



APPENDIX M

Bushfire hazard assessment

Memorandum



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To Claire Burnes
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From Erin Lowe
Subject J17300 - New England Solar Farm - Bushfire hazard assessment

1 Overview

This memorandum provides an assessment of potential hazards associated with bushfire, electrical fire and structure fire, in consideration of the relevant legislation within NSW. This memorandum then provides an overview of the existing environment, as related to bushfire risk as well as the potential fire hazards associated with the project. The appropriate provisions for fire mitigation for the construction, operation and decommissioning of project are then provided, in order to develop a coordinated response to fire risks.

A preliminary bushfire report for the construction accommodation village proposed on Lot 2 of DP 174053 within the development footprint for the northern array area has been prepared by Australian Bushfire Protection Planners Pty Limited (ABPP) (refer Appendix A). The aim of the report is to examine the requirements of Section 4.14 of the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act) in respect to the bushfire hazard to the construction accommodation village and provide preliminary advice on bushfire protection measures that shall be applied to the construction accommodation village (should it be required).

A very small part of the land within the development footprint (approximately 12 ha or 0.4%) is mapped bushfire prone by Uralla Shire Council (refer Figure 2.5 of the EIS). The project will potentially be exposed to bushfire threat in the form of grassfire and has the potential to cause unplanned ignition of surrounding grassland. Therefore, bushfire risks associated with the project have been assessed in accordance with *Planning for Bushfire Protection* (PBP) (RFS 2006), where applicable to the project.

For the purposes of this bushfire hazard assessment (BHA) and in keeping with PBP, the project is considered 'other development', therefore, the *Australian Standard 3959 -2009 Construction of Buildings in Bushfire-prone Areas* (AS 3959 - 2009) and associated asset protection zones (APZs), do not apply as a set of 'deemed to satisfy' provisions, and only the aim and objectives of the PBP apply.

2 Existing environment

Fire suppression operations can be made more challenging as a result of adverse bio-physical risk factors, such as weather conditions, terrain and aspect, vegetation characteristics, limited access, lack of water supply and existing potential ignition sources. The addition of activities associated with the construction, operation and decommissioning of the project adds additional risks. The following provides an overview of the existing environment, in regards to bushfire risk factors, of the land within the project boundary (with a focus on the development footprint) and in the locality more generally.

2.1 Regional fire weather

An analysis of the fire weather experienced in the region provides insight into bushfire behaviour potential within the project boundary and surrounds. Fire Danger Index (FDI) is based upon the Local Government Area (LGA) and Fire Weather District, as determined by the NSW Rural Fire Service (RFS), where the development is to be located. As the project occurs in the Uralla Shire Council LGA, a FDI of 80 (New England Fire Weather District) has been used to inform bushfire behaviour on land within the project boundary (RFS 2017a). The project is within the New England Bush Fire Management Committee (BFMC) area, which ascribes the following regional weather characteristics:

- the typical/average climate is temperate to cool climate;
- summers are warm with uniform rainfall generally occurring in the summer; and
- the bushfire season generally runs from August to March.

Prevailing weather conditions associated with the bushfire season in the New England BFMC area are west to north-westerly winds, moderate to high daytime temperate and low relative humidity. Frosts in winter can create low fuel moisture contents and dry lightning storms occur in the bushfire season (New England BFMC 2017).

2.2 History of bushfire frequency and existing ignition sources

The New England BFMC area has on average 95 bushfires per year, of which 12 on average can be considered major fires (New England BFMC 2017).

The main sources of ignition of unplanned fires in the New England BFMC area are reported to be:

- escaped private burns;
- lightning strikes; and
- arson/fire setting (New England BFMC 2017).

2.3 Vegetation

Vegetation mapping within the development footprint has been undertaken by EMM (2018) as part of the Biodiversity Development Assessment Report (BDAR) for the project (Appendix C). Vegetation mapped by EMM within the development footprint is listed in Table 1 and shown in Figure 5.1 of the EIS.

Table 1 **Vegetation within the development footprint**

Plant Community Type (PCT)	Area	Vegetation formation (Keith 2004)	Condition	PBP classification
PCT 1174 - Silvertop Stringybark open forest of the New England Tableland Bioregion	5.67 ha	Grassy Woodlands	Woodland	Woodland (grassy)
510 - Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	38.2 ha	Grassy Woodlands	Woodland	Woodland (grassy)
510 - Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	15.26 ha	Grassy Woodlands	Planted	Woodland (grassy)
510 - Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion	1,302.53 ha	Grassy Woodlands	Pasture	Grassland
Exotic grasslands	1,288.83 ha	-	Pasture	Grassland
Exotic cropping	112.17 ha	-	Cropping	Grassland
Exotic trees (wind rows)	17.79 ha	-	Planted wind rows	Plantation (pine)

Source: EMM (2018)

As shown in Table 1 and Figure 5.1 of the EIS, the native vegetation within the development footprint aligns with the woodland and grassland vegetation formations, as classified by Keith (2004). Those areas of vegetation mapped as a non-native have been assigned vegetation formations as per PBP, based upon predicted fuel load and best fit. Therefore, the predominant vegetation classification within the development footprint as per PBP is grassland (approximately 2,703.5 ha) with small areas of woodland (approximately 59.1 ha).

