

BUSHFIRE THREAT ASSESSMENT REPORT

**-Finley Solar Project-
198 Canalla Road
Finley**



PREPARED BY:



AUGUST 2017

PEAK LAND MANAGEMENT

Land management consulting services:

-Bushfire-

-Ecological-

-Environmental-

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Cover Photo: View of subject site.

CONTENTS

1.0	INTRODUCTION.....	6
2.0	SITE DESCRIPTION AND SURROUNDING LANDUSE	12
3.0	VEGETATION	13
4.0	SLOPE.....	13
5.0	ENVIRONMENTAL FEATURES.....	13
6.0	ABORIGINAL FEATURES.....	13
7.0	BUSHFIRE ASSESSMENT	14
8.0	BUSHFIRE RECOMMENDATIONS	16
9.0	REFERENCES	18
	APPENDIX 1: PHOTOS OF SITE AND SURROUNDS	19

FIGURES AND TABLES

Figure 1: Topographic map showing subject site and surrounds (imagery from Lands Department)	8
Figure 2: Aerial photo showing subject site and solar farm proposal (from RPS).....	9
Figure 3: Bushfire Prone Land Map showing no mapped bushfire prone land within 5kms of subject site (from Berrigan Shire Council)	10
Figure 4: Ecological Constraints map, showing vegetation types/landuse & recommended 10m Asset Protection Zone around perimeter of site (from RPS)	11
Table 1: Bushfire Threat Site Assessment for proposal	14
Figure 5: Components of an Asset Protection Zone (from PBP 2006)	14

Document History

Document Id.	Prep. Date	Version	Submitted to:
Bushfire Assessment Report	9.8.2017	1	Shaun Smith, RPS
Bushfire Assessment Report	10.8.2017	2	Shaun Smith, RPS
Bushfire Assessment Report	16.8.2017	3	Shaun Smith, RPS
Bushfire Assessment Report	18.8.2017	4	Shaun Smith, RPS
Bushfire Assessment Report	5.9.2017	5	Shaun Smith, RPS

AUTHOR DETAILS

Ted Smith is the director of PEAK LAND MANAGEMENT. He is a qualified Land Management Consultant with a Bachelor of Science Honours Degree majoring in in Physical Geography. He has over 25 years experience commercially consulting with PEAK LAND MANAGEMENT PTY LTD and working within state government.

Ted has completed a Graduate Diploma in Design for Bushfire Prone Areas from the University of Western Sydney and is a member of the Fire Protection Association of Australia (FPA of Australia), being a BPAD Accredited Bushfire Practitioner Level 3.

CERTIFICATION

Ted Smith of PEAK LAND MANAGEMENT has carried out a bushfire threat assessment including a site inspection on the subject property. A detailed Bushfire Assessment Report is attached which includes the submission requirements set out in *Appendix 2 & 4 of Planning for Bushfire Protection 2006* together with recommendations as to how the relevant specifications and requirements are to be achieved.

I hereby certify, in accordance with Section 79BA of the *Environmental Planning and Assessment Act 1979 No 203*:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in Bushfire Risk Assessment; and
2. That subject to the recommendations contained in the attached Bushfire Risk Assessment Report the proposed development conforms to the **relevant specifications and requirements** being the document entitled *Planning for Bush Fire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by Section 79 BA(1)(a) of the *Environmental Planning and Assessment Act 1979 No 203*.



Signature

5th September, 2017

Date



TERMS AND ABBREVIATIONS

Abbreviation	Meaning
AHIMS	Aboriginal Heritage Information Management System
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2009	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BCA	Building Code of Australia
BPA	Bush Fire Prone Area (Also Bushfire Prone Land)
BPL	Bush Fire Prone Land
BPL Map	Bush Fire Prone Land Map
BPMs	Bush Fire Protection Measures
BRMP	Bushfire Risk Management Plan
BTA	Bushfire Threat Assessment
Defendable Space	An area within the asset protection zone that provides an environment in which a person can undertake property protection after the passage of a bush fire with some level of safety.
EPA Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EMP	Emergency Management Plan
FDI	Fire Danger Index
FMP	Fuel Management Plan
ha	hectare
IPA	Inner Protection Area
LEP	Local Environment Plan
LGA	Local Government Area
LMCC	Lake Macquarie City Council
OPA	Outer Protection Area
PBP 2006	Planning for Bushfire Protection 2006
RF Act	<i>Rural Fires Act 1997</i>
RF Regulation	Rural Fires Regulation
RPS	RPS Australia East Pty Ltd
SEARs	Depart of Planning & Environment - Secretary's Environmental Assessment Requirements
WHRS	Westpac Helicopter Rescue Service

