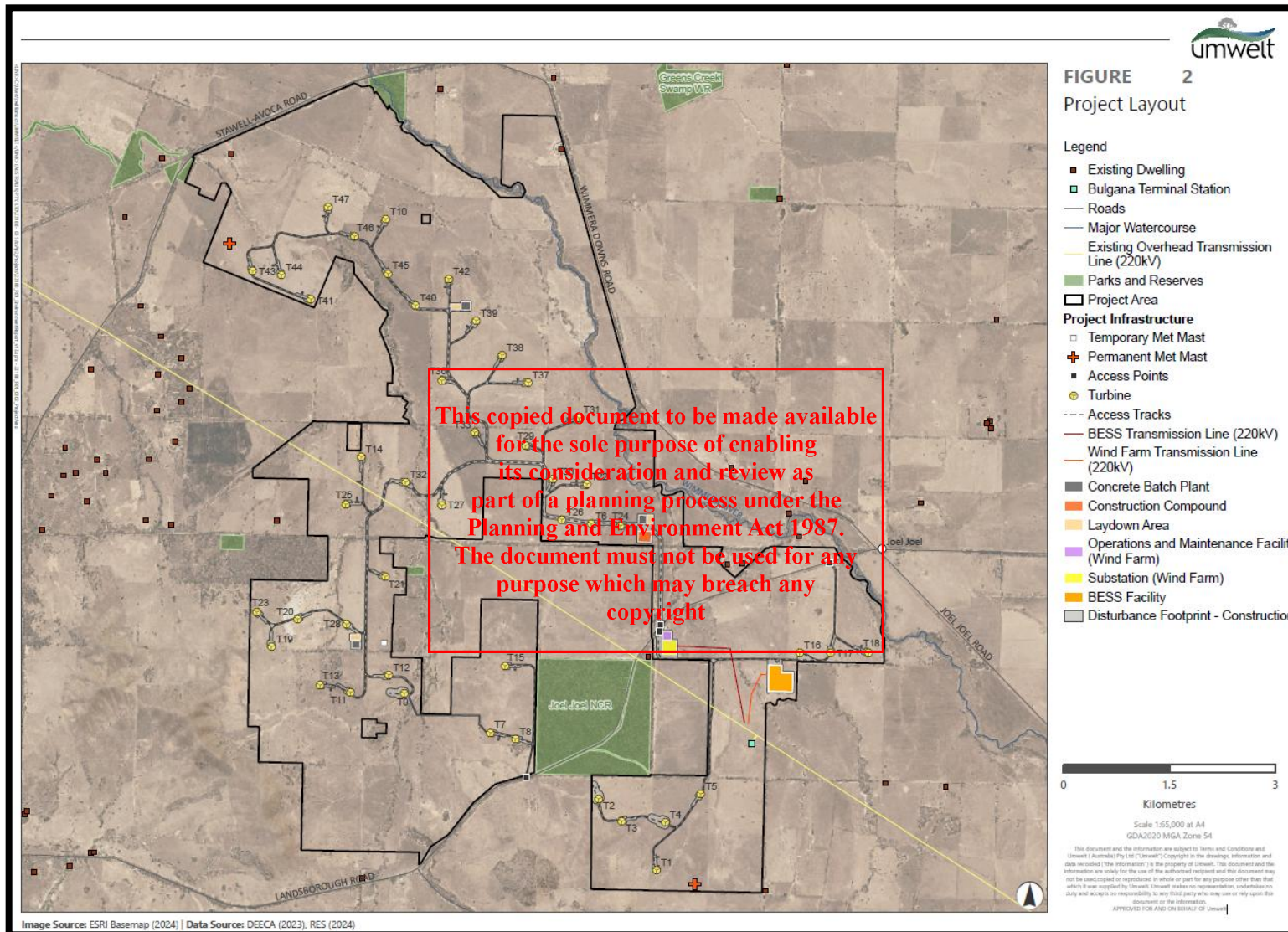
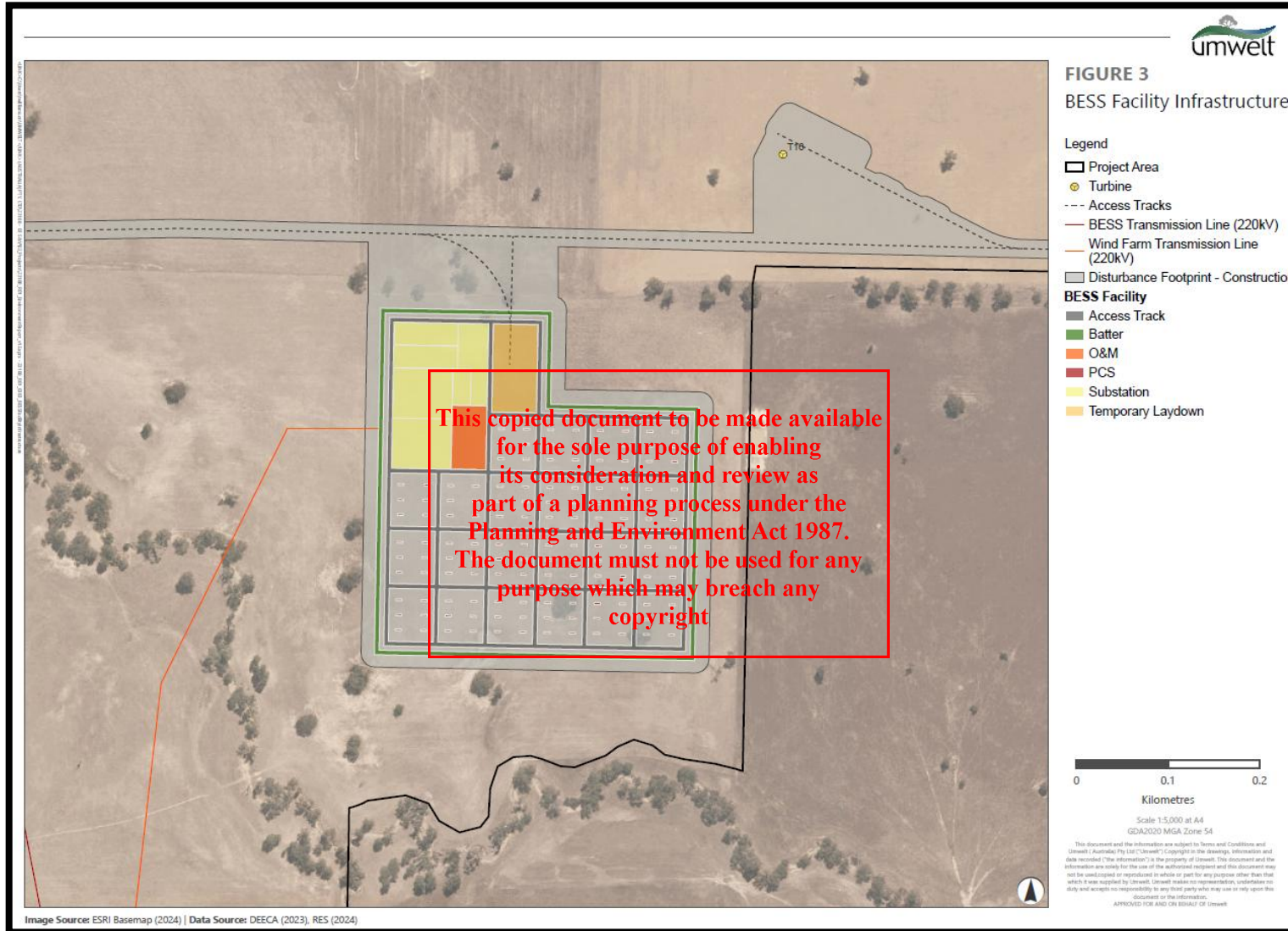


Figure 2 - Project layout

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Figure 3 - Project Infrastructure Layout

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2 Existing conditions assessment

2.1 Site description and location

The key features within the Project Area that are likely to influence bushfire behaviour for a range of reasons including ignition sources, fire breaks or contributing to the development of embers are considered throughout the assessment and include:

- Landsborough Road
- Wimmera Downs Road
- Wimmera River
- Joel Joel Nature Conservation Reserve (JNCR)
- Seven Mile Creek Streamside Reserve
- Watta Wella I18 Bushland Reserve
- Greens Creek Public Park
- Greens Creek Streamside Reserve

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The identified areas generally consist of vegetation that could support bushfire activity but in relation to the roads, may also assist with fire suppression activities as being either a safer area or a fire break.

2.2 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 bushfire risk that exists in the surrounding area.

2.2.1 Bushfire Management Overlay

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

The criteria¹ to determine if a BMO should be implemented includes the identification of vegetation including forest, woodland, scrub, shrubland, mallee and rainforest vegetation that is 4 hectares or more in size. Once this is confirmed, a 150-metre buffer is applied from the edge of vegetation. Fire authorities also have the ability to advise on locations that may be subject to extreme landscape bushfires.

outlines the location of the BMO in relation to the Project. There is one WTG located in the BMO. This is considered within this report.

¹ https://www.planning.vic.gov.au/_data/assets/pdf_file/0030/639507/Fact-sheet-Bushfire-mapping-methodology-and-criteria.pdf

The areas covered by the BMO are associated with the Wimmera River to the east of the development and the nature reserves around Landsborough Road and the JJNCR. These areas are not connected and would not support an elevated landscape risk. This was supported by the analysis of aerial imagery and observations during site visits.

The BMO along the eastern edge of the Project Area is associated with the vegetation along the Wimmera River. CFA have produced a publication² that has assessed the bushfire risk associated with riparian land. The report indicates that whilst riparian areas and the conditions they will be exposed to will differ significantly across Victoria, the following general conclusions can be drawn about fire behaviour in riparian areas:

- *In well-managed riparian vegetation with limited grass and weed growth and low slopes, and under a Low to Moderate Fire Danger Rating, bushfire may be difficult to ignite and may only burn very slowly and at a low intensity.*
- *Under more severe conditions, any vegetation will burn, and any significant patch of vegetation situated close to assets may pose a fire threat.*

The outcome of this assessment is that whilst the land along the Wimmera River is subject to the BMO, due to the influence of farming activities including stock grazing, the strip of vegetation either side of the river is narrow in some areas. At lower fire dangers the outcome of the riparian land assessment by CFA indicates that these areas are unlikely to cause increased bushfire behavior. However, at elevated fire dangers (normally associated with extreme and catastrophic fire danger ratings), it is likely for these areas to contribute to bushfire behaviour including the generation of embers.

