BUSHFIRE PLANNING AUSTRALIA

BUSHFIRE ASSESSMENT REPORT

Pottinger Wind Farm

Prepared for RPS AAP Consulting Pty Ltd

Bushfire Planning Australia

Stuart Greville
Accredited Bushfire Practitioner
BPAD-26202
✆ 0400 917 792
✉ stuart@bfpa.com.au
BPA Reference: 2365 Pottinger Wind

Prepared for RPS AAP Consulting Pty Ltd on behalf of Pottinger Renewables Pty Ltd
Attention: Dianne Munro
✉ Dianne.Munro@rpsgroup.com.au

Disclaimer and Limitation

This report is prepared solely for RPS AAP Consulting Pty Ltd on behalf of Pottinger Renewables Pty Ltd (the 'Applicant') for the specific purposes of only for which it is supplied (the 'Purpose'). This report is not for the benefit of any other person; either directly or indirectly and is strictly limited to the purpose and the facts and matters stated in it and will not be used for any other application.

This report is based on the Project Area conditions surveyed at the time the document was prepared. The assessment of the bushfire threat made in this report is made in good faith based on the information available to Bushfire Planning Australia at the time.

The recommendations contained in this report are considered to be minimum standards and they do not guarantee that a building or assets will not be damaged in a bushfire. In the making of these comments and recommendations it should be understood that the focus of this document is to minimise the threat and impact of a bushfire.

Finally, the implementation of the adopted measures and recommendations within this report will contribute to the amelioration of the potential impact of any bushfire upon the development, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

Document Status: 2365 - Pottinger Wind Farm

Version	Status	Purpose	Author	Review Date
1	Draft	Draft for review	Katrina Greville	20 November 2023
2	Draft	Draft for Applicant review	Stuart Greville	8 December 2023
3	Draft	Draft for submission	Stuart Greville	12 December 2023
4	Draft	Update to include client comments	Stuart Greville	16 January 2024
5	Final	Update to include client comments	Stuart Greville	28 March 2024

BPAD Certification

As the author of this Bushfire Assessment Report (BAR), I certify this BAR provides the detailed information required by the NSW Rural Fire Service under Clause 45 of the Rural Fires Regulation 2022 and Appendix 2 of Planning for Bushfire Protection 2019 (PBP 2019) in accordance with the requirements of section 4.14 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

BPAD Bushfire Planning & Design Accredited Practitioner Level 2

Stuart Greville

Accredited Bushfire Practitioner
BPAD-26202

Date: 28 March 2024

In signing the above, I declare the report is true and accurate to the best of my knowledge at the time of issue.

Executive Summary

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire impact assessment of the Pottinger Wind Farm for Pottinger Renewables Pty Ltd (the Applicant).

The Project includes the construction, operation and decommissioning of a wind farm and associated infrastructure with a targeted electricity generation capacity of 1.3 GW. The Project Area covers 26,400 ha as shown on **Figure 1**. It is located 60 km south of Hay in the rural locality of Booroorban in south-western NSW, entirely within the South West Renewable Energy Zone (REZ).

This bushfire hazard assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) relating to bushfire risks and outlines appropriate bushfire protection measures to be implemented during construction and operation of the Project.

The National Construction Code (NCC) does not provide for any *bushfire* specific performance requirements for the Project; being a development that will facilitate the construction of non-habitable buildings. The general fire safety construction provisions of the NCC are taken as acceptable solutions in this instance.

Planning for Bushfire Protection (PBP 2019) refers to the Project as 'Other development'. Given the unique features of these developments, compliance with PBP is strongly focused in satisfying the aims and objectives of PBP 2019.

A bushfire hazard assessment has found that the Project Area was exposed to a low bushfire hazard potential. The vegetation within and surrounding the Project Area is predominantly used for grazing across a mixture of derived grasslands and pastures. The isolated areas of woodland vegetation formation as described in the NSW Rural Fire Service document Planning for Bushfire Protection 2019 (PBP 2019) present the greatest bushfire hazard; albeit this type of vegetation is only found in small areas throughout the Project Area (**Figure 7**).

The following recommendations when implemented will reduce the impact of a bushfire to an acceptable level for the proposed industrial (non-habitable) buildings and demonstrate the Project is able to comply with PBP 2019:

1. A minimum 10m Asset Protection Zone (APZ) around wind farm infrastructure; including Wind Turbine Generator (WTG) Project Area, substations, office, shall be provided and be managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
2. To allow for emergency services personnel to undertake property protection activities, a 10m defendable space (APZ) that permits unobstructed vehicle access is to be provided around the perimeter of the Project Area compounds and maintenance yards;
3. Property access roads are to be constructed in accordance with Table 5.3b and Chapter 7.4a of PBP 2019;
4. One (1) x 20,000 litre static water tank shall be located adjacent to the each of the four (4) site entrance roads (i.e. Four (4) water storage tanks in total);
5. A water storage tank with a capacity of at least 45,000 litres shall be provided at each construction office/ maintenance compound (unless already provided for the Pottinger Solar Farm Project) and located within the required APZ. The water storage tanks shall be located adjacent to an internal access road and directly accessible by firefighting vehicles;
6. Consideration should be given to landscaping and fuel loads within the Project Area to decrease potential fire hazards;
7. All hazardous materials shall be stored in a secure enclosure to ensure these items do not contribute to a bushfire event;

8. A Fire Management Plan shall be prepared in consultation with the NSW RFS Hay Fire Control Centre (or relevant regulator), prior to the commencement of construction and in accordance with the Conditions of Approval; and
9. The operators of the facility shall prepare a Bushfire Emergency Management and Operations Plan and identify an area of the Project Area that can be used for refuge in the event of a bushfire.

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the Project Area, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

This assessment has been made based on the bushfire hazards observed in and around the Project Area at the time of inspection and production (March 2024).

Table of Contents

Figures

Tables

Plates

Terms and Abbreviations

Abbreviation	Meaning
Applicant	Pottinger Renewables Pty Ltd
Application	Application for Development Consent under Part 4.7 of the EP&A Act and the Determination under Part 9 of the EPBC Act
APZ	Asset Protection Zone
Associated Dwelling	Habitable dwelling which does have an agreement with the Project
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BAR	Bushfire Assessment Report
BAL	Bushfire Attack Level
BCA	Building Code of Australia
BESS	Battery Energy Storage System
BEMOP	Bushfire Emergency Management and Operations Plan
BFPL	Bush Fire Prone Land
BFPLM	Bush Fire Prone Land Map
BFRMP	Bush Fire Risk Management Plan
BLMP	Biodiversity and Land Management Plan
BMP	Bush Fire Management Plan
BMZ	Bushfire Management Zones
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPM	Bush Fire Protection Measures
Disturbance Footprint	Direct maximum Project-related disturbance in hectares. Largely within the Survey Area except where detailed in Section 3 of the EIS.
DoE	Commonwealth Department of the Environment
DPI Water	NSW Department of Primary Industries – Water
Due Diligence	Environmental assessment process by which minor Project components may be located within the Project Area but external to the Survey Area as stipulated in Section 3 of the EIS during the detailed design (post-approval) phase
EP&A Act	NSW Environmental Planning and Assessment Act 1979
FCC	Fire Control Centre
FDI	Fire Danger Index
FSS	Fire Safety Study
ha	hectare
IPA	Inner Protection Area
LGA	Local Government Area
NCC	National Construction Code
Non-associate dwelling	Habitable dwelling which does not have an Agreement with the Project
Non-associate dwelling (associated other Project)	Habitable dwelling which does not have an Agreement with the Project, however, does have an Agreement with another Project
OPA	Outer Protection Area
OEH	NSW Office of Environment and Heritage
PBP or PBP (2019)	Planning for Bushfire Protection 2019
Pottinger Energy Park	Combination of the Wind Farm and Solar Farm projects for which separate Applications are being made
Project	The wind farm as described in **Section 3** of the EIS to which this Application applies

Project Area	Red boundary shown on key figures to which the Application applies (unless otherwise stipulated
Receiver	Assessment location
RF Act	Rural Fires Act 1997
RF Regulation	Rural Fires Regulation
RFS	NSW Rural Fire Service
SEARs	Secretary's Environmental Assessment Requirements
Subject Site	The summation of all lots included for the Project
Survey Area	Area surveyed within the Project Area within which detailed assessment has been consistently undertaken for all field studies. The Project components may be moved and/ or micro sited within this boundary during detailed design
WTG	Wind Turbine Generators

1. Introduction

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire impact assessment of the Pottinger Wind Farm for Pottinger Renewables Pty Ltd (the Applicant).

The Project includes the construction, operation and decommissioning of a wind farm and associated infrastructure with a targeted electricity generation capacity of 1.3 GW. The Project Area covers 26,400 ha as shown on **Figure 1**. It is located 60 km south of Hay in the rural locality of Booroorban in south-western NSW, entirely within the South West Renewable Energy Zone (REZ).