The grassland vegetation classification is the most prevalent of the vegetation mapped within the development footprint. The 1,302.53 ha of mapped grassland that is derived from Plant Community Type (PCT) 510 is highly modified and used for grazing of livestock including cattle and sheep with canopy species either absent or limited to scattered trees. The ground cover here is typically a mixture of native and exotic grasses, with the composition variable due to the proceeding management intensity and the timeframe since significant intervention (EMM 2018). The 1,288.83 ha of exotic grassland mapped within the development footprint is dominated by exotic grass species. Typically these areas have been ploughed, sown with exotic pasture species and improved with fertiliser.

The BDAR included as Appendix C of the EIS (EMM 2018) provides detailed descriptions of the composition of each vegetation community mapped within the development footprint.

2.4 Slope

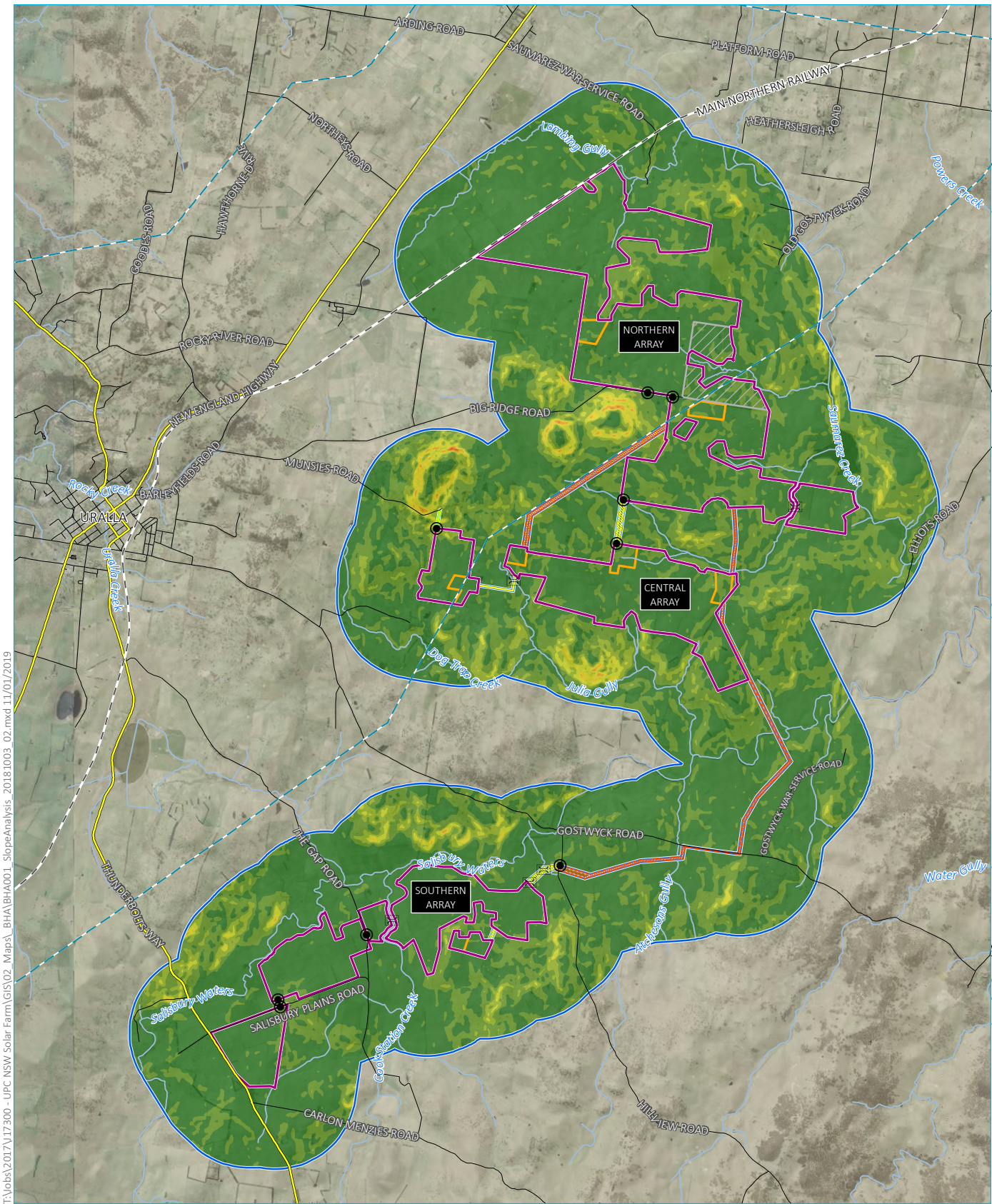
Slope is an important contributor to a bushfire’s rate of spread. A bushfire will spread more quickly up a steep slope in comparison with a gradual slope or over flat land. Slopes are classified in accordance with the provisions of PBP and are combined with vegetation classes in an area to determine APZs for a development type. Slopes are classified according to the following PBP categories:

- all flat and upslope vegetation (considered 0°);
- >0 to 5 degrees (°) downslope vegetation;
- >5 to 10° downslope vegetation;
- >10 to 15° downslope vegetation; and
- >15 to 18° downslope vegetation.