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² <https://www.cfa.vic.gov.au/ArticleDocuments/550/Riparian-fire-risk-report-170302.pdf>

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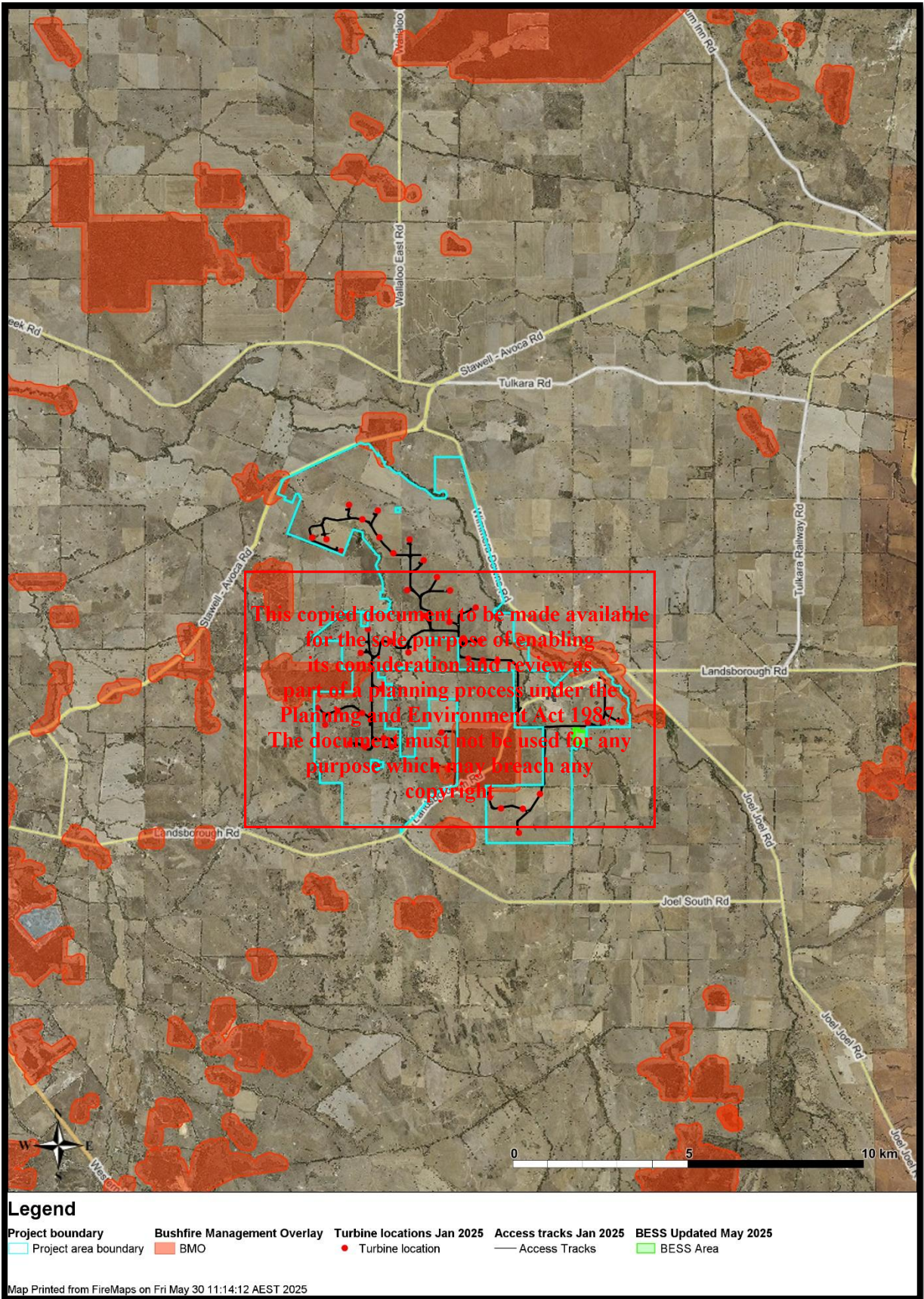


Figure 4 - Location of Bushfire Management Overlay in relation to the proposed development

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2.2.2 Bushfire Prone Areas

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. The entire Project is located within a BPA.

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 that occurred following the 2009 Black Saturday bushfires.

The existence of the BPA will trigger the need to respond to Clause 13.02-1S of the Planning Scheme. Refer to Section 3.1 of this report.

2.2.3 Municipal Fire Management Plan³

The Northern Grampians Municipal Fire Management Plan (MFMP) (2023) outlines the risk of fires within the municipality and outlines the treatments required to offset these risks. The MFMP was last updated and released in May 2023 as V4.1.

The MFMP outlines that the climate in the Grampians region is dominated by warm dry summers and cool wet winters, with most rainfall occurring in winter and spring. The bushfire season generally runs from December to April. Prevailing weather conditions associated with the bushfire season in the Northern Grampians Shire are warm to hot north westerly winds accompanied by high temperatures and low relative humidity followed by a cool south westerly change.

The MFMP outlines that there are a range of generic statewide and municipal treatments that include:

- Community education programs.
- Community education and engagement activities.
- Public awareness – multimedia communications.
- Powerline hazard tree identification, management, and reporting.
- Fire hazard inspection program and issue of notice.
- Compliance and enforcement of legislation.
- Bushfire Management Overlays.
- Building code of Australia.
- Permits to Burn.
- Local Laws.

It has been assumed that these treatments are being implemented across the municipality where a specific risk has been identified. The MFMP does not identify any of the communities in and surrounding the Project. This is likely due to the low population that is present and the risk analysis tool not identifying the locations. However, in recognition of the grassfire risk, the area is provided with various mitigation treatments, including roadside vegetation management (Fire Control Lines)

³ <https://www.ngshire.vic.gov.au/files/assets/public/v/3/document-resources/emergency-management/ngs-municipal-fire-management-plan-2023-26-v4.1-sept-2023.pdf>

and fuel reduction burning. The MFMP outlines the location of Fire Control Lines that includes the following in the Project locality:

- Joel South Road
- Joel Joel Road
- Wimmera Downs Road
- Stawell Avoca Road
- Landsborough Road

According to the MFMP, Fire Control Lines are roads where the roadside is provided with a three metre wide slash behind the guide posts (where practical). These works are normally undertaken by the relevant Road Manager, usually prior to the introduction of the Fire Danger Period. The local area is also provided with fuel management programs that are identified within the Joint Fuel Management Program which is a coordinated approach to vegetation management by the agencies.

The Joint Fuel Management Program for the JJNCR includes the creation and maintenance of a perimeter fire break and an internal track network. This is in addition to Landsborough Road which provides the separation of fuel and enables firefighting resources to access the Reserve if required.

Figure 5 shows an example of the Joint Fuel Management Program activities along the Wimmera Downs Road. The areas outlined are likely to be fuel treated by fuel reduction burning activities by CFA.

These fuel reduction burning programs will enable the road to better perform as a fire break along with improving the safety of road users during a bushfire.

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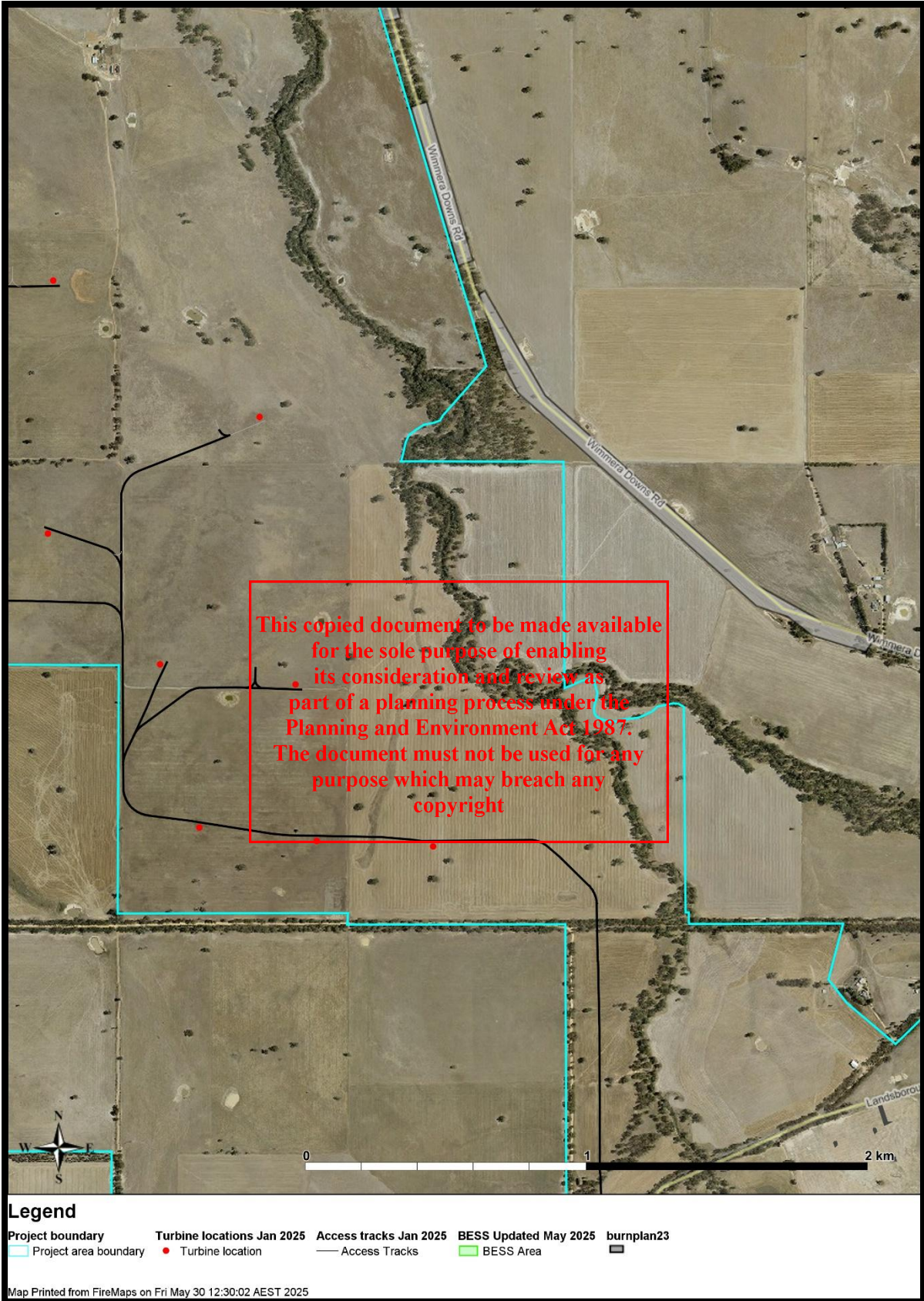


Figure 5 - Joint Fuel Management Program along Wimmera Downs Road

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2.2.4 Bushfire history

An analysis of bushfire history in the area surrounding the Project Area indicates bushfire activity. According to the data made available by DEECA, two bushfires have burnt through the Project Area historically.

The larger of the two occurred in 1980 when the bushfire started to the east of Wimmera Downs Road and to the west of Perry Jones Road. This bushfire burning through mainly grasslands travelled almost directly south for approximately 26 kilometres. It was extinguished to the north of the Pyrenees Highway, approximately seven kilometres to the northeast of Ararat.

The smaller bushfire started to the west of Wimmera Downs Road in 1975 and travelled approximately six kilometres before being extinguished to the west of North Woodlands Road.

In the broader landscape, there have been large bushfires that have mostly been within grassland vegetation and some of these have been influenced by the north westerly wind influence followed by a south westerly wind change. These bushfires are considered dangerous due to the speeds that they can travel and the effect a south westerly wind change can have on them.

2.2.5 Surrounding landscape and Project Area assessment

Surrounding area

The Project is occurring in an area located to the east of Stawell and to the north of Ararat. The landscape is dominated by farming properties that utilise a mix of cropping and grazing. This mixture can change regularly and influence bushfire risk due to the increased vegetation fragmentation that occurs. The landscape includes a few small areas of public land that will likely assist bushfire behaviour through an increase in ember generation, and will support bushfires to spread rapidly downwind of the public land reserve.

The topography in the surrounding landscape is unlikely to influence bushfire behaviour in and around the Project Area. There are some areas that consist of smaller slopes to the west and south of the site, but these are unlikely to influence the bushfire behaviour within the footprint.



Figure 6 - View showing the limited topography in the surrounding landscape.

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Project Area

The Project Area is cleared land primarily used for stock grazing and cropping with some areas of public land. The public land areas including the JJNCR appear within the Joint Fuel Management Program that is delivered by the Victorian fire agencies.

There are also roadsides within the local area that will be fuel reduced via either slashing or fuel reduction burning programs.



Figure 7 - Interface between the Joel Joel Nature Conservation Reserve and the adjoining farmland.

The landscape may include peat deposits in isolated areas. This could be associated with low lying areas which the Project is avoiding. However, during the construction phase of the Project, these areas will need to be considered due to the elevated fire risk.

The presence of the road network and the variable farming practices along with the proactive fire mitigation activities undertaken by the fire agencies, community and land managers, ensures the risk of bushfire is managed in the local area. The risk of bushfire is always present as history has demonstrated but these events usually only occur under elevated fire danger conditions.

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3 Risk assessment framework

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

- Clause 13.02-1S (Bushfire Planning) Northern Grampians Planning Scheme⁴
- Assessment against the model requirements of the CFA Guideline
- Risk assessment that meets Section 5 of the CFA Guideline.

The risk assessment provides the opportunity to bring the information gained from the above processes or information together and if required, make any additional recommendations. All recommendations are aimed at reducing the risk to an acceptable level.

3.1 Clause 13.02 – Bushfire planning assessment

Clause 13.02-1S (Bushfire Planning)⁵ of the Planning Scheme plans to strengthen the resilience of settlements and communities and prioritise protection of human life through several strategies. However, it should be noted that the Project does not introduce new settlements into the landscape. The assessment has been undertaken within the context of a wind energy facility and BESS.