1.0 INTRODUCTION

PEAK LAND MANAGEMENT has been engaged by RPS to prepare a Bushfire Threat Assessment Report for a proposed commercial Solar Farm development located at Lots 133, Lot 134 & Lot 136 DP 752299 (referred to hereafter as “subject site or proposed development”).

The project is a State Significant Development, and this report informs an EIS being prepared for the proposal. Department of Planning & Environment have issued Secretary’s Environmental Assessment Requirements (SEAR’s), which state there is a requirement for “*an assessment of potential hazards and risks associated with bushfires*”, and NSW Rural Fire Service have issued a SEARs advice letter, dated 30th June, 2017, which states:

The New South Wales Rural Fire Service’s (NSW RFS) has reviewed the information provided and advises that the following conditions be attached to any consent granted:

1. *A Bush Fire Management Plan (BFMP) shall be prepared in consultation with NSW RFS District Fire Control Centre. The BFMP shall include:*
 - *24/7 contact details including alternative telephone contact;*
 - *Site infrastructure plan;*
 - *Fire fighting water supply plan;*
 - *Site access and internal road plan;*
 - *Construction of asset protection zones and their continued maintenance;*
 - *Location of hazards (Physical, Chemical and Electrical) that will impact on fire fighting operations and procedures to manage identified hazards during fire fighting operations;*
 - *Such additional matters as required by the NSW RFS District Office (Plan review and update).*
2. *The entire development site is to be managed as an Asset Protection Zone as outlined within section 4.1.3 and Appendix 5 of ‘Planning for Bush Fire Protection 2006’ and the NSW Rural Fire Service’s document ‘Standards for asset protection zones’.*
3. *A 20,000 litre water supply (tank) fitted with a 65mm Storz fitting shall be suitably located along a property access road to the development within the APZ.*
4. *To allow for emergency service personnel to undertake property protection activities, a 10 metre defendable space (APZ), that permits unobstructed all weather vehicle access is to be provided around the perimeter of the development site.*

Figures 1-4 show the subject site location, topographic map, development proposal, ecological constraints, and Appendix 1 shows photos of the subject site.

Under the *Environmental Planning and Assessment Act, 1979* (and its regulations), and the *Rural Fires Act 1997* (and its regulations), councils are required to assess and control new developments in bushfire prone land mapped areas. This land and surrounds has not been mapped as Bushfire Prone Land and is therefore not subject to this legislation (Berrigan Council Bushfire Prone Land Map – Figure 3). Recommendations are made despite this in order to provide a reasonable level of bushfire safety to the facility.

The proposed development is predominantly a Class 8 building under the Building Code of Australia (BCA). As stated in Planning for Bushfire Protection Guidelines (PBP) 2006 it should be noted that “*Buildings of Class 5 to 8 and 10 of the BCA- The BCA does not provide any bush fire specific performance requirements and as such AS 3959 does not apply as a set of deemed*

to satisfy requirements. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP 2006 apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management”.

This report aims to address these SEARs requirements and PBP 2006 where relevant in order to provide improved bushfire protection for the proposed solar farm facility, and support its approval.

