

# BUSHFIRE ASSESSMENT REPORT

Revision B

6 EUROMEDAH ROAD NARROMINE



## EXECUTIVE SUMMARY

This report outlines a site analysis and bushfire risk assessment for a proposed solar farm development that is within the scope of the acceptable solutions in “Planning for Bushfire Protection 2006” (PBP). The development can comply with the “other development” requirements of Planning for Bushfire Protection – 2006 and meet the standards required by the Environmental Planning and Assessment Act 1979.

## PROPERTY DETAILS

<b>Property:</b>	6 Euromedah Road Narromine
<b>Building Classification:</b>	10b
<b>Proposed Development:</b>	Solar Farm (Photovoltaic Solar Arrays)
<b>Land Use Zoning:</b>	RU1
<b>Development Land Area:</b>	Approximately 24 Hectares
<b>Fire Area:</b>	Orana – Narromine Shire – FDI 80
<b>Bushfire Prone Land:</b>	Yes

## INTRODUCTION

Bushfires burn under a wide range of conditions and whilst every effort may be made to negate risk and reduce the hazard, an element of risk, no matter how small, will always remain. Whilst we have made every effort in this report to ensure the risk assessment is accurate and the recommendations relevant to the subject site, it must always be acknowledged that an unmanaged bushfire and the associated emergency response is largely unpredictable.

This site analysis and bushfire assessment for a solar farm (photovoltaic array) has been prepared to ensure bushfire safety compliance with both the Environmental Planning and Assessment Act 1979 and PBP. The site analysis and assessment includes land at least 140m beyond the subject development site.

The proposed development is noted as “other development” under clause 4.3.6 of PBP and as such has its own special set of requirements to be met. Clause 4.3.6 states that this type of development application should note the range of available bush fire protection measures; satisfy the aims and objectives of PBP; consider any matters listed for the specific purpose; and propose an appropriate combination of bush fire protection measures, with evidence that the intent of each measure (with reference to the relevant Tables in sections 4.1.3 and 4.2.7) is satisfied.

The report will address the key Bush Fire Protection Measures that should be undertaken to satisfy the aims and objectives of PBP 2006 to provide for the protection of human life (including fire fighters) and to minimise impacts on property from the threat of bush fire, while having due regard to development potential, on-site amenity and protection of the environment.

## SITE DESCRIPTION AND PROPOSAL

The site is located at 6 Euromedah Road Narromine, within the Orana fire area. The land is zoned RU1. It is partially bounded by the Macquarie River and is surrounded by agricultural land. The proposal, to construct a solar farm (photovoltaic array), falls under the definition of other development as described in Clause 4.3.6 of "Planning for Bushfire Protection – 2006" (PBP). The development application should therefore be considered under section 4.14 of the Environmental Planning and Assessment Act 1979.

## AIMS AND OBJECTIVES OF PBP

1. To afford occupants of any building adequate protection from exposure to a bush fire.
2. To provide for a defensible space to be located around buildings.
3. To provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent direct flame contact and material ignition.
4. To ensure that safe operational access and egress for emergency service personnel and residents is available.
5. To provide for ongoing management and maintenance of bush fire protection measures, including fuel loads in the asset protection zone (APZ).
6. To ensure that utility services are adequate to meet the needs of fire-fighters (and others assisting in bush fire fighting).

## KEY BUSH FIRE PROTECTION MEASURES OF PBP

1. The provision of clear separation of buildings and bush fire hazards, in the form of fuel reduced APZ (and their subsets, inner and outer protection areas and defensible space).
2. Construction standards and design.
3. Appropriate access standards for residents, fire fighters, emergency service workers and those involved in evacuation.
4. Adequate water supply and pressure.
5. Emergency management arrangements for fire protection and/or evacuation.
6. Suitable landscaping, to limit fire spreading to a building.

## VEGETATION FORMATION

All land within 140m of the proposed development appears to be managed grazing land which presents as low risk. This vegetation type is equivalent to grassland vegetation as determined by the AUSLIG Pictorial Analysis in AS 3959-2009.

**ASSET PROTECTION ZONES**

The figures in Table 1 below have been calculated in accordance with Table 2.4.3 of AS3959-2009.

**TABLE 1: BUSHFIRE ATTACK ASSESSMENT**

<b>Elevation</b>	<b>North</b>	<b>South</b>	<b>East</b>	<b>West</b>
<b>Fire Danger Index</b>	80 - Orana	80 – Orana	80 – Orana	80 - Orana
<b>Vegetation Formation Class (140m)</b>	Grassland	Grassland	Grassland	Grassland
<b>Effective Slope Under the Vegetation in Degrees (100m)</b>	0 to 5° Downslope (worst case)			
<b>Proposed APZ (m).</b>	20m	20m	20m	20m
<b>Estimated Radiant Heat Flux Exposure (kW/m<sup>2</sup>)</b>	<12.5 kW/ m <sup>2</sup>			
<b>Bushfire Attack Category</b>	BAL-12.5	BAL-12.5	BAL-12.5	BAL-12.5
<b>Required Construction Standard</b> See NCC V2 NSW Variation 3.10.5.0	Not Applicable	Not Applicable	Not Applicable	Not Applicable

A defensible space (APZ) of 20m should be provided on all sides of the proposed solar arrays so that it will be within the confines of the allotment boundaries.

**DESIGN AND CONSTRUCTION STANDARDS**

The National Construction Code 2019 Volume 2 (NSW variation 3.10.5.0) does not require class 10b structures to meet any construction standards regarding protection from bushfires.