3.1.1 Bushfire hazard assessment

Elevated bushfire behaviour in southeast 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 4 below outlines the bushfire hazard assessment relating to the Project Area. Figures 9 and 10 provide an overview of the likely bushfire scenarios within the surrounding area. The assessment has identified the presence of likely bushfire impacts from the northwest and southwest due to the wind conditions likely to be experienced during elevated fire danger conditions. This is supported by the MFMP.

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 any directions. The presence of public land areas within and surrounding the Project is acknowledged as they will likely generate additional embers that will start new fires ahead of the main fire front.

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⁵ <https://planning-schemes.app.planning.vic.gov.au/Northern%20Grampians/ordinance/13.02>

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Table 4 - Assessment against Clause 13.02-1S

Bushfire hazard type	Conditions	Likely Scenario	Proposed mitigations
The site for the development	<p>During construction, there is a risk of a fire igniting and spreading through unmanaged vegetation.</p> <p>During the construction phase, the properties surrounding the construction area will continue to be used for farming activities including stock grazing.</p>	<p>A bushfire starting on the property is a possibility during the construction phase due to the increased number of people working on the Project and the operating machinery.</p> <p>Bushfires that are started by lightning, arson or other human caused events could burn through the Project Area and threaten the surrounding properties and infrastructure.</p> <p>The access track network and vegetation management plan requirements and the turbine towers, BESS, and other infrastructure will limit bushfire spread under elevated fire danger conditions.</p> <p>During construction, any work that is occurring near unmanaged grassland has the potential to start a bushfire and leave the property.</p> <p>Any exposed peat may ignite and cause fires to burn for some time underground.</p>	<p>During the construction phase of the Project, the Fire Management Plan and Construction Management Plan for the Project will outline the requirement for a risk assessment to be undertaken to manage work areas during the fire danger period.</p> <p>Areas near unmanaged vegetation including grasslands or cropping will require specific risk assessments, with appropriate control measures implemented. These may include vegetation management strategies, particularly around activities with potential ignition sources (e.g., hot works such as welding).</p> <p>It is essential to ensure the safety of the construction workforce from surrounding bushfire risks. This may involve vegetation cutting near work areas to create fire breaks during periods of elevated fire danger.</p> <p>The development of these risk assessments and control measures will be carried out in consultation with affected landowners.</p> <p>When the fire danger conditions are elevated (Catastrophic), the EMP will outline procedures to close the site during the construction phase and limit maintenance operations</p>

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Bushfire hazard type	Conditions	Likely Scenario	Proposed mitigations
			<p>unless critical. It should be noted that the farm would not stop operating, but the site will be vacated.</p> <p>Management of vegetation surrounding the base of the turbine towers, the BESS area and other infrastructure per the CFA Guideline.</p> <p>Access roads will be maintained for the life of the Project.</p> <p>The Project will introduce a peat management procedure that is contained within the FMP that ensures the site understands the risk of peat fires and requires the management of any peat that is exposed.</p>
Neighbourhood (400 metres) and local conditions (one kilometre)	<p>Within one kilometre of the Project Area, the surrounding landscape is predominantly grassland that is used for agricultural purposes.</p> <p>The surrounding road network provides access and egress opportunities for emergency services and in some cases, these are maintained as fire breaks or fire control lines.</p>	<p>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.</p> <p>Firefighting resources need to access the site to undertake fire suppressions activities during a bushfire event including firefighting aircraft.</p> <p>Roadsides will contribute to bushfire spread due to the unmanaged fuels and the presence of trees that will likely generate</p>	<p>The provision of access roads throughout the Project will assist with containing bushfires and providing increased accessibility to the landscape by firefighting resources.</p>

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Bushfire hazard type	Conditions	Likely Scenario	Proposed mitigations
		<p>short distance ember attack.</p> <p>The managed areas will also significantly limit the chances of a bushfire starting at the towers, BESS and other infrastructure.</p> <p>The nature of the farming properties results in a highly fragmented landscape where some areas are considered as containing reduced fuel or other areas have elevated fuels due to cropping.</p>	
Landscape conditions (20 kilometres)	<p>The landscape surrounding the Project Area consists of primarily grassland vegetation.</p> <p>There are small areas of forests contained within public land reserves that may generate increased bushfire behavior.</p>	<p>The presence of the public land reserves cause additional embers that will start new fires ahead of the fire front.</p> <p>The likely bushfire behaviour will involve fast running grass fires that will have varying intensities and will be heavily influenced by changes in vegetation types and other landscape features including dwellings, managed areas and roadways.</p> <p>The grassfire can approach from any direction, but the greatest risk is from the north west or south west aspects.</p>	<p>As outlined above, the mitigations including fire breaks and access roads will assist with reducing the impact from a bushfire.</p>

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3.1.2 Bushfire Hazard Landscape Assessment

Figures 9 and 10 outline the outcome of the bushfire hazard landscape assessment. The assessment identifies the two likely scenarios that may occur in relation to the Project. Both scenarios are consistent in that the likely bushfire impact on the Project Area is from either the northwest or southwest. Table 5 provides a description of each of the scenarios contained within Figure 9 and 10.

Table 5 - Bushfire scenarios

Scenario	Description
A	<p>Bushfires burning under a north westerly wind influence will burn through predominantly grassland fuels. These fuels will be varied due to the different farming practices and if they are located adjacent to private, municipal and state roads or residential properties. Traditionally a north westerly wind influence is associated with elevated fire danger days.</p> <p>Other landscape features including the surrounding fire breaks and fire control lines listed within the MFMP and roadside management undertaken by adjoining landowners will provide opportunities to slow or stop bushfires spreading in the local area.</p> <p>It is likely for the new Access Track network to provide additional areas where bushfire spread may be interrupted depending on the fire danger conditions.</p>
B	<p>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 Project can come under threat at the same time. This type of bushfire behaviour is consistent with historical bushfires that have occurred to the south west of Stawell.</p> <p>Due to the lack of vegetation that consists of trees and shrubs in the landscape, a bushfire spreading through embers starting new fires ahead of the fire front is likely to be limited unless the bushfire travels through the public land reserves.</p> <p>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.</p>

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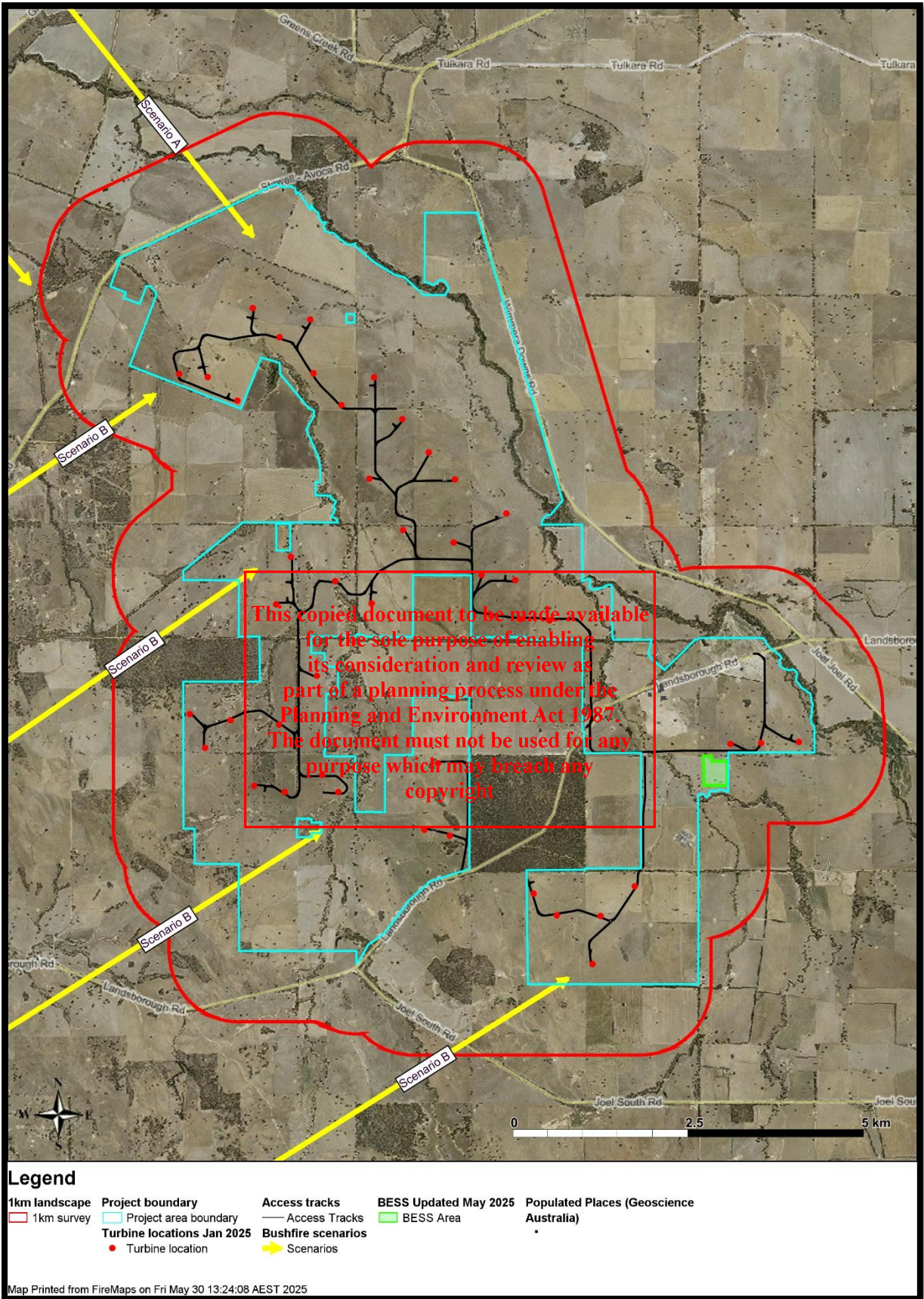


Figure 8 - One kilometre landscape assessment

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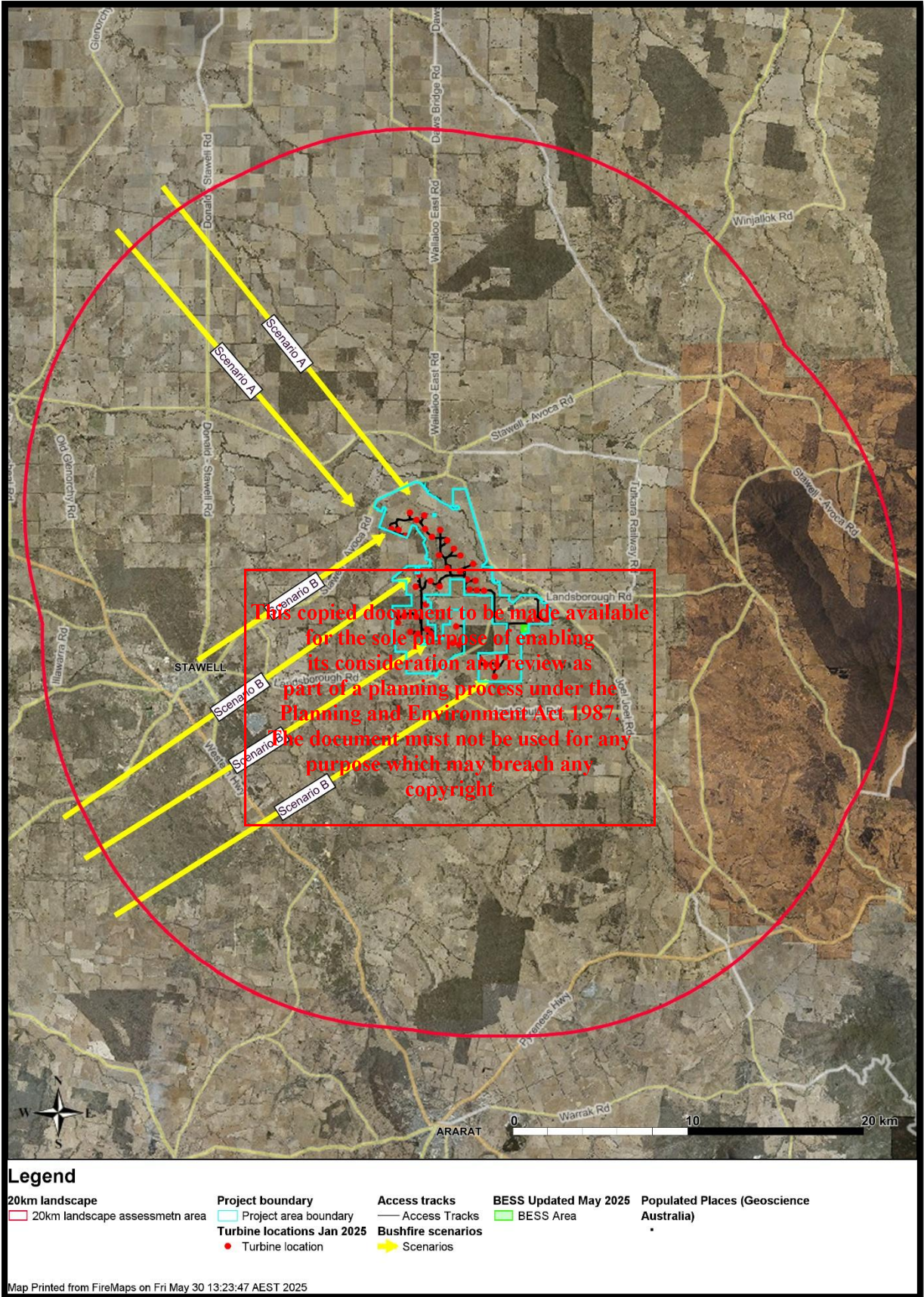