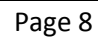
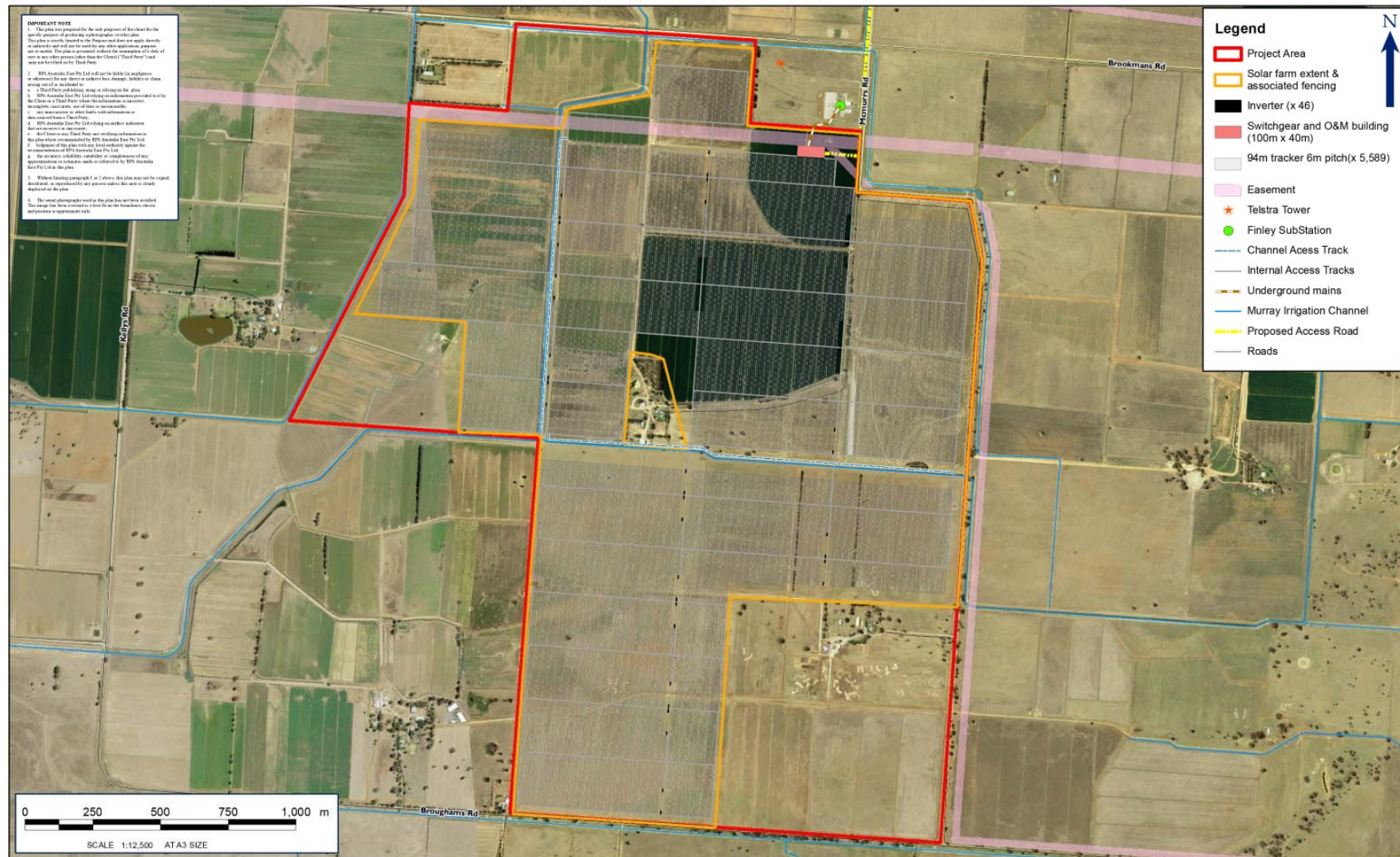


Figure 2: Aerial photo showing subject site and solar farm proposal (from RPS).