The impacts and proposed mitigation for bushfires from the proposed construction, operation and decommissioning phases of the Project are addressed in this report in accordance with relevant regulatory requirements and guidelines (this assessment).

Section 8.3 of PBP 2019 refers to any type of development that are not residential/ rural residential subdivisions, SFPPs or residential infill development as 'Other development'. The proposed industrial development seeks consent for the construction of several non-habitable buildings on the Project Area in addition to the BESS.

The National Construction Code (NCC) does not provide for any bush fire specific performance requirements for other development, such as the proposed industrial development. The general fire safety construction provisions of the NCC are taken as acceptable solutions in this instance.

Nevertheless, in order to demonstrate the proposed development is able to satisfy the aims and objectives of PBP 2019, this Bushfire Assessment Report (BAR) was completed to determine the bushfire hazard that has the potential to threaten the proposed development. Based on this assessment, a series of bushfire protection measures that will provide for an increased level of protection on property and life from the threat of bushfire have been recommended; thereby satisfying the aims and objectives of PBP 2019.

This report supports a State Significant Development (SSD) Development Consent application under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) (SSD-59235464), as an appendix to the Environmental Impact Statement (EIS) for the Project.

1.1. Purpose of this report

This BAR has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) (SSD-59235464). The SEARs relevant to this BAR are detailed in **Table 1**.

The BAR has been prepared in accordance with the Submission requirements detailed in Appendix A2.1 of PBP 2019.

Table 1: SEARs - Bushfire Risk Assessment

SEARS	Section addressed in this report
❑ Hazards & Risks - including: ▪ Identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a wind farm would cause bush fire and demonstrate compliance with *Planning for Bush Fire Protection 2019*.	Section 3 of this report contains a Bushfire Hazard Assessment. Section 4 demonstrates the proposed Wind Farm is able to satisfy the Aims and Objectives of PBP 2019.

Table 2: Community Engagement Issues and Where Addressed

Aspect Area	Detail	Section addressed in this report
❑ Nil issues		

2. Project Area Description

2.1. Overview

The Project spans across multiple lots known as the Project Area and is required to be assessed and considered in its entirety as part of this bushfire hazard assessment.

Table 3: Project Area Details

Address	West Burrabogie Road, Booroorban & Jerilderie Road, Hay South
LGA	Hay Shire Council
Project Area	Approximately 26,400 hectares
Land Use Zone	RU1 Primary Production
Context	It is located 60 km south of Hay in the rural locality of Booroorban in south-western NSW, entirely within the South West Renewable Energy Zone (REZ). The Project Area is located south of West Burrabogie Road and east of Willurah Road and spans across multiple lots, noting some lots are shared between the proposed Pottinger Wind Farm and Pottinger Solar Farm. The Project Area contains multiple dams and there is evidence of historical and current grazing and cropping. This extends and surrounds the Project Area.
Topography	Undulating terrain with elevation at the Project Area ranging from 85-108m AHD. Overall the Project Area is flat.
Fire Danger Index	The Project Area lies within a local government area with a Fire Danger Index (FDI) rating of 80.

Project: Pottinger Wind Farm
Job No: 2365b

Figure 1

Site Location

BUSHFIRE PLANNING AUSTRALIA

Project Area (Pottinger Wind Project)

100m Buffer

140m Buffer

Pottinger Solar Project Boundary

SOURCE:
Cadastral Boundary: ACT Government 2023
Basemap: NSW Department of Customer Service 2022

N
W E
S

0 1 2 3 4 5
Kilometers

A3 Scale: 1:100,000

File:2365b-PottingerWindFarm-Fig1-SiteLocation-231211 Date: 11/12/2023

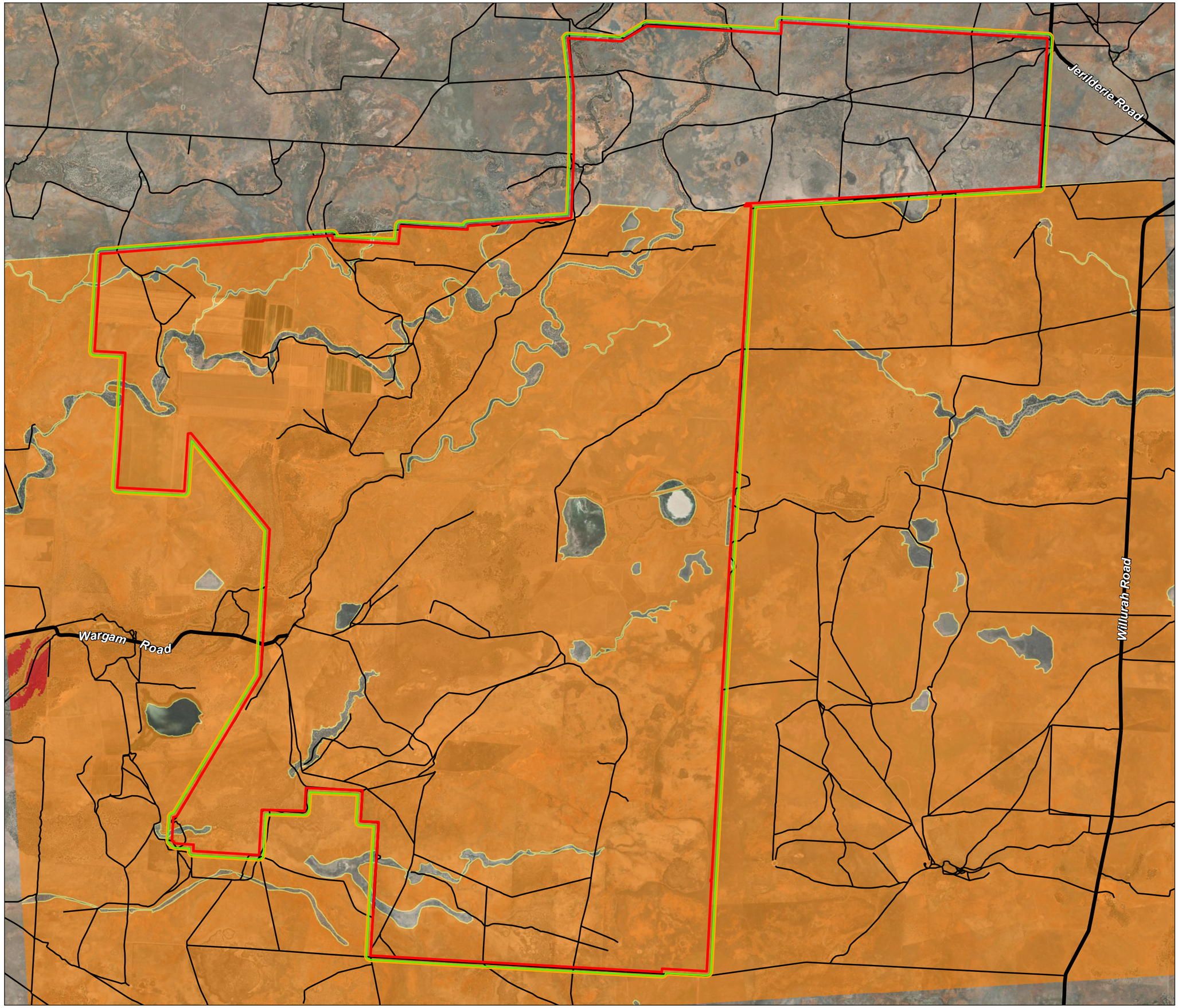
GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management

2.2. Bushfire Prone Land

Bushfire activity is prevalent in landscapes that carry fuel and the two predominant bushfire types are grassland and forest fires. Factors such as topographic characteristics and quantity of fuel loads influence the intensity and spread of fire. The scale of a bushfire hazard is tailored to the characteristics of the hazard, the size and characteristics of the affected population, types of land use exposed to bushfire, predicted development growth pressures and other factors affecting bushfire risk.

Figure 2 demonstrates majority of the Project Area is identified as bushfire prone land being Vegetation Category 3. This is identified as the primary bushfire hazard. Similarly, within and beyond 140m south of the Project Area Vegetation Category 3 bushfire prone land exists.

Isolated Vegetation Buffer bushfire prone land throughout the mid-section of the Project Area also exists along the dried river beds whilst the northern portion of the Project Area and beyond has not yet been mapped.