Figure 9 - 20 kilometre landscape assessment

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Clause 13.02-1S (Bushfire Planning) of the Planning Scheme identifies several strategies relating to the protection of human life and settlement planning. The Project does not meet the definitions of a settlement however an assessment of the project has been undertaken against the strategies relating to settlement planning to allow for detailed consideration of the Project against the Clause 13.02-1S (Bushfire Planning) and as required by the CFA Guideline (2023).

Table 6 - Response to Clause 13.02-1S – Protection of human life strategies

Protection of human life objectives	Project response	Achieved (✓ or ✗)
Give priority to the protection of human life by:		
Prioritising the protection of human life over all other policy considerations.	The development design has prioritised the protection of human life. Whilst the development will not promote a large increase in the number of people within the landscape, the Project has ensured the presence of access tracks, water supply and asset protection zones.	✓
Directing population growth and development to low risk locations and ensuring the availability of safe access to, areas where human life can be better protected from the effects of bushfire.	This Project does not promote population growth directly and will have people onsite during the construction and operations phase.	✓
Reducing the vulnerability of communities to bushfire through the consideration of bushfire risk in decision making at all stages of the planning process.	The Project through the introduction of the various mitigation treatments, will reduce the bushfire risk to the surrounding communities. The presence of access tracks, variable fuel loads within the surrounding agricultural areas, fire breaks and existing roadside management activities will slow or stop bushfire spread.	✓

Table 7 - Response to Clause 13.02-1S – Settlement strategies

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 3959-2018 Construction of Buildings in Bushfire-prone Areas (Standards Australia, 2018).	Due to the type of development, it is not possible to locate it within a community where the risk is likely to be less. The CFA Guidelines outline a range of mitigation measures that ensures the risk is managed.	✓

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Settlement planning objectives	Project response	Achieved (✓ or ✗)
<p>Ensuring the availability of, and safe access to, areas assessed as 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.</p>	<p>The Project will result in areas that will achieve a Bushfire Attack Level (BAL) Low rating when assessed against AS3959. This will include the BESS and other areas around the site.</p> <p>Depending on the location of a bushfire in the surrounding landscape, there are several travel routes available to leave the area and travel to an area deemed to be BAL LOW. These locations would include Stawell and Ararat.</p> <p>The identification and travel routes to the various locations that meet the BAL LOW requirements will be addressed within the EMP that is developed for the Project.</p>	<p>✓</p>
<p>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.</p>	<p>The Project 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:</p> <ul style="list-style-type: none"> • Asset Protection Zone of at least 10 metres surrounding the base of each Turbine Tower, the BESS area and other infrastructure. • A fire detection (smoke/heat) and suppression (gas) system will be installed within the high risk electrical cabinets in the wind turbine nacelle, with the details/design of this system to be determined in consultation with CFA. • BESS design considerate of fire risk and provided with suitable monitoring systems with the aim of preventing fires. • Access track network to be developed and maintained to allow for access to each of the towers. • Provision of static water supplies to support firefighting operations throughout the Project Area. 	<p>✓</p>
<p>Achieving no net increase in risk to existing and future residents, property and community infrastructure, through the</p>	<p>The fire protection measures required by the CFA Guideline ensures that there is no net increase in risk to existing and future residents.</p>	<p>✓</p>

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Settlement planning objectives	Project response	Achieved (✓ or ×)
implementation of bushfire protection measures and where possible reducing bushfire risk overall.	The site for the Project 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 Project 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 various infrastructure components that is being introduced.	✓
Assessing alternative low risk locations for settlement growth on a regional, municipal, settlement and neighbourhood basis.	The Project 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 ensure the management of risk is occurring that reflects 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 Project will achieve a less than BAL 12.5 rating when assessed against AS3959 through the provision of Asset Protection Zones around the infrastructure. The project infrastructure has a 15m construction buffer which accounts for the likely extent of vegetation clearance required for construction. These areas will be rehabilitated post-construction with fire protection in mind.	✓

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3.1.3 Assessment against Clause 13.02 summary

The assessment against Clause 13.02-1S (Bushfire Planning) of the Planning Scheme has identified that the Project is within an area where the landscape bushfire risk is influenced by the potential for grassfires in the surrounding landscape. These grassfires have the potential to travel long distances depending on the weather conditions being experienced. However, the Project has been designed to limit both the potential impact on the Project Area and the potential for fires to leave the property and enter the surrounding landscape. As the Project is required to achieve the requirements outlined within the CFA Guideline as a minimum, this will ensure that the settlement planning objectives are achieved.

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3.2 Analysis against CFA Guideline

CFA has produced the CFA Guideline that outline their requirements to address fire risk within renewable energy installations. Section 5 of the Guideline 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 and BESS 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 8 - Response to CFA Guideline model requirements

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).	✓	This report includes an assessment against Clause 13.02 of the Planning Scheme within Section 3.1. 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. This Risk Management Plan is only the initial version and will be updated as detailed design and planning progresses.
c) Indicate where the exact specifications of elements within the renewable energy facility will be determined during the detailed design phase, such as wind turbine model/manufacture and battery chemistry.	✓	This Risk Management Plan is only the initial version and will be updated as the detailed design and planning progresses. 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 commences as part of the post-

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Model requirement	Compliance	Requirement/Comments
with this guideline, in consultation with CFA, before development starts: <ul style="list-style-type: none"> • Risk Management Plan • Fire Management Plan • Emergency Management Plan 		approvals 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 Guideline.
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 Section 1 of 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 in the Risk Assessment presented in Section 4 and will be further assessed as the Project progresses.
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c) Specify and justify, in accordance with Section 4.2 of the CFA guideline:		
<ul style="list-style-type: none"> • The location of the facility in the landscape, and the proposed infrastructure on-site. 	✓	This is included within Section 3.1 and will be further assessed as the Project progresses.
<ul style="list-style-type: none"> • Emergency vehicle access to and within the facility that: <ul style="list-style-type: none"> ○ 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 Section 4.2.1 of this Table and will be further assessed as the Project progresses.
<ul style="list-style-type: none"> • Firefighting water supply for the facility. 	✓	This is included within Section 4.2.2 of this Table and will be further assessed as the Project progresses.
<ul style="list-style-type: none"> • A fire break width of 10m or greater, based on radiant heat flux (output) as an ignition source: 	✓	This is included within Section 4.2.6 of this Table and will be

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Model requirement	Compliance	Requirement/Comments
<ul style="list-style-type: none"> ○ Around the perimeter of the facility. ○ Between any landscape buffer/vegetation screening and infrastructure. 		further assessed as the Project progresses.
<ul style="list-style-type: none"> ● The separation distance, based on radiant heat flux (output) as an ignition source, between: <ul style="list-style-type: none"> ○ 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 Section 2.2, 4, and this Table. This will be further assessed as the Project progresses.
<ul style="list-style-type: none"> ● 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 Section 4.5.3 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 4 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 of the Planning Scheme within Section 3.1. The assessment has identified the potential for bushfires to approach the development from either the northwest or southwest.

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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 (Section 3.1) has considered this and has also been addressed within the risk assessment in Section 4.
c) The impact of bushfire on the infrastructure (e.g., ember attack, radiant heat impact, flame contact).	✓	This report considers the impact of bushfire on the infrastructure. The Clause 13.02 assessment considered this and has also been addressed within Section 4.1.
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 (Section 3.1) 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 and BESS area, detection and suppression systems installed within the wind turbine nacelle and provision of access roads supports the management of bushfire risk.
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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.

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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 criteria of the access tracks for the site. The location of the passing bays will be determined during detailed design.
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, BESS area and other works areas. Other infrastructure is located adjacent to public roads and accessible by emergency service vehicles.
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 BESS will be provided with dual access/egress points. Access to the BESS facility will be provided from Landsborough Road via access track to the BESS facility.
Wind Energy Facilities		
Constructed roads developed during the construction phase of facilities must be	✓	The access roads developed for the construction phase will be

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Model requirement	Compliance	Requirement/Comments
maintained post-commissioning and throughout the operational life of the facility, 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.		retained throughout the life of the project. This will provide access for maintenance activities along with emergency vehicle access if required.
Battery Energy Storage Systems		
At least two access points are to be provided into each section where battery energy storage systems are located. The number and location of vehicle access points must be determined in consultation with CFA.	✓	At least two access points will be provided for the BESS components of the Project.
Section 4.2.2 Firefighting Water Supply		
All Facilities		
a) Water access points must be clearly identifiable and unobstructed to ensure efficient access. <div style="border: 2px solid red; padding: 10px; margin: 10px 0; color: red; text-align: center;"> <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p> </div>	✓	Static water supplies for the wind energy facility and BESS will be located where possible at the property entrances or at other strategic locations around the site. The final location of static water supplies will be determined in consultation with CFA during the detailed design phase and shown on the management plans required as part the conditions of the planning permit.
b) Static water storage tank installations must comply with <i>AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning</i> .	✓	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

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Model requirement	Compliance	Requirement/Comments
		hours. This will be addressed within the EMP.
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. <i>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.</i>	✓	The static water tanks will be provided with a hard suction point and adapters that will allow for the typical firefighting 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 EMP.
j) The hard-suction point must be protected from mechanical damage (e.g., bollards) where necessary.	✓	Barriers, e.g., 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.	✓	Turbine hardstands will be provided at the base of each wind turbine and will be wide enough for fire trucks to turn around.