TITLE : FIGURE 6: PROJECT LAYOUT

LOCATION : FINLEY, NSW

DATUM:GDA 1994

DATE : 10/08/2017

VERSION (PLAN BY): B A3 (Natalie.Wood)

PATH: J:\JOBS\1360\13608\Foley10 - Drafting\Arcgis Map Documents\Planning\13608 Figure 5 Project Layout 8 A3 20170810.mxd

CLIENT: ESCO PACIFIC
JOB REF: PR 136808

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creative people

RPS

Figure 3: Bushfire Prone Land Map showing no mapped bushfire prone land within 5kms of subject site (from Berrigan Shire Council)

Created by staff on Monday, 31 July 2017

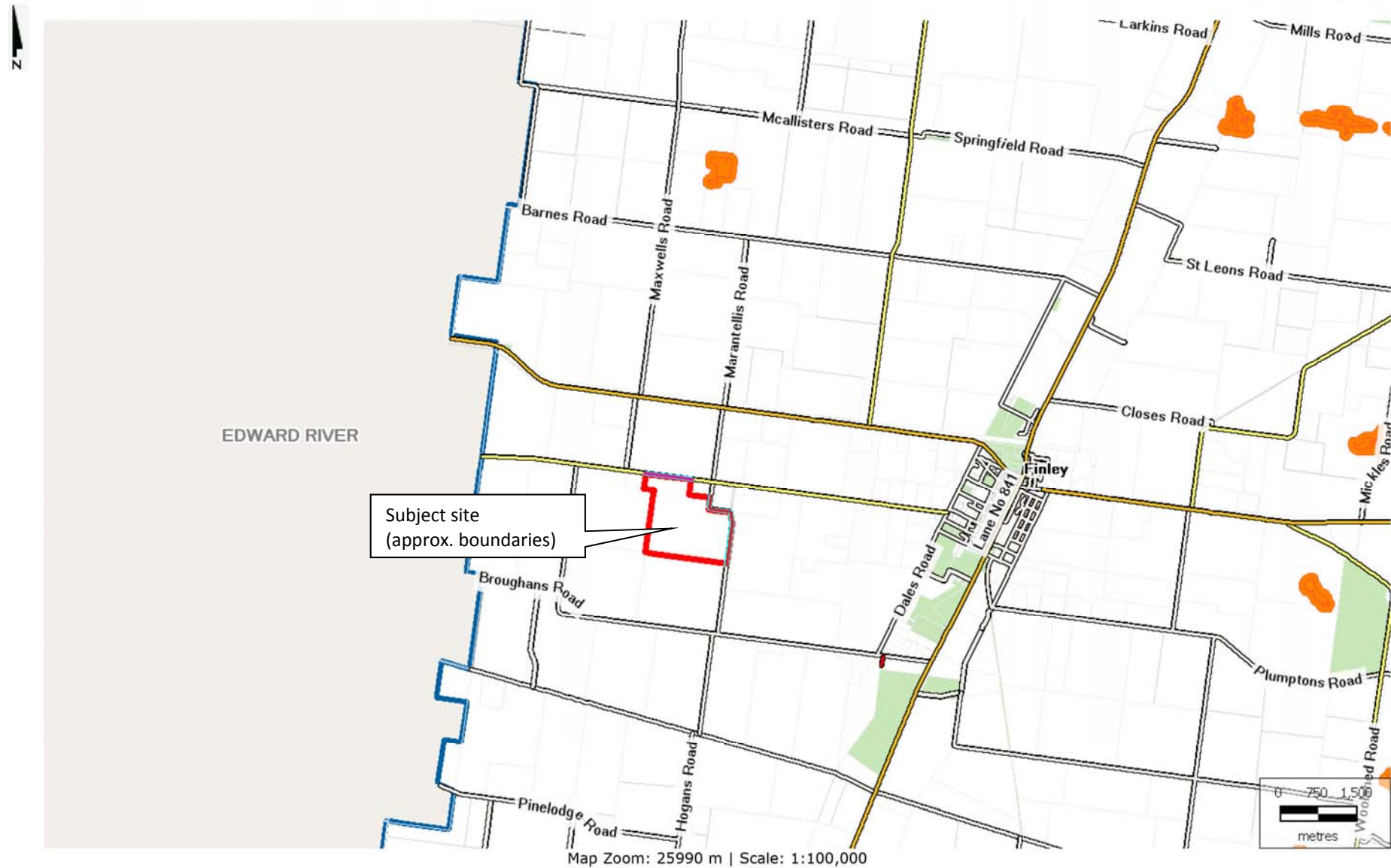
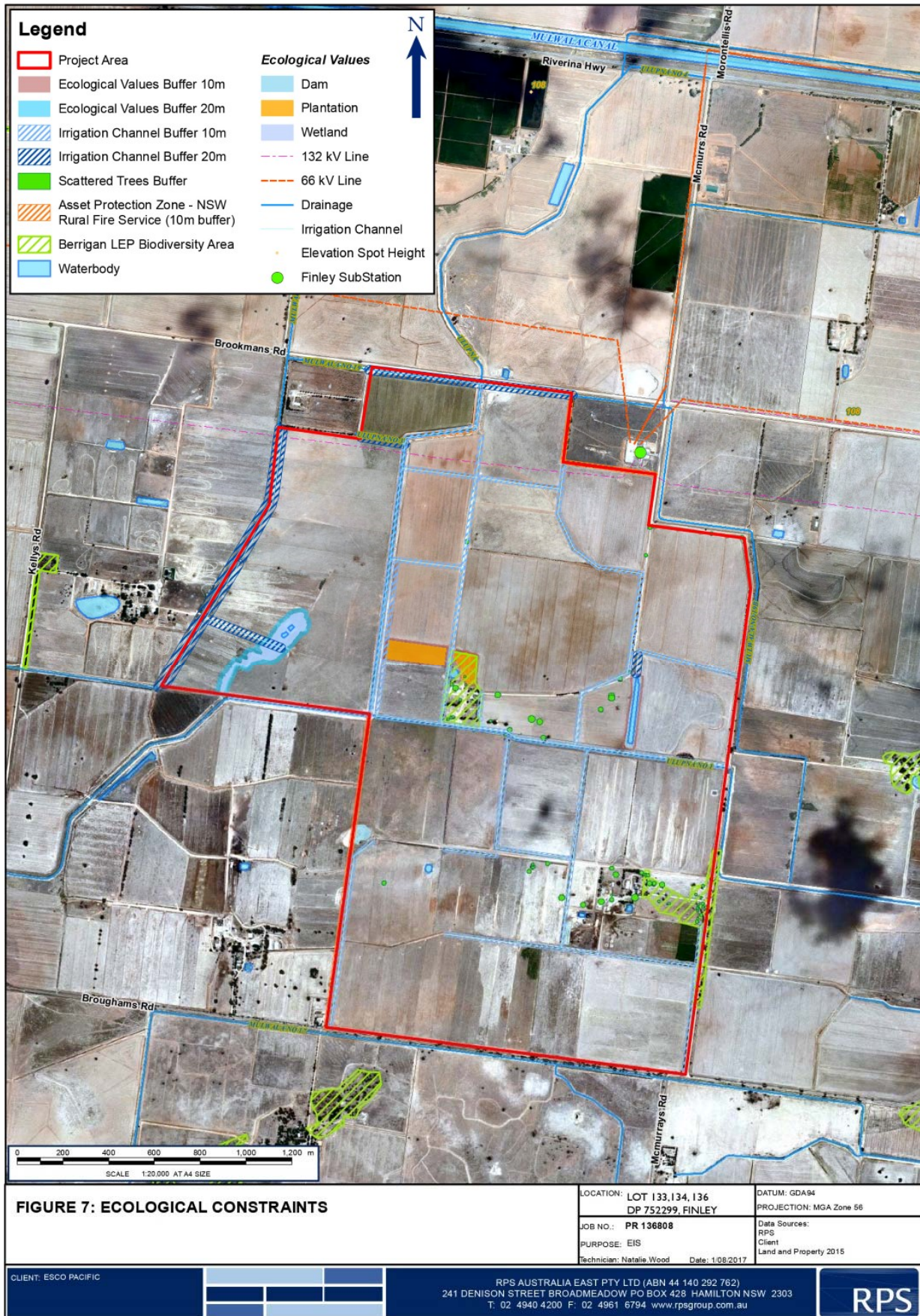


Figure 4: Ecological Constraints map, showing vegetation types/landuse & recommended 10m Asset Protection Zone around perimeter of site (from RPS)



2.0 SITE DESCRIPTION AND SURROUNDING LANDUSE

The site is located in a cropping agricultural area of the southwest slopes of NSW. The land over the site and surrounds is dominated by managed cropping & grazing land. A small woodlot is located over the property, however it is less than 1 hectare in extent, and not within 100m separation of any other Category 1,2,3 vegetation, and is not considered a hazard. There is no mapped bushfire prone land map over the subject site, or within 140m of it under Berrigan Councils Bushfire Prone Land Map (Fig 3).