Project: Pottinger Wind Farm
Job No: 2365b

Figure 2

NSW Bush Fire Prone Land

BUSHFIRE PLANNING AUSTRALIA

Project Area
(Pottinger Wind Project)

140m Buffer

100m Buffer

Bushfire Prone Land

Vegetation Category 1

Vegetation Category 3

Buffer

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2023
Aerial photo: Maxar 2021
Bush Fire Prone Land: © State Government of NSW and NSW Rural Fire Service 2023

N
W E
S

0 1 2 3 4
Kilometers

A3 Scale: 1:85,000

File:2365b-PottingerWindFarm-Fig2-BFPA-231231 Date: 31/12/2023

ABN 47 606 360 115
GEOVIEW MAPPING & GIS
Web: www.geoview.com.au
Email: info@geoview.com.au
Office: (02) 6685 5554
Mobile: 0409 481147
Address: 318 Jacaranda Dr Byron Bay NSW Australia 2481
GIS & mapping solutions for infrastructure, town planning & environmental management

2.3. Bush Fire Risk Management Plan

The New South Wales *Rural Fires Act 1997* (RF Act) requires each bushfire management committee to prepare a Bush Fire Risk Management Plan (BFRMP) for a nominated area; commonly defined by local government area boundaries. A BFRMP is a strategic document that identifies community assets at risk across a fire district and sets out coordinated treatment measures to reduce the risk of bushfire to the assets.

BFRMPs are often not site specific, and individual sites or development do not have a statutory obligation to prepare a BFRMP, however it is often recommended as part of preparedness, a BFRMP is completed.

2.3.1. Murrumbidgee Irrigation Area Bush Fire Risk Management Plan

2.3.1.1. Climate & Bushfire Season

The Murrumbidgee Irrigation Area (MIA) Bush Fire Management Committee developed the Murrumbidgee Irrigation Area Bush Fire Risk Management Plan (MIABFRMP) which was approved on 26 August 2006. The Murrumbidgee Irrigation Area includes local government areas of Hay, Griffith, Leeton, Murrumbidgee and Narrandera.

The Hay region experiences hot dry summers with low rainfall levels. The Murrumbidgee Irrigation Area Bush Fire Management Committee has varied the local Bush Fire Danger Period, declaring that the ordinary start date of the Bushfire Danger Period for the MIA region is 1 November, and the standard end date is 31 March. These dates may be adjusted according to seasonal conditions.

Typical days of extreme fire danger occur with periods of dry north westerly winds, bringing maximum temperatures to the vicinity of 43 degrees celsius. Usually these days occur around January and February. The mean maximum temperature for the region is 33 degrees celsius occurring in January.

2.3.1.2. Bushfire History

There have been a number of bushfires recorded within 10km of the Project Area dating back to 1990 varying in size and impact, mostly flat open grassland fires. The largest bushfire occurred in 1990, known as the ‘Hay Plains Fire’, started to the north west of Murrumbidgee Shire on the Sturt Highway and burnt out 120,000 hectares.

2.3.1.3. MIA BFRMP Assets

The MIABFRMP investigated the high risk human settlements and ranked them according to the assessed bushfire risk and the likely consequence of a bushfire attack.

The MIA BFRMC includes a series of treatment actions for each asset and nominates the responsible agencies required to undertake the treatment actions.

The Project Area is not identified in the MIA BFRMP as an asset.

2.4. Project Description

The Applicant seeks in perpetuity approval for the construction, operation and decommissioning of a 1.3 GW wind farm, electrical infrastructure, other infrastructure and ancillary activities generally including the following components:

- Up to 247 Wind Turbine Generators (WTGs) of which each has a tip height of up to 280m and capacity up to 8 MW;
- Electrical reticulation network:
  - Up to six substations and 13 transformers;
    - One BESS 33/330kV substation with three transformers;
    - Internal 33 kV, 66 kV, 132 kV, or 330 kV electrical reticulation network and infrastructure connecting to the 330 kV Project EnergyConnect line via a switchyard and collector station;
  - Approximately 500 MW / 2 gigawatt hours (GWh) Battery Energy Storage (BESS);
- Other temporary and permanent infrastructure including:
  - Operations and Maintenance (O&M) facility and infrastructure including site office, control room, storage facilities, car parking and fencing;
  - Accommodation facilities;
  - Construction and operational compounds;
  - Hardstands for WTGs and other infrastructure;
  - Internal access tracks and road turning head connecting Project infrastructure;
  - Meteorological masts; and
  - Concrete batching plants, crushing facilities, gravel / borrow pits, construction laydown areas;
- Ancillary activities including sourcing of materials and equipment for construction; sourcing of water for construction; subdivision and boundary adjustments, visual screening and associated ancillary works;
- Access road use via four locations and Project-required upgrades:
  - Project Area access: via the Cobb Highway from Jerilderie Road in the north east, from Wargam Road in the west, from East West Road in the south and West Burrabogie Road in the west, as well as emergency access; and
  - Wind farm major components transported via Port Adelaide;
- Operational workforce of up to 50 Full Time Equivalent (FTE) and construction up to 900 FTE;
- Construction generally within standard construction hours and operations 24 hours per day 7 days per week; and
- Preliminary disturbance footprint of up to 1,066 ha.

No external transmission lines or associated easements are currently anticipated for the Project. Some of the Project-associated infrastructure will be shared with the Pottinger Solar Farm (the subject of a separate application) as generally shown within the white dashed boundary on **Figure 3**.

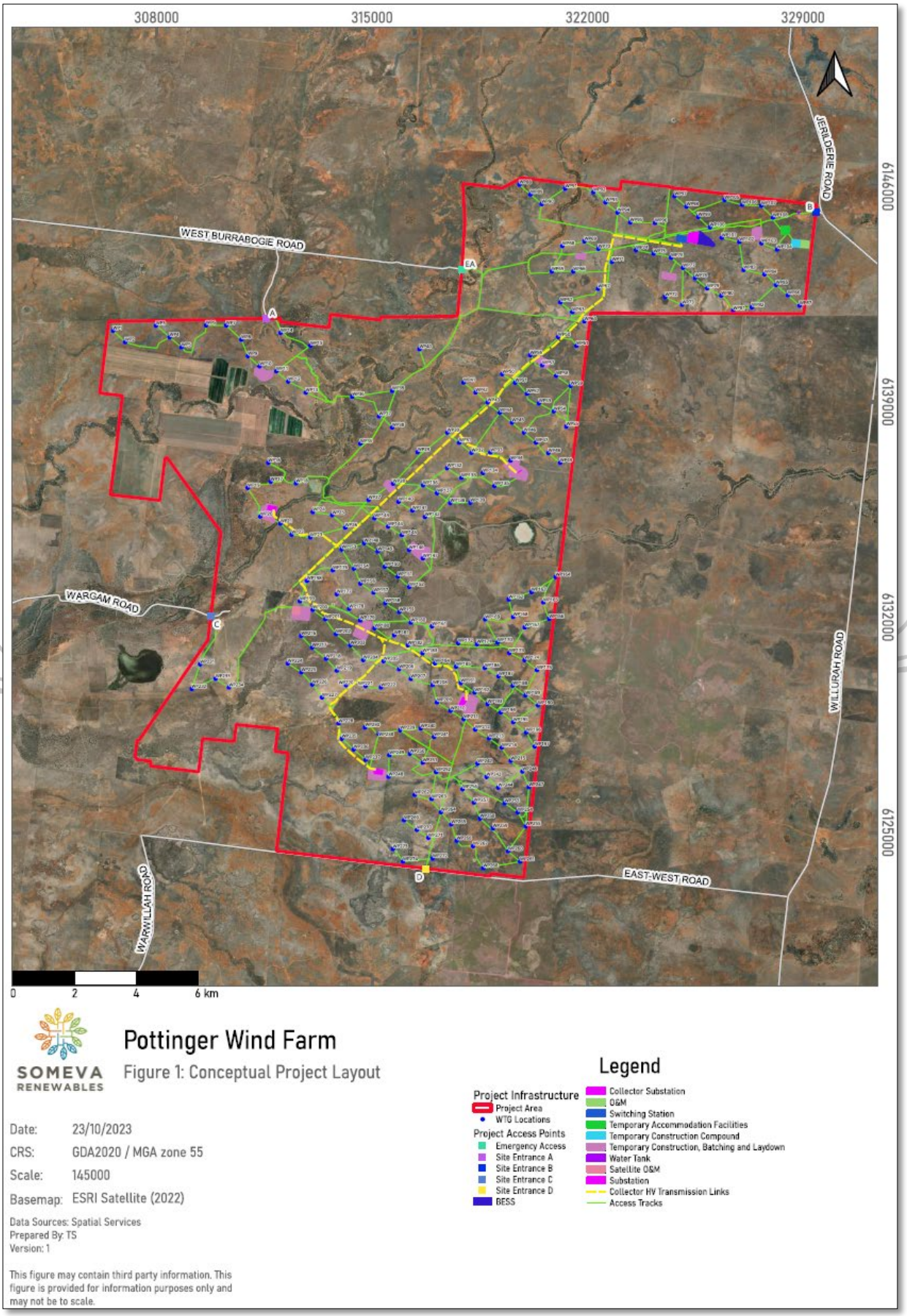


Figure 3: Project Area

2.5. Industrial Development

Section 8.3 of PBP 2019 provides specific advice for developments that are not residential subdivision, special fire protection purposes (SFPPs) or residential infill. The Project is limited to Class 5-8 and 10 buildings of the National Construction Code: Building Code of Australia (NCC). These classes of buildings include factories, warehouses, offices and other industrial facilities. Residential development and habitable buildings are not permissible within the Project Area.