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Model requirement	Compliance	Requirement/Comments
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		
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 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 wind farm . Additional water supplies will be provided for the Terminal Station and BESS area, and these are outlined in further sections.
c) Nacelles must be equipped with automatic fire detection, alarm and fire suppression systems.	✓	<p>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.</p> <p>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 EMP will include procedures for alerting the CFA to a fire.</p>
Battery Energy Storage Systems (Centralised)		
1) For facilities with battery energy storage systems, the fire protection system must include as a minimum:		

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Model requirement	Compliance	Requirement/Comments
b) Where no reticulated water is available, a fire water supply in static storage tanks, where:	✓	Fire water supplies will be provided within static storage tanks.
i. The fire water supply must be of a quantity no less than 288,000L or as per the provisions of AS2419.1-2021: <i>Fire hydrant installations</i> , Table 2.2.5(D) for open yards flowing for a period of no less than four hours at 20L/s, whichever is the greater.	✓	The BESS layout is being determined and the provision of water supplies will be in accordance with the provisions of the CFA Guideline.
ii. The quantity of static fire water storage is to be calculated from the number of hydrants required to flow from AS 2419.1-2021: <i>Fire hydrant installations</i> , Table 2.2.5(D). (E.g., For battery installations with an aggregate area of over 27,000m ² , 4 hydrant outlets are required to operate at 10L/s for four hours, which equates to a minimum static water supply of 576kL.)	✓	The BESS area will be provided with water supplies that conforms with AS2419.1.
iii. Fire hydrants must be provided and located so that every part of the battery energy storage system is within reach of a 10m hose stream issuing from a nozzle at the end of a 60m length of hose connected to a fire hydrant outlet.	✓	Fire hydrants will be located around the site to enable coverage to be achieved.
iv. The fire water supply must be located at vehicle entrances to the facility, at least 10m from any infrastructure (electrical substations, inverters, battery energy storage systems, buildings).	✓	The water supply will be at least 10 metres from any infrastructure.
v. The fire water supply must be reasonably adjacent to the battery energy storage system and shall be accessible without undue danger in an emergency. (Eg., Fire water tanks are to be located closer to the site entrance than the battery energy storage system).	✓	The static water supply and booster assembly will be located adjacent to the main entrance to the BESS area.
vi. The fire water supply must comply with AS2419.1-2021: <i>Fire hydrant installations</i> , Section 5: Water storage tanks.	✓	The water supply will comply with the requirements outlined within Section 5 of the CFA Guideline. This will as a minimum include:

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Model requirement	Compliance	Requirement/Comments
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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.
b) For storages of dangerous goods, according to the requirements of any Australian Standards for storing and handling of dangerous goods.	✓	An assessment will be undertaken during the detailed design phase and any dangerous goods compliance requirements will be included within the design.
c) For electrical installations, a minimum of two (2) suitable fire extinguishers must be provided within 3m-20m of each PCU.	✓	Fire extinguishers will be installed adjacent to Power Conversion Units (PCU).
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.	✓	This will be included within the BESS detailed design. The fire break will be located around the perimeter of the BESS area.

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Model requirement	Compliance	Requirement/Comments
<p>b) The perimeter of control rooms, electricity compounds, substations and all other buildings onsite.</p> <p><i>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.</i></p>	✓	<p>The following infrastructure will be provided with a 10 metre wide fire break including:</p> <ul style="list-style-type: none"> • Substations • O&M Facility • WTGs • BESS • Static water supplies
Wind Energy Facilities		
<p>A fire break must be established and maintained around the base of wind turbines.</p> <div style="border: 2px solid red; padding: 10px; margin: 10px 0;"> <p style="color: red; text-align: center;">This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p> </div>	✓	<p>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.</p> <p>It is also acknowledged that the site operators through their regular inspection program will engage with landowners if the surrounding landscape becomes unmanaged through the life of the Project.</p>
Battery Energy Storage Systems		
<p>A fire break must be established and maintained around battery energy storage systems and related infrastructure.</p>	✓	<p>A fire break will be provided surrounding the BESS compound. The fire break will extend from the edge of the perimeter driveway to the BESS area fence.</p>
Section 4.2.6 – Design Specific to Facility Type		
Wind Energy Facilities		
<p>a) Wind turbines must be located no less than 300 metres apart.</p>	✓	<p>This has been included within the design.</p>
<p>b) Wind turbines must be provided with automatic shut-down, and the ability to be</p>	✓	<p>This requirement has been included within the project specifications. The SCADA</p>

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Model requirement	Compliance	Requirement/Comments
completely disconnected from the power supply in the event of fire.		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 <i>CASA Advisory Circular AC 139.E-05 v1.1, October 2022</i> (as for all structures 110m or more above the ground).	✓	There are permanent weather masts being installed as part of the project. The locations will be provided to CASA
d) All guy wires and monitoring towers must be clearly marked, even where marking is not required by CASA.	✓	Guy wires and monitoring towers will be clearly marked.
Battery Energy Storage Systems		
1) The design of the facility must incorporate:		
a) A separation distance that prevents fire spread between battery containers/enclosures and: <ul style="list-style-type: none"> Other battery containers/enclosures. On-site buildings. Substations. The site boundary. Any other site buildings. Vegetation. <p><i>Separation must be at least the distance where the radiant heat flux (output) from a battery energy storage system container/enclosure fully involved in fire does not create the potential for ignition of these site elements.</i></p>	✓	The site design will be in accordance with the manufacturer's specifications. The manufacturer design specifications have been tested against international standards. Appropriate separation will be provided to enable effective firefighting operations to occur and to limit the potential for fire spread between battery packs.
b) A fire break around the battery energy storage system and related infrastructure, of a width of no less than 10m, or greater where determined in the Risk Management Plan. <p><i>Fire breaks must be non-combustible, constructed of concrete, mineral earth or non-combustible mulch such as crushed rock.</i></p> <p><i>The width must be calculated based on the ignition source being radiant heat of surrounding vegetation, including landscaping.</i></p>	✓	The BESS will be surrounded by a minimum 10m fire break. Additional hard standing and access tracks will increase buffer distances. There will be no vegetation within the BESS compound.

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Model requirement	Compliance	Requirement/Comments
c) A layout of site infrastructure that: <ul style="list-style-type: none"> i. Considers the safety of emergency responders. ii. Minimises the potential for grassfire and/or bushfire to impact the battery energy storage system. iii. Minimises the potential for fires in battery containers/enclosures to impact on-site and offsite infrastructure. 	✓	The site layout has been designed to ensure safe and effective access for construction and operational activities. Further engagement with the CFA will ensure safe and effective access for firefighters . The design inherently minimises the potential for grassfires to impact on the area.
2) Battery energy storage systems must be:		
a) Located to be reasonably adjacent to a site vehicle entrance (suitable for emergency vehicles).	✓	Emergency vehicle access is available to the site. Access to the BESS facility will be provided from Landsborough Road via an access track to the entrance of the BESS facility.
b) Located so that the site entrance and any fire water tanks are not aligned to the prevailing wind direction (therefore least likely to be impacted by smoke in the event of fire at the battery energy storage system.)	✓	The static water supply will be located adjacent to the main entrance. This provides effective access for firefighters.
c) Provided with in-built detection and suppression systems. Where these systems are not provided, measures to effectively detect and/or suppress fires within containers must be detailed within the Risk Management Plan. <div style="border: 2px solid red; padding: 10px; margin: 10px 0;"> <p style="text-align: center; color: red; font-weight: bold;">This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p> </div>	✓	The BESS packs will be installed as per the manufacturer’s specifications. Where detection and suppression systems are recommended, these will be installed. All BESS technologies are provided with multiple sensors and alerts that will detect if a fault is occurring. Procedures will ensure that upon detection of faults, the battery will be shut down immediately until it has been checked by an operator.
d) Provided with explosion prevention via sensing and venting, or explosion mitigation through deflagration panels.	✓	The BESS Units will achieve compliance with the required standards and will have explosion prevention systems installed.

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Model requirement	Compliance	Requirement/Comments
e) Provided with suitable ember protection to prevent embers from penetrating battery containers/enclosures.	✓	The BESS packs will be designed to prevent embers from penetrating into the packs.
f) Provided with suitable access roads for emergency services vehicles, to and within the site, including to battery energy storage system(s) and fire service infrastructure.	✓	Access is provided to the BESS area and the fire hydrant systems.
g) Installed on a non-combustible surface such as concrete.	✓	The BESS packs will be installed on a non-combustible hardstand surface.
h) Provided with adequate ventilation.	✓	The BESS units will achieve compliance with the required standards and be provided with adequate ventilation.
i) Provided with impact protection to at least the equivalent of a W guardrail-type barrier, to prevent mechanical damage to battery containers/enclosures.	✓	Impact protection will be provided around the BESS area.
j) Provided with enclosed wiring and buried cabling, except where required to be above-ground for grid connection.	✓	The site layout will include this requirement.
k) Provided with spill containment that includes provision for management of fire water runoff.	✓	<p>Suitable spill containment will be provided around the equipment that holds dangerous goods. In most cases the equipment itself is manufactured with its own bunding.</p> <p>A fire water runoff basin will be provided within the BESS property. This area will enable fire water to be captured and if required, to be disposed of.</p>
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 EMP will be developed for both the construction and operations phase.

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Model requirement	Compliance	Requirement/Comments
Section 6 – Facility Operation		
Section 6.1 –Fire Management Plan		
A Fire Management Plan must be developed for the facility, in consultation with CFA, before development starts.	✓	A FMP 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 FMP will include the ongoing maintenance requirements to manage the bushfire risk and its potential impact on the Project Area.
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 FMP for the areas surrounding the terminal station, BESS 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 FMP.
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 FMP.
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 and BESS. The system includes a range of sensors that will detect faults and report them to the

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Model requirement	Compliance	Requirement/Comments
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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 FMP.
Section 7 – Emergency Planning		
All Facilities		
An Emergency Plan must be developed specific to the facility, in conjunction with CFA, before development starts.	✓	An EMP 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

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

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4 Risk Assessment

4.1 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 – Guidelines* as incorporated into the National Emergency Risk Assessment Guidelines (NERAG). Figure 11 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.

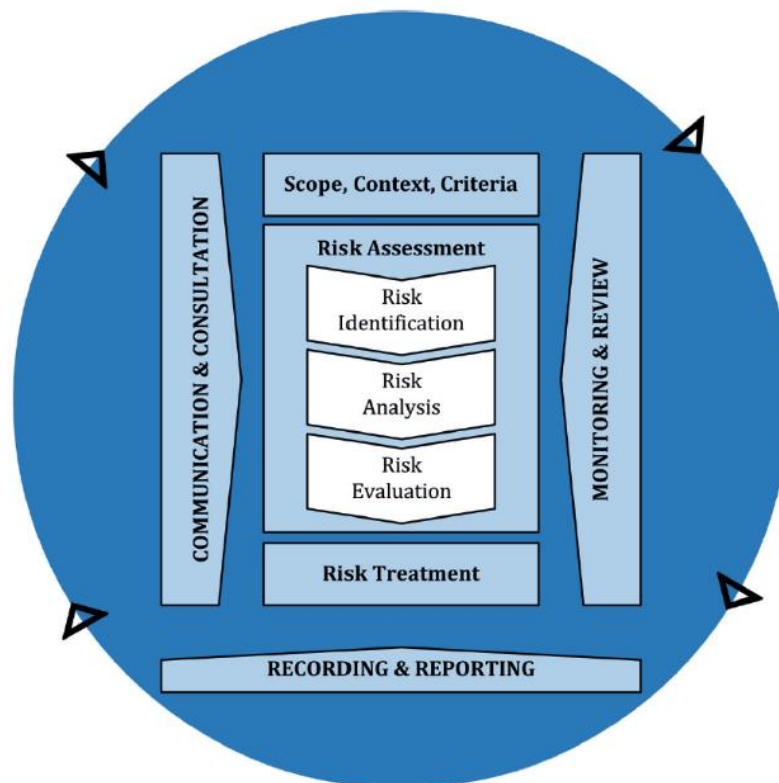


Figure 10 - Overview of AS/NZS ISO 31000-2018 risk management process

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.

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4.2 Context

The assessment of fire risk is a key requirement imposed on the Project by CFA through their Guidelines. The CFA Guideline outlines the types of hazards that may need to be considered in relation to renewable energy Projects at the design, construction and operations phases.

4.3 Analysis of fire risk

Renewable energy projects are largely acknowledged as having limited potential to cause fires. There have however been fires previously and these have been considered during the assessment of risk outlined within this report.

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

4.3.1 Assessment of fire risk during construction

The construction phase includes various stages including site works, construction of footings, substations, BESS, ancillary infrastructure 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 Project 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.

4.3.2 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 Project. The ongoing maintenance of the infrastructure 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.

4.4 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:

Table 9 - Hazard identification and description

Hazard	Description
Electrical hazards causing a fire	Electrical faults can be a cause of fire in wind turbines and BESS systems. These include loss of remote monitoring systems, internal short circuits, overheating or failure of components. Substations may also cause an electrical hazard due to a fault. Within a BESS, faults can lead to thermal runaway which will create suppression difficulties.