The proposal is shown in Figure 2 and is described by ESCO Pacific, 2017:

“The Finley Solar Farm project is a 170MW utility scale renewable energy project that would generate clean and renewable electricity from the power of the sun. Finley has been chosen because of the relatively high solar irradiance in the region, and its available capacity on the Essential Energy and TransGrid electricity network.

The solar farm would comprise up to 480,000 solar photovoltaic modules, known more commonly as ‘PV Modules’ or ‘solar panels’. The solar panels use the same type of technology but are larger in size to those used in residential solar installations located commonly throughout Australia.

The Solar Farm is a large infrastructure project and would be expected to create up to 130 jobs during construction and up to 4 full time and 8-part time positions when operational.

The solar panels would be installed on ground-mounted frames that will slowly track the daily horizontal movement of the sun. The solar panels would generate direct current (“DC”) electricity that would be inverted to alternating current (“AC”) via Power Conversion Units.

The site offers proximity to the existing electricity network (Finley 132 Substation).

The Finley Solar Farm would be built as a utility scale solar PV plant, with the solar panels mounted in rows on horizontal tracking or fixed tilt systems.

The rows of solar panels are electrically connected into arrays before being inverted from DC to AC electricity, which is the standard form of electricity used throughout Australia. Electricity is then fed, via an underground on-site high voltage power reticulation system, into the local electricity network”.

An overview of the key infrastructure items (from Finley Solar Project EIS, 2017) to be established for the project relevant to bushfire include:

- each solar panel would be fixed to a metal mounting structure;
- above ground DC cabling;
- underground DC cabling;
- underground AC cabling would run from the PCUs to the solar substation;
- internal vehicle access tracks;
- perimeter safety fencing and closed-circuit television (CCTV) system;
- site office and staff amenities, and maintenance shed;
- a permanent staff and contractor car parking area;

- a permanent all weather access and access road; and
- temporary site compound, lay-down area, and equipment storage areas.

3.0 VEGETATION

The predominant vegetation type within 140m is Grassland assessed as a hazard as per AS 3959 and PBP 2006 (Figure 2, Appendix 1 - photos).

The subject site is located in an intensively cropped/grazed rural area, with low bushfire risk present. No vegetation has been mapped as bushfire prone over the site or within 140m of it under Berrigan Councils Bushfire Prone Land Map. The subject property is to be developed and most remaining remnant vegetation/grassland/cropland removed. The cropping areas and grazed paddocks within 140m of the site occasionally sustain crops/grass >100mm in height, and are therefore conservatively assessed here as Grassland.

Grassland is not recognised under PBP 2006, however it is under AS 3959.

4.0 SLOPE

Slope assessment has been carried out around the subject site under hazardous vegetation out to 100 metres as specified under the Guidelines Assessment Procedure. The angles have been measured in the field by an inclinometer. Table 1 shows the results which are flat to very low slopes within 1 degree both up and down slopes around the subject site.

5.0 ENVIRONMENTAL FEATURES

A full Ecological Assessment is being carried out by both Ecolink, and RPS. The subject site has some scattered remnant paddock trees remaining, and areas mapped under Berrigan Councils LEP as Biodiversity Areas.

These ecological features have no bearing on the bushfire assessment, being isolated paddock trees and small LEP biodiversity areas which are proposed for removal over the site.

An EIS identifying the potential environmental impacts of the proposed development and mitigation and management measures, has been prepared to support the Development Application. This Ecological & Bushfire Threat Assessment Reports informs the EIS. Any removal of vegetation over the site is subject to NSW Government approval.