The general aims and objectives of PBP 2019 apply in relation to matters such as access, water and services, emergency planning and landscaping/ vegetation management. However, it is prudent that a suitable package of bushfire protection measures be proposed commensurate with the assessed level of risk of the future development. Accordingly, this BAR will recommend areas cleared of vegetation are maintained at the hazard interface to ensure defendable space is provided for firefighting purposes.

Notwithstanding the available bushfire protection measures outlined in PBP 2019, the NCC does not provide for any bushfire specific performance requirements for industrial (non-habitable buildings) and as such Australian Standard *AS3959-2018 Construction of buildings in bushfire prone areas* (AS3959-2018) does not apply as a set of deemed-to-satisfy provisions. However, the following objectives apply in relation to access, water and services, and emergency and evacuation planning:

- To provide safe access to/from the public road system for firefighters providing property protection during a bush fire and for occupant egress for evacuation;
- To provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development;
- To provide adequate services of water for the protection of buildings during and after the passage of bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building; and
- Consideration of storage and hazardous materials away from the hazard wherever possible.

2.6. Renewable Energy Facilities Design Guidelines

The Victorian Country Fire Authority (CFA) published a set of guidelines for renewable energy facilities in August 2023. Whilst the guidelines apply to a separate jurisdiction, as there is limited documentation and guidance material in NSW or other jurisdictions, the CFA guideline has quickly become a source of best practice requirements for the renewable energy industry.

PBP 2019 does not have a set of specific Acceptable Solutions for large scale solar or wind farms, or large-scale battery installations. The RFS provide a set of considerations and provisions for solar and wind farms, limited to a nominal 10m managed APZ separating the infrastructure from combustible vegetation and the APZ must be maintained to the standard of an IPA for the life of the development. As such, the model requirements outlined in the CFA guideline have been adopted to demonstrate the Project is able to satisfy the aims and objectives of PBP 2019.

3. Bushfire Hazard Assessment

A bushfire hazard assessment has been completed in accordance with the submission requirements detailed in Appendix 2 of PBP 2019; including an assessment of the predominant vegetation surrounding the Project Area and the effective slope underneath the classified vegetation.

3.1. Vegetation Assessment

Vegetation classification over the Project Area and surrounding areas within 140m from the Project Area has been carried out as follows:

- Aerial Photograph Interpretation to map the vegetation classification and extent;
- Reference to NSW State Vegetation Type NSW Department of Planning, Industry and Environment 2021 (**Figure 4**); and
- Site inspection on 12 October 2023.

In accordance with PBP 2019, an assessment of the vegetation over a distance of 140m in all directions from the Project Area was undertaken. An additional assessment of vegetation within 5km of the Project Area was completed. The results of the site inspection are represented in **Plates 1 to 10**.

Vegetation that may be considered a bushfire hazard was identified in all directions from the Project Area. The vegetation classification is based on the revised Table 2.3 in AS3959-2018 and Appendix 1 of PBP 2019. The inconsistencies between the mapping sources listed above was quantified during the site inspection and compared to the Keith Vegetation Formations (Keith 2004).

The majority of the Project Area supports derived grasslands with isolated woodlands and scattered trees. The historic land use of the properties that comprise the Project Area has been to graze the grassland vegetation.

The results of the vegetation assessment are shown in **Table 4** and **Figure 7**.

Table 4: Project Area Vegetation & Fuel Load

Vegetation	Vegetation Classification	Overall Fuel Load (t/ha)
Woodlands	*Floodplain Transition Woodland*	18.9
Forested Wetlands (riverine forest)	*Inland Riverine Forest*	15.1
Semi-arid Woodlands	*Riverine Sandhill Woodland*	14.5
Semi-arid Woodlands (grassy)	*Inland Floodplain Woodland* *Riverine Plain Woodland*	9.0
Grassland	*Riverine Plain Grassland*	6.0
Freshwater Wetlands	*Inland Floodplain Shrubland*	4.4
Arid Shrublands (Chenopod)	*Aeolian Chenopod*	3.2

Plate 1: Floodplain Transition Woodlands/ Inland Floodplain Woodlands

Plate 2: Floodplain Transition Woodlands/ Inland Floodplain Woodlands

Plate 3: Riverine Sandhill Woodland

Plate 4: Aeolian Chenopod Shrublands

Plate 5: Aeolian Chenopod Shrublands

Plate 6: Riverine Plain Grassland/ Aeolian Chenopod Shrublands

Plate 7: Riverine Plain Grassland

Plate 8: Ecotone of the various vegetation formations found throughout the Project Area

Project: Pottinger Wind Farm
Job No: 2365b

Figure 4

NSW State Vegetation Type (Class)

BUSHFIRE PLANNING AUSTRALIA

Project Area (Pottinger Wind Project)
100m Buffer
140m Buffer

Vegetation Class

- Aeolian Chenopod Shrublands
- Floodplain Transition Woodlands
- Inland Floodplain Shrublands
- Inland Floodplain Woodlands
- Inland Riverine Forests
- Riverine Chenopod Shrublands
- Riverine Plain Grasslands
- Riverine Plain Woodlands
- Riverine Sandhill Woodlands
- Not native vegetation

SOURCE:
Cadastral Boundary: ACT Government 2023
NSW Vegetation Type: NSW Department of Planning, Industry and Environment 2022
Aerial photo: Maxar 2021

N
W E
S

0 1 2 3 4
Kilometers

A3 Scale: 1:85,000

File:2365b-PottingerWindFarm-Fig3-Vegetation-231231 Date: 31/12/2023

GEOVIEW
GIS & mapping solutions for infrastructure, town planning & environmental management
Web: www.geoview.com.au
Email: info@geoview.com.au
Mobile: 0409 481647
Address: 3/18 Jacaranda Dr Byron Bay NSW Australia 2481

3.2. Slope Assessment

The slope assessment was undertaken as follows:

- Review of LiDAR point cloud data - including Digital Elevation Model (DEM) (NSW LPI)
- Slope Analysis (5 degree increments); and
- Detail survey of existing contours.

An assessment of the slope over a distance of 140m in the hazard direction from the Project Area boundary was undertaken. The effective slope was then calculated under the classified vegetation where there was a fire run greater than 50m. The topography of the Project Area has been evaluated to identify both the average slope and by identifying the maximum slope present. These values help determine the level of gradient which will most significantly influence the fire behaviour of the Project.

The effective slope in all directions is shown in **Figure 5**, **Figure 6** and **Table 5.** Overall the entire Project Area has been assessed as being flat.

Project: Pottinger Wind Farm
Job No: 2365b

Figure 5

Digital Elevation Model

BUSHFIRE PLANNING AUSTRALIA

Project Area (Pottinger Wind Project)

100m Buffer

140m Buffer

Contour (2m) Contour

(0.5m)

Value

High : 104.753

Low : 84.363

SOURCE:

Cadastral Boundary: NSW Department of Finance, Services and Innovation 2023
Surface analysis: Derived from 5m resolution LiDAR: MOGGUMBILL (2012), CONARGO (2011), HAY (2011) © Department of Finance, Services and Innovation