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Hazard	Description
Fire causing spread to adjoining infrastructure on the property	A fire that has started in the Project Area may spread to adjoining infrastructure or surrounding areas within the facility. Rapid escalation of the fire size and complexity can create issues for onsite staff and contractors, firefighters and the community.
Fire causing off-Site impacts	A fire that starts within the wind energy facility may spread to adjoining infrastructure. A fire that has started within a component with the BESS may spread to adjoining infrastructure.
Off-Site fire impacting on the Site	A bushfire burning through the surrounding landscape can occur and threaten the infrastructure by potentially starting new fires.
Dangerous goods	With reference to the Dangerous Goods (Storage and Handling) Regulations 2012, there are quantities of Dangerous Goods at the Site within various components of the Project. There is the potential for a leak of Dangerous Goods to occur that may cause a threat to people, the environment or be involved in a fire.
Fire water runoff	In the event of a fire involving the BESS, firefighters will respond and use water to either extinguish or cool the surrounding area until the infrastructure is deemed safe. The CFA Guideline outlines the need to provide capacity for the management of fire water runoff for the BESS to ensure that this water does not enter the environment.
Injury to staff and responding firefighters	The response and 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 Project of this type.

4.5 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 risk matrix has been developed that enables the effective consideration of risk. An inherent risk assessment is completed in Section 4.5.3 which includes consideration of Project design. A residual risk assessment is then undertaken, which identifies any further mitigation that may be required to minimise the risk.

4.5.1 Likelihood

An assessment of the likelihood of a fire occurring at this Project 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:

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- 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.

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Table 10 - Likelihood table

Likelihood scale frequency	Description
Almost certain	The event is expected to occur in most circumstances. (75% - 99%). Has occurred frequently in the industry
Likely	The event will probably occur in most circumstance (50% - 75%). Has occurred frequently in the industry .
Possible	The event should occur at some time. Likely to occur sometime (25% - 50%). Has occurred in the industry.
Unlikely	The event could occur at some time. Unlikely but possible (10% - 25%). Has occurred once or twice in the industry.
Rare	The event may occur only in exceptional circumstances. Assumed it may not be experienced (0% - 10%). Unheard of in the industry.

4.5.2 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 11 - Risk assessment consequence table

Consequence scale	Description		
	People	Environment	Plant/Equipment
Catastrophic	Multiple fatalities	Permanent widespread ecological damage. Toxic release off-site with detrimental effect. Likely EPA prosecution	Massive widespread equipment damage (i.e. plant/equipment write-off)
Major	Single fatality or permanent disability	Major ecological damage with costly restoration. Off-site release contained with outside assistance and little detrimental impact.	Multiple equipment replacements
Moderate	Major injuries - Incapacitations or requiring time off work	Moderate but recoverable ecological damage. On-site release contained with outside assistance.	Equipment level replacement /repair (
Minor	Significant injuries - Medical treatment, non-permanent injury	Limited but medium-term damage. On-site release immediately contained	Component level replacement /repair
Insignificant	Slight injuries- First Aid Treatments (cuts/bruises)	Short term damage. Low financial loss, negligible environmental impact	Slight Damage

The risk rating matrix (Table 12) 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 Project Area. Actions can be prioritised using this method to determine where risk mitigation will be required.

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Table 12 - Risk matrix

			Impact Score					
			1	2	3	4	5	
			Insignificant	Minor	Moderate	Major	Catastrophic	
Risk Assessment Matrix			People	Slight Injuries- First Aid Treatments (cuts/bruises)	Significant Injuries - Medical Treatment, non-permanent injury	Major Injuries - Incapacitations or requiring time off work	Single Fatality or Permanent Disability	Multiple Fatalities
			Environment	Short term damage / Low financial loss, negligible environmental impact	Limited but medium term damage / On-site release immediately contained. Unlikely EPA investigation.	Moderate but recoverable ecological damage / On-site release contained with outside assistance. Possible EPA investigation.	Major ecological damage with costly restoration / Off-site release contained with outside assistance and little detrimental impact. Possible EPA prosecution.	Permanent widespread ecological damage / Toxic release off-site with detrimental effect / Likely EPA prosecution
			Plant / Equipment	Slight Damage	Component level replacement /repair	Equipment level replacement /repair	Multiple equipment replacements	Massive widespread equipment damage (ie plant/equipment write-off)
Likelihood	A	Almost Certain	The event is expected to occur in most circumstances / 75%-99% / Has occurred frequently in the industry	Low (5)	Moderate (10)	Very High (18)	Extreme (23)	Extreme (25)
	B	Likely	The event will probably occur in most circumstances / 50% - 75% / Has occurred frequently in the industry	Low (4)	Moderate (9)	Very High (17)	Very High (20)	Extreme (24)
	C	Possible	The event should occur at some time. Likely to occur some time / 25% - 50% / Has occurred in the industry.	Low (3)	Moderate (8)	High (13)	Very High (19)	Very High (22)
	D	Unlikely	The event could occur at some time. Unlikely but possible / 10% - 25% / Has occurred once or twice in the industry	Low (2)	Low (7)	High (12)	High (15)	Very High (21)
	E	Rare	The event may occur only in exceptional circumstances. Assumed it may not be experienced / 0% - 10% / Unheard of in the industry	Low (1)	Low (6)	Moderate (11)	High (14)	High (16)

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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.

4.5.3 Risk analysis worksheets

The following risk analysis worksheets have assessed the hazards identified in Section 4.4 and results in a risk classification that correspond with strategies to lower risk if it is 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 be considered.

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Table 13 - Risk assessment - Electrical hazards causing a fire.

HAZARD	Electrical hazards causing a fire
CAUSE	Electrical faults can be a cause of fire in wind turbines and BESS systems. These include loss of remote monitoring systems, internal short circuits, overheating or failure of components. Substations may also cause an electrical hazard due to a fault. Within a BESS, faults can lead to thermal runaway which will create suppression difficulties.
LIKELIHOOD	Rare
JUSTIFICATION	<p>Fires have occurred in wind energy facilities including electrical substations however these are considered as rare occurrences. Available data does not indicate that this is widespread.</p> <p>Turbine technology has advanced significantly over the past 20 years, as has early warning and fire suppression systems. Modern wind farms employ sophisticated fire detection systems with multiple levels of redundancy, including smoke detectors, to quickly identify and respond to any potential fire incidents. Critical electrical components within the turbine are constantly monitored and controlled. Systems are implemented to primitively disconnect or isolate components where a fault might occur, thus reducing the likelihood of a fire. Early detection allows for prompt intervention and containment of fires before they escalate including the release of a non-toxic, environmentally friendly fire suppression agent in case of internal fires.</p> <p>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.</p> <p>There are examples of fires within BESS technology that indicates that when faults occur, they can escalate into challenging events including thermal runaway. To offset the likelihood of a fault within the BESS that creates a flammable atmosphere in and around the BESS, escalates to a fire, or a fire that affects adjacent infrastructure, the following mitigation treatments are included:</p> <ul style="list-style-type: none"> • Cooling systems that maintain the temperature of the battery packs during day-to-day operations. • Safety systems that send alerts to the monitoring centre if a sensor is activated. • Barriers between each of the battery module bays within each BESS designed to reduce the possibility of thermal runaway from spreading to adjoining battery units.

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	<ul style="list-style-type: none"> Separation distances between individual battery packs and other infrastructure in accordance with manufacturer installation guidelines. The BESS will be installed by qualified and competent people in accordance with the manufacturer's specifications to relevant Australian Standards and including compliance with UL9540A – Energy Storage System Requirements.
CONSEQUENCE	Moderate
JUSTIFICATION	<p>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 significantly impact on business operations. Due to the remoteness of the infrastructure, they will unlikely cause issues that will impact on surrounding people or property.</p> <p>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:</p> <ul style="list-style-type: none"> Smoke detection and fire suppression system. Monitoring systems that detect faults. Electrical system manufactured, installed and maintained in accordance with the relevant standards. <p>The consequence of a fire within a BESS has been assessed as likely only impacting on the Unit where the fire originated. It is unlikely for a fire to spread to other Units.</p>
RISK RATING	Moderate
STRATEGY TO LOWER RISK	<p>The requirements outlined within the response to the CFA Guideline will be sufficient to ensure risk is negligible. Other requirements that will further reduce the risk include:</p> <ul style="list-style-type: none"> Development of an EMP that includes in addition to that required by CFA and AS3745: <ul style="list-style-type: none"> 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.

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	<ul style="list-style-type: none"> • Cooling systems that maintain the temperature of the battery packs during day-to-day operations. • Safety systems that send alerts to the monitoring centre if a sensor is activated. • Barriers between each of the battery module bays within each BESS designed to reduce the possibility of thermal runaway from spreading to adjoining battery units. • Separation distances between individual turbines or battery packs and other infrastructure in accordance with CFA and manufacturer installation guidelines. • The BESS will be installed by qualified and competent people in accordance with the manufacturer’s specifications to relevant Australian Standards and including compliance with UL9540A – Energy Storage System Requirements.
RESIDUAL RISK	Low (Likelihood: Rare and Consequence: Minor)

Table 14 - Risk assessment - Fire causing spread to adjoining infrastructure on the property

HAZARD	Fire spreading to adjoining infrastructure on the property
CAUSE	A fire that starts within the wind energy facility may spread to adjoining infrastructure. A fire that has started within a component with the BESS may spread to adjoining infrastructure.
LIKELIHOOD	Rare
JUSTIFICATION	<p>A fire that starts within a wind turbine 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.</p> <p>The risk of fire spreading to adjoining infrastructure within the BESS and to adjoining infrastructure with the wind energy facility is rare due to the design of the components within the BESS, and the mitigation features incorporated into the design.</p>
CONSEQUENCE	Minor
JUSTIFICATION	<p>The consequence of a fire affecting adjoining areas of the Project is likely to be minor due to the provision of fire breaks around the base of the turbine towers, surrounding the BESS, terminal station and operations and maintenance area.</p> <p>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.</p>
RISK RATING	Low

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STRATEGY TO LOWER RISK	<p>Due to the low rating, no additional strategies are required to be implemented beyond compliance with the CFA Guideline as outlined in Section 4. These strategies include:</p> <ul style="list-style-type: none"> • Development of an EMP • Development of a FMP that outlines the required performance and maintenance of all fire mitigation and management initiatives. • Provision of access tracks and fire breaks around the wind energy facility and BESS. • 24/7 monitoring of the system that will alert operators to any faults or events that may lead to a fire. This will result in immediate shut down of the system. • Provision of vegetation management programs. • Provision of static water at strategic locations around the site for fire fighting
RESIDUAL RISK	Low

Table 15 - Risk assessment - Fire causing offsite impacts.