6.0 ABORIGINAL FEATURES

An Aboriginal archeological survey/or AHIMS search has been undertaken by the proponent, which showed no AHIMS sites or any Aboriginal features over the subject site.

7.0 BUSHFIRE ASSESSMENT

As the site is not mapped as bushfire prone the “*aim and objectives of PBP 2006 do not apply in relation to ... matters such as access, water and services, emergency planning and landscaping/vegetation management*”. Notwithstanding these objectives, the statutory requirements have been addressed in this report, as there is a recognised potential Grassland bushfire risk from time to time.

7.1 Setbacks including asset protection zones

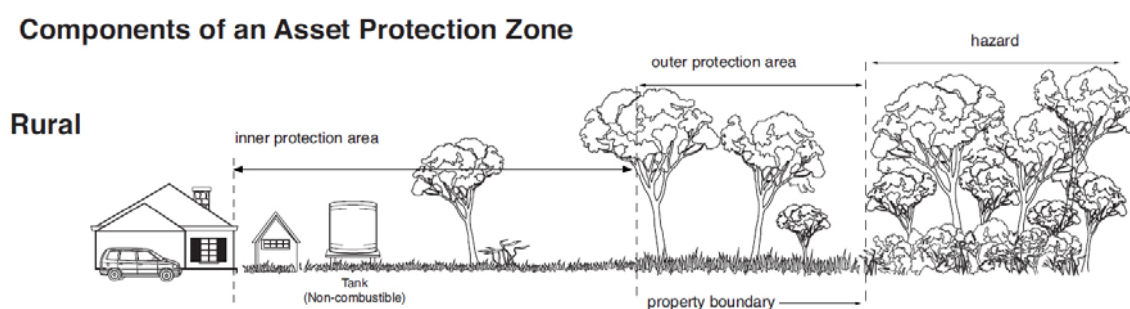
Table 1 shows the bushfire threat assessment for the subject site. Figure 5 shows a graphical representation of the recommended Asset Protection Zone.

Table 1: Bushfire Threat Site Assessment for proposal

DIRECTION TO BUSHFIRE HAZARD	MOST SIGNIFICANT GRADIENT	PREDOMINANT VEGETATION TYPE WITHIN 140m as per PBP 2006	Distance to hazard (from proposed development)	Recommended Asset Protection Zone (from NSW Rural Fire Service-SEARs)
All directions	Flat or within 1 ⁰ degree both up & down slopes	Grassland	10m where no perimeter roads present 34m where public roads present	10m

It is noted PBP 2006 makes no recommendations for Asset Protection Zones over Grassland, however in conformance with NSW Rural Fire Service stated SEARS advice a 10m Asset Protection Zone is required.

Figure 5: Components of an Asset Protection Zone (from PBP 2006)



7.2 Water supplies and utilities

The subject site is not serviced by reticulated town water supplies. According to aerial photo interpretation three small dams of approximately 1 megalitre water capacity are to be retained over the site, and access to irrigation water supply is available.

The proposed development will have a non combustible 20 000 litre water tank with Storz fitting, and other fire fighting equipment in compliance with Australian Standards.

The subject site is serviced by above ground power to the site. There are no permanent proposed gas tanks/bottling.

7.3 Access

The site is accessed from Canalla Road, as well as other perimeter public roads being Broughams Road, and Broockmanns Road, and emergency access is available from these public two way through roads. Broughams Road is unsealed, whilst Broockmanns Road and Canalla Road are sealed. A perimeter access maintenance track will be provided around the development, which will be also part of the managed proposed 10m wide Asset Protection Zone.

An unsealed property access road to the existing homestead over the property (Lot 133) will be retained.

There is ample room for fire fighting vehicles to access and turn around on site.

7.4 Construction standards

No construction standards are applicable for this development under:

- PBP 2006
- AS 3959-2009
- PBP, 2010 Amended Appendix 3 (on Rural Fire Service web site) which overrides and amends certain parts of AS 3959.