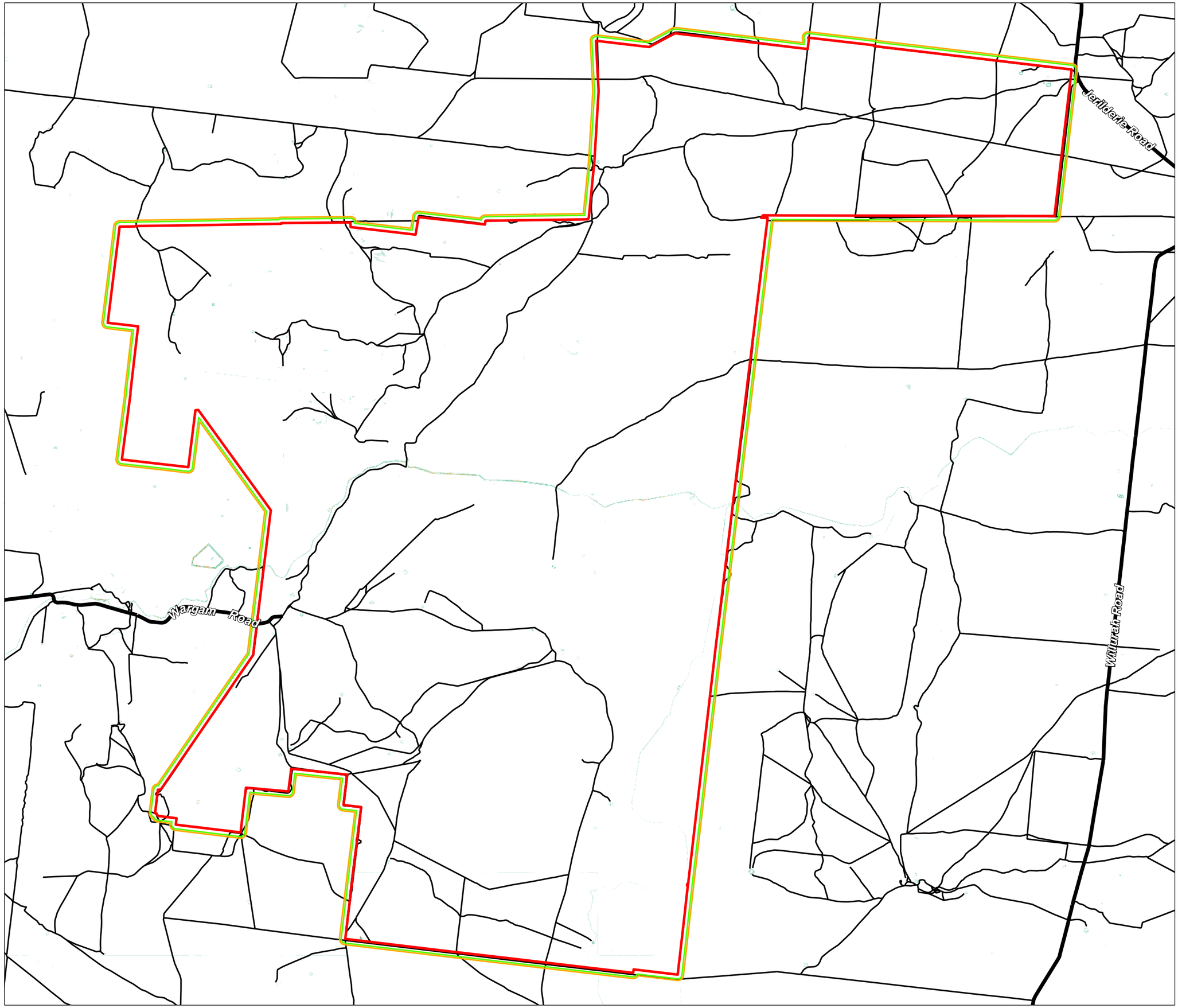
N
W E
S

0 1 2 3 4
Kilometers

A3 Scale: 1:85,000

File:2365b-PottingerWindFarm-Fig4-DEM-231231 Date: 31/12/2023

GEOVIEW
Web: www.geoview.com.au
Email: info@geoview.com.au
Office: (02) 6685 5554
Mobile: 0429 461147
Address: 3/18 Jacaranda Dr Byron Bay NSW Australia 2481
GIS & mapping solutions for infrastructure, town planning & environmental management



Project: Pottinger Wind Farm
Job No: 2365b

Figure 6

Slope Analysis: LiDAR

BUSHFIRE PLANNING AUSTRALIA

Project Area (Pottinger Wind Project)

100m Buffer

140m Buffer

Slope

- 0° - 5°
- 5° - 10°
- 10° - 15°
- 15°- 20°
- >20°

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2023
Surface analysis: Derived from 5m resolution LiDAR: MOGGUMBILL (2012), CONARGO (2011), HAY (2011) © Department of Finance, Services and Innovation

N
W E
S

0 1 2 3 4
Kilometers

A3 Scale: 1:85,000

File:2365b-PottingerWindFarm-Fig5-SlopeLiDAR-231231 Date: 31/12/2023

ABN 47 606 360 155
GEOVIEW MAPPING & GIS
Web: www.geoview.com.au
Email: info@geoview.com.au
Office: (02) 6685 5564
Mobile: 0409 461147
Address: 3/19 Jacaranda Dr Byron Bay NSW Australia 2481
GIS & mapping solutions for infrastructure, town planning & environmental management

3.3. Results

All vegetation identified within the current Bush Fire Prone Land map was confirmed during the site inspection.

Vegetation located within the Project Area largely consists of *grassland* and *arid shrubland* formations and scattered sections of *freshwater wetlands* and *woodlands*. The *woodland* formation largely exists within the north-western and western portions of the Project Area and is identified as the primary bushfire hazard. This continues within and beyond 140m north and west of the Project Area.

Vegetation within and beyond 140m of the Project Area is identified as the same contained within the Project Area, largely compromising of *grassland* and *arid shrubland* formations and scattered sections of *freshwater wetlands* and *woodlands*.

The results of the Bushfire Hazard Assessment are presented in **Table 5** and **Figure 7**.

Table 5: Slope and Vegetation Assessment results

Classification of Vegetation Formations PBP 2019	Slope
Woodlands	Flat
Grassland	Flat
Freshwater Wetlands	Flat
Arid Shrublands	Flat

Project: Pottinger Wind Farm
Job No: 2365b

Figure 7

Slope & Vegetation Assessment

BUSHFIRE PLANNING AUSTRALIA

Project Area (Pottinger Wind Project)
100m Buffer
140m Buffer
Roads

Development layout

Turbine
Wind development footprint

UAV Photo Point

Vegetation Class

Arid Shrublands
Freshwater Wetlands
Woodlands
Forested Wetland
Grasslands
Not native vegetation

SOURCE:
Cadastral Boundary: NSW Department of Finance, Services and Innovation 2023
Vegetation: Based on NSW SVT (NSW Department of Planning, Industry and Environment 2022), modified by BPA 2023
Surface analysis: Derived from 5m resolution LiDAR: MOGGUMBILL (2012), CONARGO (2011), HAY (2011) © Department of Finance, Services and Innovation
Aerial photo: Maxar 2021

N
W E
S

0 1 2 3 4
Kilometers

A3 Scale: 1:85,000

File:2365b-PottingerWindFarm-Fig6-SlopeVeg-231231 Date: 31/12/2023

GEOVIEW MAPPING & GIS
Web: www.geoview.com.au
Email: info@geoview.com.au
Mobile: 0409 461147
Address: 3/18 Jacaranda Dr Byron Bay NSW Australia 2481
GIS & mapping solutions for infrastructure, town planning & environmental management

3.4. Significant Environmental Features

The development footprint is wholly located within that part of the Project Area that is predominantly cleared and disturbed. A Biodiversity Development Assessment Report has been prepared as part of the EIS.

3.5. Threatened Species, populations or ecological communities

A Biodiversity Development Assessment Report has been prepared as part of the EIS.

3.6. Aboriginal Objects

A separate Aboriginal heritage cultural impact statement has been prepared as part of the EIS.

4. Bush Fire Protection Measures

PBP 2019 refers to the Project as 'Other development'. In order to comply with PBP, the development should:

- Note the range of available Bush Fire Protection Measures (BPMs);
- Satisfy the aims and objectives of PBP 2019;
- Consider any matters listed for the specific purpose; and
- Propose an appropriate combination of BPMs.

As part of the BAR, the recommended BPMs demonstrate the aims and objectives of PBP 2019 are able to be satisified; including the matters considered by the RFS necessary to protect persons, property and the environment from the danger that may arise from a bushfire.

Section 8.3.9 of PBP 2019 requires the BPMs to be commensurate with the bushfire hazards and associated risks. The recommended BPMs have been assessed for compliance against Section 5.3 of PBP 2019; being BPMs for residential and rural residential subdivisions. Whilst the Project is not required to provide BPMs relevant to residential land development, in this instance given the absence of any development specific criteria (e.g. for wind farms and large scale battery storage systems), the BPMs for residential development have been proposed as part of adopting a precautionary approach.

4.1. Asset Protection Zones

An APZ is an area surrounding a development that is managed to reduce the bushfire hazard to an acceptable level to mitigate the risk to life and property. The required width of the APZ varies with slope and the type of hazard. The foremost effective treatment for reducing bushfire risk is the establishment of an APZ. This involves the removal and continual management of vegetation to create a buffer zone that reduces the effect of flame contact and radiant heat on the asset/s as well as providing access for firefighting operations. An APZ also reduces the chances of a fire escaping from a site and entering surrounding bushland by ensuring a fuel-free (fuel-reduced) environment whereby fire cannot propogate and spread.

4.1.1. Determining the Appropriate Setbacks

A leading factor when determining the APZ for the Project Area is the ability for firefighters to gain access. A secondary consideration is the vulnerability of the asset, such as what is required to prevent exposure to bushfire attack from exceeding a threshold that may be result in material combustion or ignition, or more importantly, the threat to life.