HAZARD	Fire causing offsite impacts
CAUSE	Any fire within the wind energy facility and BESS may 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	Rare
JUSTIFICATION	<p>The compliance with CFA Guideline requires a range of mitigation strategies implemented including:</p> <ul style="list-style-type: none"> • Provision of a fire break surrounding the wind energy facility and BESS infrastructure. • Static water supplies for firefighting purposes are scattered through the Project Area and at the BESS. • 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	<p>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, BESS, terminal station and operations and maintenance area will reduce the potential for a fire to leave the infrastructure.</p> <p>Under elevated fire danger conditions there is the potential for a fire that is caused by site operations to leave the site. This fire would have started outside</p>

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	<p>the vegetation managed areas. Depending on the level of vegetation management in the surrounding landscape, the fire could spread and become uncontrollable quickly. This fire will be influenced by the various existing fire management activities including roadside vegetation management, personal property preparation, firefighting appliances and equipment and activities undertaken by agencies responsible for fire management. The consequence of this type of fire would be the same as a fire caused by other practices in the surrounding landscape.</p> <p>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.</p>
RISK RATING	Low
STRATEGY TO LOWER RISK	<p>The Project EMP will include a procedure for contacting the Municipal Fire Prevention Officer (MFPO) if the vegetation on adjoining properties is unmanaged and becomes a fire risk. The MFPO may, following an assessment, issue a Notice requiring the vegetation to be managed.</p> <p>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 breaks and other critical areas.</p>
RESIDUAL RISK	Low

Table 16 - Risk assessment - Offsite fire impacting on the site

HAZARD	Offsite fire impacting on the site
CAUSE	A bushfire burning through the surrounding landscape can occur and threaten the infrastructure by potentially starting new fires.
LIKELIHOOD	Unlikely
JUSTIFICATION	<p>The Clause 13.02 assessment has identified the surrounding landscape as having the potential for supporting a bushfire. It also identifies major fires that have occurred in the surrounding landscape.</p> <p>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.</p> <p>The provision of a firebreak and other managed areas will limit the ability for a bushfire to impact on the property.</p>
CONSEQUENCE	Minor
JUSTIFICATION	Due to the separation between the wind turbines and other infrastructure, the separation surrounding the BESS, the likelihood of the Project Area being impacted by a bushfire is reduced. The provision of fire breaks around the base of

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	the towers, BESS area and other infrastructure will ensure a bushfire can't directly impact on the structure.
RISK RATING	Low
STRATEGY TO LOWER RISK	<p>Prior to construction commencing, an EMP 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.</p> <p>The Project is monitored through a SCADA system that will enable remote operation in the event that the site needs to be closed to personnel.</p>
RESIDUAL RISK	Low

Table 17 - Risk assessment – Dangerous goods

HAZARD	Dangerous Goods not stored safely resulting in health impacts
CAUSE	<p>With reference to the Dangerous Goods (Storage and Handling) Regulations 2012, there are quantities of Dangerous Goods at the Site within various components of the Project. There is the potential for a leak of Dangerous Goods to occur that may cause a threat to people, the environment or be involved in a fire.</p>
LIKELIHOOD	Unlikely
JUSTIFICATION	<p>There will be dangerous goods associated with the BESS and the associated infrastructure. The quantities of dangerous goods will depend on the chosen supplier of the battery packs and other the types of other equipment including transformers. As a minimum the following dangerous goods will be present:</p> <ul style="list-style-type: none"> • Lithium ion • Refrigerant <p>Both products are contained within the battery packs and have their own bunding, and sensors and an alert system that will send a message to the operator if a leak is occurring.</p> <p>The dangerous goods are installed within the infrastructure during the manufacturing process. This means that Dangerous Goods are contained and sealed and not readily accessible at the site.</p> <p>Following transportation to the Site, any infrastructure with Dangerous Goods will be inspected to ensure it has not been damaged during transportation. If infrastructure with dangerous goods is to be stored at Site prior to installation, it will be stored in line with manufacturer's specifications. Infrastructure will be installed in line with the manufacturer's specifications (including inspection and testing). Together, these measures will prevent the likelihood of leaks outside the infrastructure footprint.</p> <p>The manufacturers installation specifications include the protection of the battery pack to ensure that no damage occurs during installation.</p>

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	The design of the BESS including the installation of bollards at high risk locations will prevent vehicles from impacting the infrastructure and potentially causing a leak.
CONSEQUENCE	Minor
JUSTIFICATION	The assessment of the dangerous goods quantities at the BESS will be confirmed following the selection of the chosen technology and will comply with the requirements of the Dangerous Goods legislation.
RISK RATING	Low
STRATEGY TO LOWER RISK	In accordance with the Dangerous Goods (Storage and Handling) Regulations (2012), the fire brigade's views must be sought if the quantities have exceeded the fire protection amounts listed in Schedule 2 as will be likely be the case for the Lithium-Ion and the insulating gas. The EMP will include details of the hazards associated with dangerous goods and appropriate procedures in response to this RMP, including leak management and other response arrangements to Dangerous Goods related emergencies.
RESIDUAL RISK	Low

Table 18 - Risk assessment - Fire water runoff

HAZARD	Fire water runoff causing pollution or contamination of the surrounding areas.
CAUSE	In the event of a fire involving the BESS, firefighters will respond and use water to either extinguish or cool the surrounding area until the infrastructure is deemed safe. The CFA Guideline outlines the need to provide capacity for the management of fire water runoff for the BESS to ensure this water does not enter the environment.
LIKELIHOOD	Unlikely
JUSTIFICATION	The risk of a fire within the BESS that would result in fire water runoff is unlikely due to the design of its components, particularly the battery packs and the mitigation features incorporated into its design. This includes: <ul style="list-style-type: none"> • Quality components will be selected for the Project. Most of the infrastructure that supports the BESS is non-combustible or has low quantities of combustible materials. • The battery packs are contained within an enclosure and have several features incorporated within the design that limits the potential for fire spread between components. • The separation between the battery packs and supporting infrastructure (transformers) is in accordance with manufacturer specifications.

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	<ul style="list-style-type: none"> Battery packs will be installed on a non-combustible area that will prevent fire spreading along the ground. <p>Due to the design features incorporated into the BESS the likelihood of a fire occurring at the BESS is low. As such, the likelihood of requiring fire water to extinguish a fire at the BESS is also low.</p> <p>If a fire did occur, the fire brigade response will be influenced by the creation of an EMP that outlines how the site will respond to the emergency.</p> <p>Likelihood is low because the Project will comply with the CFA Guideline and design will incorporate fire water run off capable of storing the maximum amount of water that might be used in firefighting activities.</p>
CONSEQUENCE	Minor
JUSTIFICATION	The BESS area will be designed to enable the collection of fire water in the event of a fire. A basin will be constructed where water will flow to and enable testing to then determine the most appropriate disposal method. The basin will ensure that the water is flowing away from firefighters and site staff to enable them to continue to monitor and undertake suppression activities if required.
RISK RATING	Low
STRATEGY TO LOWER RISK	The EMP will provide procedures to manage fire water runoff on the site and provide contact details for organisations that can undertake testing and disposal if required.
RESIDUAL RISK	Low

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Table 19 - Risk assessment – Staff and responding firefighters

HAZARD	Injury to staff and responding 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	<p>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.</p> <p>There is the potential for firefighting aircraft to operate with reduced performance due to the introduction of the wind energy facility.</p> <p>The CFA Guideline does impose a variety of controls onto the management of the site through the EMP and how CFA interacts with the site if they are called to a fire. The CFA Guideline also specifies obligations to be implemented to ensure firefighting aircraft can operate safely.</p>
CONSEQUENCE	Moderate

JUSTIFICATION	<p>The provision of an Emergency Information Container that will include the EMP, site plans and contact details for technical specialists will ensure responding firefighters seek information prior to entering the property.</p> <p>The wind energy facility has been designed to ensure that the towers are separated by at least 300 metres and they and the weather masts are fitted with CASA compliant lights. The use of firefighting aircraft around wind turbines is not new and has been practiced on a number of occasions in the past.</p> <p>The local CFA brigades will be provided the opportunity to tour the facility regularly.</p> <p>Regular reviews of the FMP and EMP will occur.</p>
RISK RATING	High
STRATEGY TO LOWER RISK	<p>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.</p> <p>Any faults that are sent to the monitoring centre will be assessed and a technician deployed to make an initial assessment.</p> <p>The wind turbines and weather masts will be fitted with CASA compliant lighting.</p> <p>The EMP 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.</p> <p>The Emergency Information Container that is required by the CFA Guideline will provide detailed contact information for responding firefighters to seek specialist advice prior to accessing the property.</p> <p>Site management will undertake regular reviews of emergency management arrangements as outlined within the FMP.</p>
RESIDUAL RISK	Medium

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4.6 Cumulative impact assessment

It is acknowledged that there are other wind farms and other renewable energy projects within the surrounding landscape. The Bulgana Wind Farm is located to the south of this development with part of the wind farm within the Project Area. Consideration of the potential cumulative effects of multiple wind farms in the surrounding landscape has not identified any issues that require assessment.

The matters considered included use of firefighting aircraft, firefighting strategies and bushfire ignition risk and spread. It was determined that due to the existing separation it was unlikely for a bushfire to impact on multiple wind farms at the same time. If this did occur, the geographical separation would not cause any cumulative effects.

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5 Conclusion

The assessment of risk for the proposed Watta Wella Renewable Energy Project has identified that this Project can occur safely providing the requirements outlined within this RMP are implemented.

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

The assessment of fire history in relation to wind energy facilities and BESS infrastructure identifies limited examples of where these renewable energy projects and systems have caused fires. There is no doubt that a wind turbine and BESS unit 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 Project by the CFA Guideline and this RMP will strengthen the management of fire risk such as reducing the fuel load in proximity to infrastructure and providing increased fire breaks and access for fire fighting vehicles. In addition to this, following the issue of a planning permit, the development of a FMP and EMP that meets the requirements of the CFA Guideline will assist with managing the risk of fire.

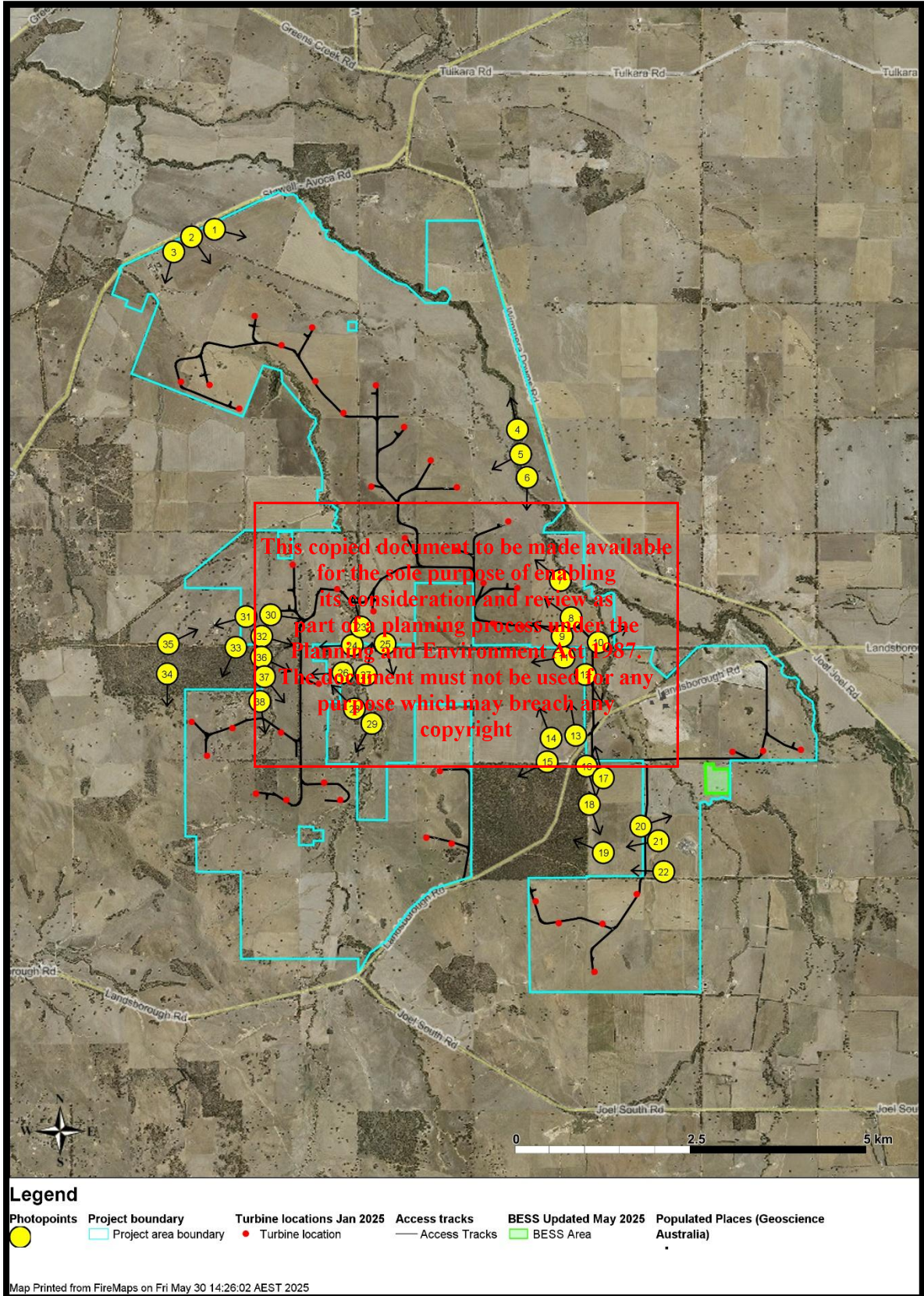
The results of this assessment should provide confidence that the operator of the wind energy facility and BESS will introduce systems, procedures and maintenance programs to ensure fire risk is managed.