7.5 Other fire protection measures

Other non compulsory measures which are recommended to improve bushfire safety include:

- Local Fire & Rescue Brigade informed of proposal once approved regarding its operation, water supplies, and layout;
- Gutters cleaned annually (if relevant);
- All doors closed during bushfire in local area;
- The interior of any buildings will have all necessary fire safety provisions (sprinklers, fire extinguishers, etc) as required by the relevant Australian Standards and legislation.

8.0 BUSHFIRE RECOMMENDATIONS

The proposed development is not located within a bushfire prone land mapped area, and the requirements of PBP 2006 are not therefore not applicable.

Nevertheless in recognition of possible grass fires/bushfire risk over surrounding lands, and Rural Fire Service SEARs requirements, the following recommendations are made:

- ❑ **Asset Protection Zone:-**The entire development site is to be managed as an Asset Protection Zone as outlined within section 4.1.3 and Appendix 5 of 'Planning for Bush Fire Protection 2006' and the NSW Rural Fire Service's document 'Standards for asset protection zones'. This requirement includes a 10m wide Asset Protection Zone be provided around the perimeter of the Solar Farm over the subject site. Please note that isolated paddock trees, woodlots, conservation areas can be retained as they are relatively small in size and of a low risk, so long as vegetation does not touch the proposed solar array panels, and access is maintained around the perimeter.
- ❑ **Electricity, water and gas services:-** The proposed development is to have a non combustile 20 000 litre dedicated water tank with Storz fitting, and other fire fighting equipment in compliance with Australian Standards. Dedicated fire fighting water supply from either this tank or dams, is specifically for fire tanker refilling/on site fire fighting. A petrol or diesel or solar powered fire fighting pump and 30m hose reel with steel nozzle is recommended, and can be mounted on a 4WD with water tank. This can be used for grass fire/ember attack fighting by the proponent in the advent of a fire.
- ❑ **Internal access roads** – All internal roads should be two wheel drive, all weather roads allowing 2 way traffic flow (except when crossing a drainage/irrigation channel - use of single lane internal bridge) around the perimeter of the site and safe design which enable safe access for emergency services and allow crews to work with equipment about the vehicle.
- ❑ **Emergency Management** - Suitable management arrangements for the implementation of the Emergency Evacuation Plan be developed. The A Bush Fire Management Plan (BFMP) shall be prepared in consultation with NSW RFS District Fire Control Centre. The BFMP shall include:
 - 24/7 contact details including alternative telephone contact;
 - Site infrastructure plan;
 - Fire fighting water supply plan;
 - Site access and internal road plan;
 - Construction of asset protection zones and their continued maintenance;
 - Location of hazards (Physical, Chemical and Electrical) that will impact on fire fighting operations and procedures to manage identified hazards during fire fighting operations;
 - Such additional matters as required by the NSW RFS District Office (Plan review and update).
- ❑ **Landscaping-** Whole site to be developed and therefore not applicable. If scattered trees are retained and visual screening used these are acceptable as part of the Asset Protection Zone, assuming vegetation does not touch the solar array/impede perimeter access track/road.

The bushfire risk is considered to be adequately managed in regards to the proposal over the site, and in conjunction with any approval conditions from the relevant statutory authorities.

Report prepared by:



Ted Smith BSc (Hons), Grad Dip, Accredited Practitioner Level 3 -FPA Australia
PEAK LAND MANAGEMENT PTY LTD

DISCLAIMER: Whilst every effort is made to present clear and factual information based on fieldwork and current legislation no guarantee is made that the development or its occupants are safe from bushfire, or will be approved, as this is in the hands of the approving statutory authorities/certifier. No warranty or guarantee, whether expressed or implied, is made with respect to the observations, information, findings and inclusions expressed within this report. No liability is accepted for losses, expenses or damages occurring as a result of information presented in this document.

9.0 REFERENCES

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Websites

www.rfs.nsw.gov.au

nearmap

Lands Department- SIX Maps

Berrigan Shire Council

APPENDIX 1: PHOTOS OF SITE AND SURROUNDS

Grassland to east of subject site



Grassland to east of subject site



Managed Grassland to south of subject site



Grassland to north of subject site



Grassland to west of subject site



Grassland to south of site, also showing Broughans public sealed road