The methodology to determine the appropriate APZ setback has adopted an acceptable solution (in accordance with PBP 2019 Table A1.12.3). Whilst PBP 2019 does not explicitly require the Project to provide an APZ in accordance with Appendix 1 of PBP 2019, Section 8.3.5 of PBP 2019 nominates a minimum 10m APZ for the structures and associated buildings/ infrastructure. It is also noted the CFA Model Requirements nominates a minimum 10m firebreak around BESS, large scale wind farms and related infrastructure. Accordingly, this is recommended for the Project Area as shown in **Table 6**.

Table 6: Recommended Asset Protection Zones

Classification of Vegetation Formations (PBP 2019)	Slope	APZ (Table A1.12.3)	Recommended APZ (PBP 8.3.5)
Woodlands	Flat	11m	**10m**
Grassland	Flat	10m	**10m**
Freshwater Wetlands	Flat	5m	**10m**
Arid Shrublands	Flat	6m	**10m**

Notwithstanding the required APZs, in accordance with the precautionary principle, all components of the Project Area will be maintained as an inner protection area to minmise exposure to excessive radiant heat levels.

Table 7: Asset Protection Zone Compliance Table (PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
5.3.1 ASSET PROTECTION ZONES **Table 5.3a** To provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at buildings are below critical limits and to prevent direct flame contact.	Potential building footprints must not be exposed to radiant heat levels exceeding 29kW/m^2.	APZs are provided in accordance with Tables A1.12.2 and A1.12.3 based on the FFDI.	✓	The recommended setbacks are to be managed as an APZ ensure that no components of the wind farm (including WTGs, compounds, substations, sheds etc) are exposed to radiant heat levels greater than 29kW/m^2. The APZs would need to be 10m based on the type of vegetation adjacent to the asset. The APZ is to permit unobstructed vehicle access around the perimeter of each asset.
	APZs are managed and maintained to prevent the spread of a fire towards the building.	The APZ is managed in accordance with the requirements of Appendix 4.	✓	Any part of the Project Area identified as an APZ shall be managed in perpetuity as an IPA in accordance with the requirements of PBP 2019.
	The APZ is provided in perpetuity.	APZs are wholly within the boundaries of the development site.	✓	All recommended APZs are located within the Project Area.
	APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is negated.	The APZ is not located on lands with a slope exceeding 18°.	✓	All APZs are located on slopes less than 18°.

4.2. Landscaping and Vegetation Management

The design and management of the landscaped areas in the vicinity of any buildings or structures have the potential to improve the chances of survival of people and buildings. It is not expected any part of the Project Area will be extensively landscaped, however, should any landscaping be considered, landscaping in and around a bushfire hazard should consider the following:

- Priority given to retaining species that have a low flammability;
- Priority given to retaining species which do not drop much litter in the bushfire season and which do not drop litter that persists as ground fuel in the bush fire season;
- Priority given to retaining smooth barked species over stringy bark; and
- Create discontinuous or gaps in the vegetation to slow down or break the progress of fire towards the dwellings.

The principles of landscaping for bushfire protection aim to:

- Prevent flame impingement on buildings;
- Provide a defendable space for property protection;
- Reduce fire spread;
- Deflect and filter embers;
- Provide shelter from radiant heat; and
- Reduce wind speed.

Careful thought must be given to the type and physical location of any proposed landscaping. Inappropriately selected and positioned vegetation has the potential to 'replace' any previously removed fuel load.

Whilst it is recognised that fire-retardant plant species are not always the most aesthetically pleasing choice for landscaping, the need for adequate protection of life and property requires that a suitable balance between visual and safety concerns be considered.

Where landscaping may be required to provide visual screens to dwellings, landscaping shall be located no less than 100 metres from the affected dwelling/s that are within the Project Area.

Table 8: Landscaping Compliance Table (PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
LANDSCAPING	Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	Landscaping is in accordance with APZ standards (see Appendix 4). Fencing is constructed in accordance with section 7.6.	**Able to Comply**	All new landscaping will consider the requirements of APZs per Appendix 4. All new fencing will comply with PBP 2019 section 7.6.

4.3. Access

In the unlikely event of a serious bushfire, it will be essential to ensure that adequate ingress / egress and the provision of defendable space are afforded in the development layout. PBP 2019 requires an access design that enables safe operational access to structures and water supply whilst facilitating adequate emergency and operational response. All bushfire prone areas should have an alternate access or egress option depending on the bushfire risk, the siting of the development and the chances of the primary access road being obstructed or cut by fire for a prolonged period.

The following design specifications detailed in PBP 2019 are relevant to the Project:

- All property access roads shall be two-wheel drive all weather roads;
- be through roads, but if unavoidable then dead ends should be not more than 200 metres in length, incorporate a minimum 12 metres turning circle (either in cul-de-sac or T-head formation) and should be clearly sign posted as dead ends;
- the capacity of road surfaces is sufficient to carry fully loaded fire fighting vehicles (approximately 15 tonnes for areas with reticulated water, 28 tonnes for all other areas);
- non perimeter roads comply with table – Road widths for Category 1 Tanker;
- curves of roads (other than perimeter roads) are a minimum inner radius of 6 metres and minimal in number, to allow for rapid access and egress;
- maximum grade for sealed roads do not exceed 12.5°;
- have a minimum vertical clearance to a height of four metres at all times;
- should they exist, no services or hydrants are located within the parking bays.

Primary access to the Project Area will be provided via the Cobb Highway from Jerilderie Road in the north-east (Site Entrance B) and West Burrabogie Road in the west (Site Entrance A).

Additional points of access will be from the East West Road along the southern boundary (Site Entrance D) and Wargam Road along the western boundary (Site Entrance C). Another alternative emergency egress is provided at the eastern end of West Burrabogie Road.

Furthermore, there are several tracks that provide direct access to each proposed WTG location within the Project Area.

All proposed internal roads satisfy the requirements for property access roads required by PBP 2019 as they are designed to suit large heavy vehicles and provide clear egress.

Tables 9 and **10** demonstrate the Project Area and associated access network are able to satisfy the Acceptable Solutions detailed in Tables 5.3b and 7.4a of PBP 2019.

Table 9: Access Table 5.3b Compliance Table (Residential Subdivision - PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
5.3.2 ACCESS (GENERAL REQUIREMENTS) **Table 5.3b** To provide safe operational access to structures and water supply for emergency services, while residents are seeking to evacuate from the area.	Fire fighters are provided with safe all weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	**Able to Comply**	The Project Area is located wholly within private land and no new public roads are required. Primary access to the Project Area will be provided via the Cobb Highway from Jerilderie Road in the north-east (Site Entrance B) and West Burrabogie Road in the west (Site Entrance A). Additional points of access will be from the East West Road along the southern boundary (Site Entrance D) and Wargam Road along the western boundary (Site Entrance C). Another alternative emergency egress is provided at the eastern end of West Burrabogie Road.
		Perimeter roads are provided for residential subdivisions of three or more allotments.	**N/A**	
		Subdivisions of three or more allotments have more than one access in and out of the development.	**N/A**	
		Traffic management devices are constructed to not prohibit access by emergency services vehicles.	**N/A**	
		Access roads must provide suitable turning areas in accordance with Appendix 3.	**Able to Comply**	
		Maximum grades for sealed roads do not exceed 15° and an average of not more than 10° or other gradient specified by road design standards, whichever is the lesser gradient.	✓	Slopes are flat across the Project Area.
		All roads are through roads.	✓	The network of internal access roads are able to provide entry and exits in multiple directions.
		Where kerb and guttering is provided on perimeter roads, roll top kerbing should be used to the hazard side of the road.	**N/A**	
		Where access / egress can only be achieved through forest, woodland and heath vegetation, secondary access shall be provided to an alternate point on the existing public road system.	✓	Up to five (5) separate points of access are provided to the Project Area.
		One way only public access roads are no less than 3.5m wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.	**N/A**	

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
ACCESS ROAD CAPACITY	The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	✓	The capacity of the new property access roads will have sufficient load capacity for all firefighting vehicles.
ACCESS TO WATER	There is appropriate access to water supply.	Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression.	✓	An all-weather road access and hardstand shall be provided to the hard-suction point and/ or hydrant. The hardstand must be maintained to a minimum of 23 tonne GVM, eight (8) metres long and six (6) metres wide.
		Hydrants are provided in accordance with AS2419.1:2005	**N/A**	
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	✓	
PERIMETER ROADS	Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	There are two-way sealed roads.	**N/A**	No new public perimeter roads are included in the Project Area.
		Minimum 8m carriageway width kerb to kerb.		
		Parking is provided outside of the carriageway width.		
		Hydrants are to be located clear of parking areas.		
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.		
		Curves of roads have a minimum inner radius of 6m.		
		The maximum grade road is 15° and average grade is 10°.		
		The road crossfall does not exceed 3°.		
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches is provided.		
NON-PERIMETER ROADS	Non-perimeter access roads are designed to allow safe access and egress for firefighting vehicles while residents are evacuating.	Minimum 5.5m width kerb to kerb.	**N/A**	No new non-perimeter roads are included in the Project Area.
		Minimum 5.5m width kerb to kerb.		
		Parking is provided outside of the carriageway width.		
		Hydrants are to be located clear of parking areas.		