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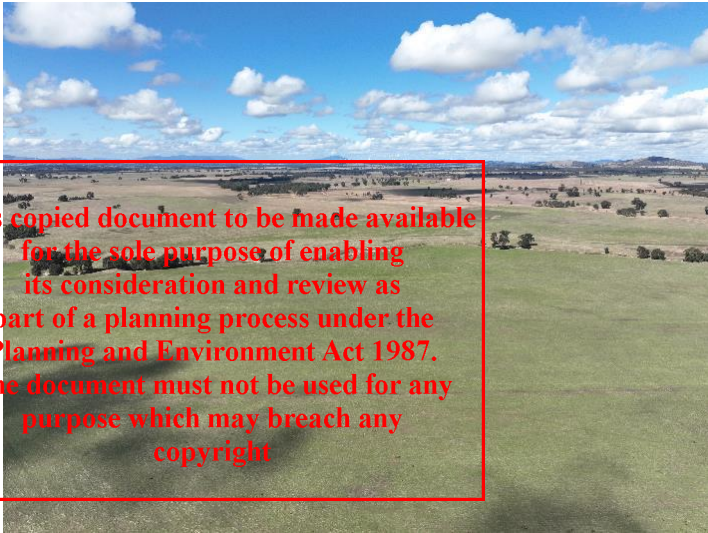

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Appendix A – Site photos




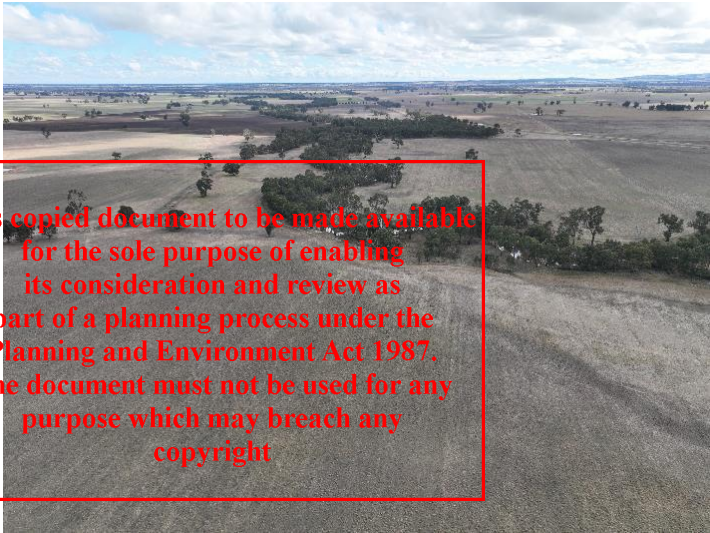

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<p>1. Looking towards Potter Road from Stawell - Avoca Road.</p>	 An aerial photograph showing a long, straight dirt road that runs through a vast, open rural landscape. The terrain is a mix of green grass and dry, brownish-yellow patches. In the distance, there are scattered trees and a low horizon line under a bright blue sky with scattered white clouds.
<p>2. Typical landscape near Stawell – Avoca Road and Whitehall Road.</p>	 An aerial photograph of a typical rural landscape. The view shows a wide expanse of green fields and scattered trees. In the background, there are rolling hills and a clear blue sky with white clouds. A red rectangular text box is overlaid on the center of the image. <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>3. Looking south from Stawell – Avoca Road.</p>	 An aerial photograph looking south from Stawell. The landscape is a mix of green and brown fields, with a few trees scattered across the terrain. The horizon is visible in the distance under a blue sky with white clouds.


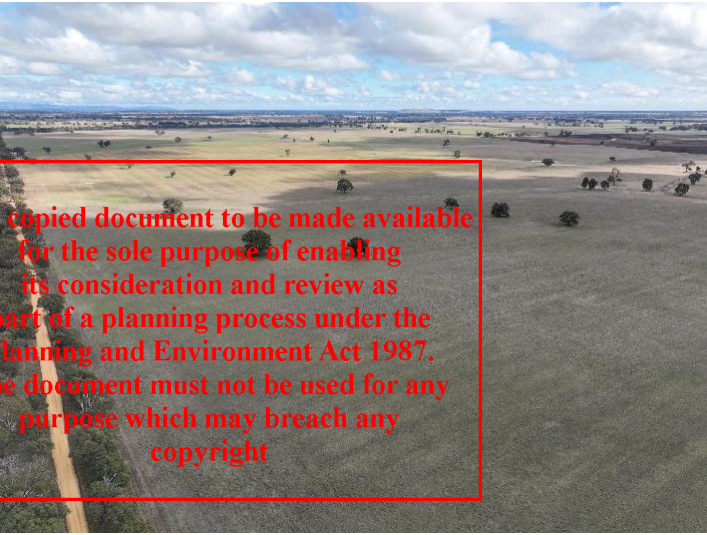

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<p>4.</p> <p>Looking north along the Wimmera River. The vegetation is a narrow strip along the river edge and is surrounded by farming properties.</p>	
<p>5.</p> <p>Typical farming activities to the west of the Wimmera River.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>6.</p> <p>Looking south along the Wimmera River. There is considerable variation in the farming practices that increases the vegetation fragmentation.</p>	




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<p>7. Looking north west along the Wimmera River.</p>	
<p>8. Photo showing the type of landscape where the WTGs will be installed.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>9. Photo showing the type of landscape where the WTGs will be installed.</p>	




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<p>10. Typical roadways within the Project footprint.</p>	
<p>11. Looking westerly along Vineyard Road.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>12. Looking south along Vineyard Road.</p>	




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<p>13. Looking north from near Landsborough Road.</p>	
<p>14. Looking north from near Landsborough Road.</p>	 <p data-bbox="523 949 1066 1285">This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright.</p>
<p>15. Looking south from the north of the Joel Joel Nature Conservation reserve. Landsborough Road can be seen within the native vegetation.</p>	




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<p>16.</p> <p>Looking south along the eastern side of the Joel Joel Nature Conservation Reserve.</p>	
<p>17.</p> <p>Looking north towards Landsborough Road. The site for the BESS is approximately to the right of the photo.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>18.</p> <p>Looking south along the eastern side of the Joel Joel Nature Conservation Reserve.</p>	


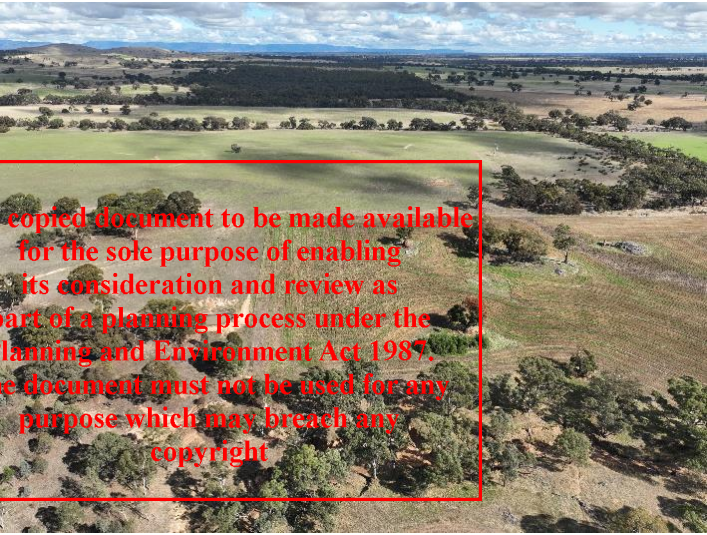

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<p>19. Looking towards the Joel Joel Nature Conservation Reserve.</p>	
<p>20. Existing Bulgana Terminal Station and BESS units located to the east of the Joel Joel Nature Conservation Reserve.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>21. Looking towards the Joel Joel Nature Conservation Reserve.</p>	


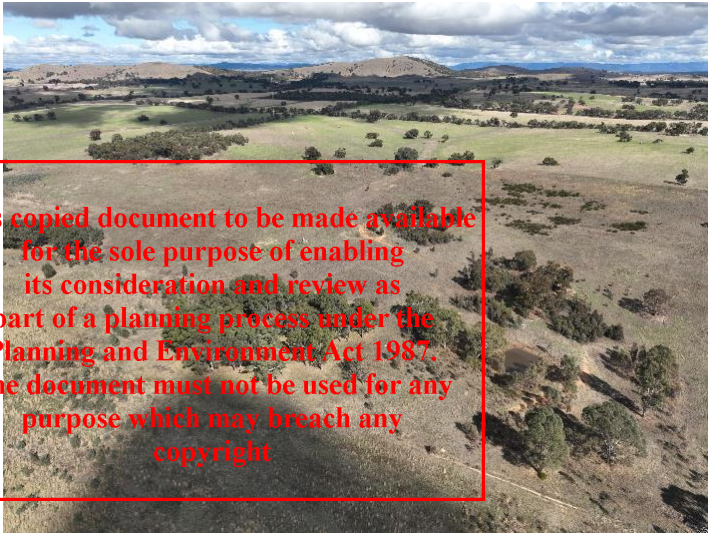

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<p>22.</p> <p>Looking towards the southern edge of Joel Joel Nature Conservation Reserve.</p>	 An aerial photograph showing a dirt road on the left side, leading to a small pond. The landscape is a mix of green grass and brownish-grey soil, with a line of trees in the distance under a blue sky with scattered clouds.
<p>23.</p> <p>Typical landscape near the intersection of Potter Road and Vineyard Road.</p>	 An aerial photograph showing a dirt road running through a landscape of green fields and brownish-grey soil. A line of trees is visible in the middle ground. A red box is overlaid on the image containing text. <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>24.</p> <p>Looking east along Vineyard Road.</p>	 An aerial photograph showing a dirt road running through a landscape of green fields and brownish-grey soil. A line of trees is visible in the middle ground.




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<p>25. Looking south from Vineyard Road.</p>	
<p>26. Looking west towards a WTG site within the paddock area.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>27. Typical landscape arrangement to the south of the Potter Road and Vineyard Road.</p>	


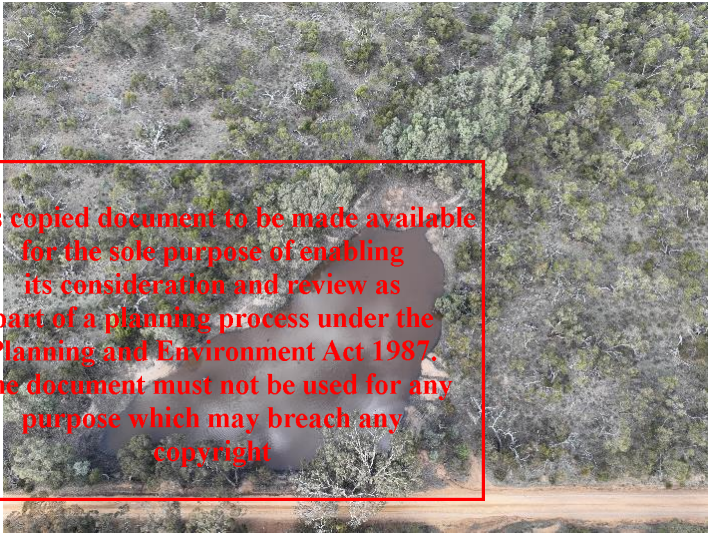

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<p>28. Typical landscape to the south of Vineyard Road.</p>	
<p>29. Looking towards the proposed WTG locations (T9, T12, T11).</p>	
<p>30. Looking towards the location of WTG T25.</p>	

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<p>31. Looking along Vineyard Road towards Watta Wella Road.</p>	
<p>32. Typical vegetation to the south of Vineyard Road.</p>	 <p data-bbox="523 952 1066 1288">This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>33. Typical vegetation to the south of Vineyard Road.</p>	

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<p>34. Typical landscape along Vineyard Road near Watta Wella Road.</p>	
<p>35. Existing dam within the Watta Wella I18 Bushland Reserve.</p>	 <p>This copied document to be made available for the sole purpose of enabling its consideration and review as part of a planning process under the Planning and Environment Act 1987. The document must not be used for any purpose which may breach any copyright</p>
<p>36 Typical landscape to the south of Vineyard Road.</p>	

37.

Looking south along a creek to the south of Vineyard Road.



38.

Looking south along a creek to the south of Vineyard Road.



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