**PERFORMANCE CRITERIA**

The proposed buildings should meet the performance criteria for bushfire protection listed in Table 2 below:

**TABLE 2: PERFORMANCE CRITERIA & RECOMMENDATIONS**

<p><b>PERFORMANCE CRITERIA - ASSET PROTECTION ZONES</b></p> <ul style="list-style-type: none"> <li>• A defensible space should be provided onsite.</li> <li>• An asset protection zone should be provided and maintained for the life of the development.</li> </ul>
<p><b>RECOMMENDATIONS FOR ASSET PROTECTION ZONES</b></p> <ol style="list-style-type: none"> <li>1. The APZ should be a 20m wide inner protection area surrounding the entire development.</li> <li>2. The inner protection area should comprise of the following:</li> </ol>

- a) minimal fine fuel at ground level;
- b) vegetation that does not provide a continuous path to building/s for the transfer of fire;
- c) shrubs and trees that do not form a continuous canopy and vegetation is planted/cleared into clumps rather than continuous rows;
- d) species that retain dead material or deposit excessive quantities of ground fuel are avoided;
- e) shrubs and trees are pruned or removed so they do not touch or overhang the building/s;
- f) vegetation is located far enough away from the building/s so that plants will not ignite the building/s by direct flame contact or radiant heat emission.

#### **PERFORMANCE CRITERIA - SITING AND DESIGN**

- Buildings should be sited and designed to minimise the risk of bush fire attack.

#### **RECOMMENDATIONS - SITING AND DESIGN**

1. The development should be sited so that a defendable space (APZ) of 20m can be provided within the confines of the allotment boundaries on all sides of the solar arrays.

#### **PERFORMANCE CRITERIA - CONSTRUCTION STANDARDS**

- It should be demonstrated that the proposed building can withstand bush fire attack in the form of wind, smoke, embers, radiant heat and flame contact.

#### **RECOMMENDATIONS - CONSTRUCTION STANDARDS**

1. Nil recommendations. Note that the National Construction Code 2019 Volume 2 (NSW variation 3.10.5.0) does not require class 10b structures to meet any construction standards regarding protection from bushfires.

#### **PERFORMANCE CRITERIA - ACCESS REQUIREMENTS**

- Safe, operational access should be provided (and maintained) for emergency services personnel in suppressing a bush fire while residents are seeking to relocate, in advance of a bush fire, (satisfying the intent and performance criteria for access roads in sections 4.1.3 and 4.2.7 of PBP 2006).

#### **RECOMMENDATIONS - ACCESS REQUIREMENTS**

1. Property access roads should comply with the following requirements of section 4.1.3 (2) of *Planning for Bush Fire Protection 2006*.
  - A minimum carriageway width of 4 metres should be provided.
  - A minimum vertical clearance of 4 metres to any overhanging obstruction, including tree branches should be provided.
  - Curves should have a minimum inner radius of 6 metres to allow for rapid access and egress.
  - The minimum distance between the inner and outer curves should be 6 metres.
  - Crossfall should not exceed 10 degrees.
  - Maximum grades for sealed roads should not exceed 15 degrees and should not be more than 10 degrees for unsealed roads.

## **CONCLUSION**

The development will be subject to the BAL – 12.5 Bushfire Attack Level. The proposed development design adopts a combination of key bushfire protection measures that generally meet the aims and objectives of PBP. If all the recommendations listed above are adopted, we are of the opinion that the development will comply with the “other development” requirements of Planning for Bushfire Protection – 2006 and meet the standards required by the Environmental Planning and Assessment Act 1979.

## DISCLAIMER

Unless otherwise stated this site analysis and bushfire risk assessment is based upon the documents listed in table 3 below for the property 6 Euromedah Road Narromine, provided to us by IT Power (Australia) Pty Ltd.

**TABLE 3 - DOCUMENTS**

Name	Drawing Number	Amendment Number	Date
Location Plan	AG000-G-040	01	25/01/19
General Arrangement	AG000-G-210	01	25/01/19
Photographs	Photos 1 to 16		Via email 25/05/19

All recommendations for compliance are based on the current NSW Rural Fire Service document "Planning for Bushfire Protection 2006". The report and recommendations contained herein may not necessarily satisfy the consent authority that the proposed development complies with the regulatory requirements. The report and recommendations contained herein may not necessarily satisfy the objectives of the client.

## REFERENCES

- "Ocean Dunes to Desert Shores", Department of Environment and Conservation, Keith (July 2004).
- "Planning for Bushfire Protection – 2006", NSW Rural Fire Service (2006).
- "Australian Standard 3959 – 2009, Construction of Buildings in Bushfire – Prone Areas", Standards Australia (2009).
- "Overall Fuel Hazard Guide – Fire Management Research Report No. 47", Department of Natural Resources and Environment, McCarthy et al (1999).
- "Standards for Asset Protection Zones", NSW Rural Fire Service.
- "National Construction Code 2019 – Volume 2", Australian Building Codes Board (2019).

This report has been prepared subject to the following:

1. A review of on-site photographs provided by the client.
2. The site assessment methodology in Planning for Bushfire Protection – 2006 has been utilised as a guide.
3. The extent of vegetation has been determined through inspection of available aerial photographs (Appendix A) and site inspection.
4. Vegetation assessment has been carried out in accordance with the text "*Ocean Shores to Desert Dunes*", Keith (2004).
5. Slope analysis and assessment has been derived from The Department of Lands Spatial Information Exchange, <http://imagery.maps.nsw.gov.au/> (Appendices B) and site inspection.
6. Plans of the proposed buildings provided by IT Power (Australia) Pty Ltd as noted in table 3 above.



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APPENDIX A - AERIAL PHOTOGRAPH SHOWING EXTENT OF VEGETATION.



APPENDIX B - SLOPE ANALYSIS AND ASSESSMENT