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		There are through roads, and these are linked to the internal road system at an interval of no greater than 500m.		
		Curves of roads have a minimum inner radius of 6m.		
		The road crossfall does not exceed 3°.		
		A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches is provided.		
PROPERTY ACCESS	Fire fighting vehicles can access the dwelling and exit the property safely.	There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	**N/A**	All internal property access roads will remain in private ownership and not be publicly accessible.
		In circumstances where this cannot occur, the following requirements apply: ❑ minimum 4m carriageway width; ❑ in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long by 2m wide, making a minimum trafficable width of 6m at the passing bay; ❑ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; ❑ provide a suitable turning area in accordance with Appendix 3; ❑ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; ❑ the minimum distance between inner and outer curves us 6m; ❑ the crossfall is not more than 10 degrees; ❑ maximum grades for sealed roads do not exceed 15 degrees and	✓	All new property access roads are expected at a minimum to satisfy the design requirements for non-perimeter roads. All property access roads are a minimum 4m wide and capable of accommodation a vehicle with a 23 tonne capacity.

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		not more than 10 degrees for unsealed roads; and ❑ a development compromising more than three dwellings has access by dedication of a road and not by right of way. Note: Some short constructions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.		

Table 10: Access Table 7.4a Compliance Table (Infill Development - PBP 2019)

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
Access	Fire fighters are provided with safe all weather access to structures.	Property access roads are two-wheel drive, all-weather roads.	✓	All new access roads within the Project Area will comply with the minimum engineering requirements of PBP 2019.
	The capacity of access roads is adequate for firefighting vehicles.	The capacity of road surfaces and any bridges/ causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.	✓	The capacity of the new property access roads will have sufficient load capacity (23 tonne) for all firefighting vehicles.
	There is appropriate access to water supply.	Hydrants are provided in accordance with AS2419.1:2005	**N/A**	The recommended static water supply will be provided and immediately accessible to responding firefighters. It is not expected a new reticulated water supply will be installed to service the Project Area. As such, no new hydrants will be available.
		There is suitable access for Category 1 fire appliance to within 4m of the static water supply where no reticulated supply is available.	✓	
	Fire fighting vehicles can access the dwelling and exit the property safely.	At least one alternative property access road is provided for individual dwellings or groups of dwellings that are located more than 200 metres from a public through road	✓	Multiple access and entrance roads to Pottinger Wind Farm Project Area shall are provided in all directions.
		There are no specific access requirements in an urban area where an unobstructed path (no greater than 70m) is provided between the most distant external part of the proposed dwelling and the nearest part of the public access road (where the road speed limit is not greater than 70kph) that supports the operational use of emergency firefighting vehicles.	**N/A**	The Project Area has frontage and direct access to: • Jerilderie Road • West Burrabogie Road • East West Road • Wargam Road
		In circumstances where this cannot occur, the following requirements apply: ❑ minimum 4m carriageway width; ❑ in forest, woodland and heath situations, rural property access roads have passing bays every 200m that are 20m long	✓	All new property access roads are expected at a minimum to satisfy the design requirements under Table 7.4a of PBP 2019.

Intent of Measure	Performance Criteria	Acceptable Solution	Compliance	Comment
		by 2m wide, making a minimum trafficable width of 6m at the passing bay; ❑ a minimum vertical clearance of 4m to any overhanging obstructions, including tree branches; ❑ provide a suitable turning area in accordance with Appendix 3; ❑ curves have a minimum inner radius of 6m and are minimal in number to allow for rapid access and egress; ❑ the minimum distance between inner and outer curves us 6m; ❑ the crossfall is not more than 10 degrees; ❑ maximum grades for sealed roads do not exceed 15 degrees and not more than 10 degrees for unsealed roads; and ❑ a development compromising more than three dwellings has access by dedication of a road and not by right of way. Note: Some short constructions in the access may be accepted where they are not less than 3.5m wide, extend for no more than 30m and where the obstruction cannot be reasonably avoided or removed. The gradients applicable to public roads also apply to community style development property access roads in addition to the above.		

4.4. Services - water, electricity and gas

Adequate services of water for the protection of buildings during and after the passage of a bushfire is essential for firefighting purposes. In addition, gas and electricity services should be located and installed so as not to contribute to the risk of fire or impede the firefighting effort.

4.4.1. Water

In the event of a fire sufficient water must be available and safely accessible to emergency responders and firefighting vehciles to ensure that fire suppression activities are safe, time, effective and not hindered in anyway.

Firefighting infrastructure must be designed to allow effective response to the risks and hazards at the facility. A reliable water supply must be provided to cover buildings, control rooms, substations and grid connections.

The Project Area will not be connected to a reticulated water supply. Accordingly, a static water supply is required for firefighting purposes. It is recommended the Project Area is suitably equipped to respond to any fires on site. The CFA provides a best practice guideline and states the minimum requirements for water supply are as follows:

1. Water access points must be clearly identifiable and unobstructed to ensure efficient access;
2. Static water storage tank installations must comply with *AS 2419.1-2021: Fire hydrant installations – System design, installation and commissioning*;
3. The static water storage tank(s) must be an above-ground water tank constructed of concrete or steel;
4. The static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours;
5. 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, battery energy storage systems, etc.);
6. The hard-suction point must be provided, with a 65mm and 150mm full bore isolation valve equipped with a Storz connection, sized to comply with the required suction hydraulic performance;
7. The hard-suction point must be positioned within four (4) metres to a hardstand area and provide a clear access for emergency services personnel;
8. An all-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 23 tonne GVM, eight (8) metres long and six (6) metres wide;
9. The road access and hardstand must be kept clear at all times;
10. The hard-suction point must be protected from mechanical damage (eg., bollards) where necessary;
11. An external water level indicator must be provided to the tank and be visible from the hardstand area;
12. Signage indicating 'FIRE WATER' and the tank capacity must be fixed to each tank; and
13. Signage must be provided at each vehicle entrance to the facility, indicating the direction to the nearest static water tank(s).

The minimum static water supplies shall be:

1. One (1) x 20,000l static water tank at the each of the four (4) site entrance roads (i.e. Four (4) water storage tanks in total); and
2. A water storage tank with a capacity of at least 45,000 litres shall be provided at each construction office/ maintenance compound and located within the required APZ (unless already provided for the Pottinger Solar Farm).

4.4.2. Electricity

By design, the Project is part of the electricity transmission and generating network. The Project Area will be connected to the existing high voltage electrical switchyard, however it is also required to be connected to a local electricity supply for day to day operation.

Whilst the entire Project Area will be managed as an APZ, vegetation clearance to any connecting transmission lines shall comply with the ISSC3 Guideline for Managing Vegetation Near Power Lines and any applicable local network provider operating procedures.

The Project Area has a relatively low fire potential with no flammable material store, handled or produced and is designed with a high degree of control of the batteries themselves; including highly automated shut-down and application of fire suppressants.

4.4.3. Gas

Any reticulated or bottled gas should be installed and maintained according to the requirements of the relevant authorities and AS 1596-2002. It is expected that the location of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.

4.5. Construction Standards - Bushfire Attack Level

The proposed land use zone permits a variety of non-habitable buildings including bulky goods premises, general industries, warehouses and distribution centres. The Project is a permissible land use on the Project Area.

A Bushfire Attack Level (BAL) rating is typically applied to a residential building, or Class 9 buildings occupied by vulnerable persons. PBP 2019 does not require BALs to be applied to infrastructure buildings or other non-habitable structures. A stated within Section 8.3.1 of PBP 2019, the NCC does not provide for any bushfire specific performance requirements for non-residential development, such as Class 5-8 and 10 buildings. As such, AS3959-2018 *Construction of buildings in bushfire prone areas* (AS3959-2018) are not considered as a set of deemed-to-satisfy provisions. However, compliance with AS3959-2018 and the National Association of Steel-framed Housing (NASH) standard may be considered when meeting the aims and objectives of PBP 2019 - for future industrial buildings.

It is not proposed to apply a BAL rating to any component of the Project Area, however the methodology to determine BAL ratings as a derivative of determining radiant heat flux exposure has been adopted as an indicator to guide the design process when siting the various components of the Project. Furthermore, the recommended APZs ensure no part of the Project Area will be exposed to direct flame contact.

The BALs for each vegetation formation have been calculated to provide the relevant BAL rating demonstrated in **Table 11**.

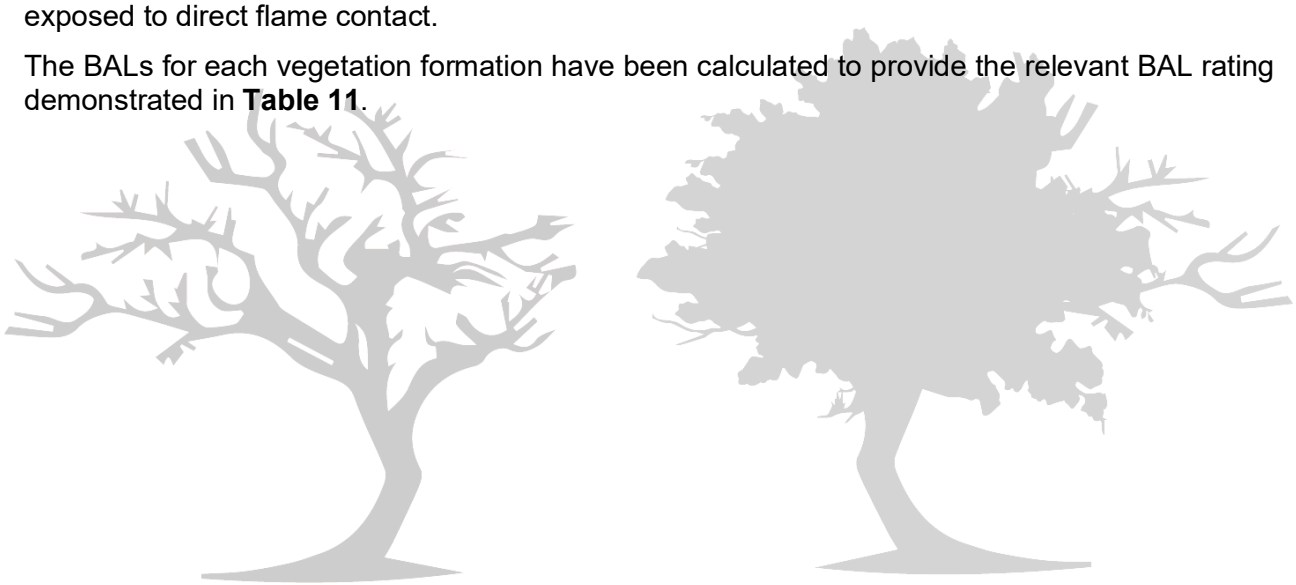


Table 11: Bushfire Attack Levels (BALs)

Vegetation Classification (PBP 2019)	Slope	Recommended APZ (PBP 8.3.5)	Distance from Hazard	Bushfire Attack Level (BAL)
Woodland	Flat	10m	0m-<8m	BAL-FZ
			8m-<11m	BAL-40
			11m-<16m	BAL-29
			16m-<22m	BAL-19
			22m<100m	BAL-12.5
Grassland	Flat	10m	0m-<7m	BAL-FZ
			7m-<10m	BAL-40
			10m-<14m	BAL-29
			14m-<20m	BAL-19
			20m-<50m	BAL-12.5
Freshwater Wetlands	Flat	10m	0m-<4m	BAL-FZ
			4m-<5m	BAL-40
			5m-<7m	BAL-29
			7m-<11m	BAL-19
			11m-<100m	BAL-12.5
Arid Shrublands	Flat	10m	0m-<5m	BAL-FZ
			5m-<6m	BAL-40
			6m-<9m	BAL-29
			9m-<14m	BAL-19
			14m-<100m	BAL-12.5

4.6. Emergency Services

NSW RFS is the primary bushfire emergency response agency for any incident affecting the Project Area. There is a NSW Rural Fire Service located at Wargam Road, Booroorban approximately 22km (or 27mins) south east of the Project Area (**Plate 9**).
A Neighbourhood Safer Place (NSP) is a designed place of last resort during a bushfire emergency only. Booroorban Hall located on Wargam Road, adjoining the Booroorban RFS station, is the closest NSP near the Project Area and can be utilised during an emergency (**Plate 10**).

Plate 9: Booroorban Rural Fire Service Brigade

Plate 10: Booroorban Hall identified as a Neighbourhood Safe Place located on Wargam Road adjoining the Booroorban RFS

4.7. Emergency Management Planning

It is recommended a 'Bushfire Emergency Management and Operations Plan' (BEMOP) be prepared in accordance with the RFS document 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' for the construction and operational phases of the Project or as required by conditions of development consent. The BEMOP must be prepared in consultation with the local fire control centre (FCC) and address the following:

- Property Incident Plan;
- detailed measures to prevent or mitigate fires igniting;
- 24-hour emergency contact details including alternative telephone contact;
- work that should not be carried out during total fire bans;
- site infrastructure plan;
- fire fighting water supply plan;
- site access and internal road plan;
- availability of fire-suppression equipment, access and water;
- implementation of Asset Protection Zones (APZ) and their continued maintenance;
- storage and location of hazards (Physical, Chemical and Electrical) that will impact on fire fighting operations and procedures to manage identified hazards during fire fighting operations;
- notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate;
- any additional matters as required by the FCC (BFMP review and updates); and
- appropriate bush fire emergency management planning.

5. Conclusion and Recommendations

5.1. Conclusion

Bushfire Planning Australia (BPA) was engaged by RPS AAP Consulting Pty Ltd (RPS) to conduct a bushfire impact assessment of the Pottinger Wind Farm for Pottinger Renewables Pty Ltd (the Applicant).

The Bushfire Assessment Report found the study area was exposed to a low bushfire hazard located to the north-west and western area within the Project Area. The predominant vegetation within the Project Area is consistent with a woodland vegetation formation as described in Planning for Bushfire Protection 2019 (PBP 2019).

5.2. Recommendations

The bushfire protection measures recommended for the Project will address any residual risk, minimise bushfire impact on the proposed assets and reduce the risk of a fire initiating and spreading from the Project Area to the surrounding vegetation.

The following recommendations when implemented will reduce the impact of a bushfire to an acceptable level for the proposed industrial (non-habitable) buildings and demonstrate the Project is able to comply with PBP 2019:

1. A minimum 10m Asset Protection Zone (APZ) around wind farm infrastructure; including WTG sites, substations, office, shall be provided and be managed as an APZ as outlined within Appendix 4 of PBP 2019 and the RFS document *Standards for asset protection zones*;
2. To allow for emergency services personnel to undertake property protection activities, a 10m defendable space (APZ) that permits unobstructed vehicle access is to be provided around the perimeter of the Project Area compounds and maintenance yards;
3. Property access roads are to be constructed in accordance with Table 5.3b and Chapter 7.4a of PBP 2019;
4. One (1) x 20,000 litre static water tank shall be located adjacent to the each of the four (4) site entrance roads (i.e. Four (4) water storage tanks in total);
5. A water storage tank with a capacity of at least 45,000 litres shall be provided at each construction office/ maintenance compound (unless already provided for the Pottinger Solar Farm Project) and located within the required APZ. The water storage tanks shall be located adjacent to an internal access road and directly accessible by firefighting vehicles;
6. Consideration should be given to landscaping and fuel loads within the Project Area to decrease potential fire hazards;
7. All hazardous materials shall be stored in a secure enclosure to ensure these items do not contribute to a bushfire event;
8. A Fire Management Plan shall be prepared in consultation with the NSW RFS Hay Fire Control Centre (or relevant regulator), prior to the commencement of construction and in accordance with the Conditions of Approval; and
9. The operators of the facility shall prepare a Bushfire Emergency Management and Operations Plan and identify an area of the site that can be used for refuge in the event of a bushfire.

Should the above recommendations be implemented, the existing bushfire risk should be suitably mitigated to offer an acceptable level of protection to life and property for those persons and assets occupying the Project Area, but they do not and cannot guarantee that the area will not be affected by bushfire at some time.

This assessment has been made based on the bushfire hazards observed in and around the Project Area at the time of inspection and production (March 2024).

6. References

- Country Fire Authority (Victoria) Design Guidelines and Model Requirements for Renewable Energy Facilities v 4 (2023)
- Industry Safety Steering Committee (2005). *ISSC 3 Guideline for managing Vegetation Near Power Lines*
- Keith, D. (2004) Ocean Shores to Desert Dunes – The Native Vegetation of New South Wales and the ACT.
- NSW Rural Fire Service (2005). *Standards for Asset Protection Zones*. NSW Rural Fire Service.
- NSW Rural Fire Service (2014). *A Guide to Development of a Bushfire Emergency Management and Evacuation Plan*.
- NSW Rural Fire Service (2019). *Comprehensive vegetation fuel loads*
- NSW Rural Fire Service (2019). Planning for Bushfire Protection – A Guide for Councils, Planners, Fire Authorities, Developers and Home Owners.
- Ramsay, GC and Dawkins, D (1993). *Building in Bushfire-prone Areas – Information and Advice*. CSIRO and Standards Australia.
- Rural Fires and Environmental Assessment Legislation Amendment Act 2002.
- Standards Australia (2018). AS 3959 – 2018: Construction of Buildings in Bushfire-prone Areas.