As the detailed design for the project, including the specific location and layout of solar arrays, substations, battery energy storage systems (BESSs), operations and maintenance (O&M) infrastructure and connection infrastructure, has not yet been undertaken, a slope analysis that encompasses the entire project boundary

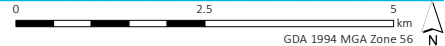
(including the development footprint) and for a 1.5 km buffer has been undertaken. This allows understanding of the slope classifications and potential fire behaviour in the development footprint and immediate surrounds.

As shown in Figure 1, the development footprint and surrounds are dominated by a gently undulating landscape with some areas of steeper slopes associated with low hills and various permanent and ephemeral water courses. As shown in Figure 1, slopes within the development footprint and immediately adjacent vary in gradient from 0 degrees (°) (flat land) to isolated areas that are over 18° in gradient. These steeper gradients are associated with larger hills and lower lying areas associated with permanent and ephemeral watercourses or valley floors. The steepest slopes occur under either cropped land or grassland vegetation and also some areas with widely spaced paddock trees.



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Source: EMM (2018); DFSI (2017); UPC (2018); ELVIS (2018)



KEY

- 330 kV transmission line
- Rail line
- Main road
- Local road
- Watercourse/drainage line
- Potential site for construction accommodation village
- 1,500 m buffer

- Development footprint
- Solar array
- Potential ETL easement
- Potential site access corridor
- Potential site access/ETL easement
- Potential electrical cabling/site access corridor
- Potential substation/BESS footprint
- Potential creek crossing
- Proposed primary site access point

- Slope ranges
- 0.0 - 2.5 degrees
- 2.5 - 5.0 degrees
- 5.0 - 7.5 degrees
- 7.5 - 10 degrees
- 10 - 12.5 degrees
- 12.5 - 15 degrees
- 15 - 17.5 degrees
- 17.5 - 20 degrees

Slope classes within the development footprint and surrounds

New England Solar Farm
Bushfire hazard assessment
Figure 1



3 Relevant legislation

3.1 NSW Rural Fires Act 1997

The objectives of the *NSW Rural Fires Act 1997* (RF Act) are to:

- prevent, mitigate and suppress bush and other fires in NSW;
- co-ordinate bushfire fighting and bushfire prevention throughout the State;
- protect people from injury or death and property from damage as a result of bushfires; and
- protect the environment.

The RF Act places emphasis on cooperative fire management and wildfire suppression planning between the various organisations involved in fire management. With respect to the project, RFS is the primary response agency for fighting fires within the project boundary and, more specifically, the development footprint. Fire and Rescue NSW (FRNSW) will also respond to either assist RFS or to fulfil the role of designated combat agency in the event of a significant fire event either in the development footprint or in close proximity to the project.

It is also noted that under section 63 of the RF Act, owners and occupiers of land have a duty to take practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires on or from that land.

Part 3, division 4 of the RF Act stipulates that the Bush Fire Coordinating Committee (BFCC) must constitute a BFMC for each area in NSW that is subject to the risk of bushfires. Each BFMC is required to prepare and submit to the BFCC a draft Bush Fire Risk Management Plan (BFRMP), a strategic document that identifies community assets at risk and sets out a five year program of coordinated multi-agency (including RFS and FRNSW) treatments to reduce the risk of bushfire to the assets identified. The project occurs within the New England BFMC area.

3.2 NSW Environmental Planning and Assessment Act 1979

Under the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act), the provisions of PBP, as set out by RFS (2006), apply to all developments on land which is mapped as being bushfire prone or all developments that are potentially exposed to a bushfire threat. If a development of a type not specifically addressed in PBP is proposed in a bushfire prone area, RFS will determine which standards apply to that development.

The RFS Bush Fire Prone Land online mapping tool and Uralla Shire Council Bushfire Prone Land mapping indicate that approximately 0.4% of the development footprint for the project is mapped as bushfire prone (see Figure 2.5 in the EIS). The project is potentially exposed to bushfire threat in the form of grass fire, and has the potential to cause unplanned ignition of surrounding grassland. Therefore, an assessment and recommendations have been made to address how a grass fire impacting on and structural fire emanating from the project will be managed (this memorandum).

Under Section 5.23(1) of the EP&A Act, SSD projects are exempt from requiring a bushfire safety authority (BFSA). However, given the scale of many SSD projects, the requirements of PBP should be applied as appropriate, and consultation with RFS is encouraged. Even where comments are sought at the strategic planning stage of a project, further consultation with RFS may be required at subsequent stages of project development (eg during detailed design).

i National Construction Code

The National Construction Code (NCC) provides the minimum necessary requirements for safety, health, amenity and sustainability in the design and construction of new buildings throughout Australia.

The NCC is a performance based code which comprises the *Building Code of Australia* (BCA) as Volumes 1 and 2 and the *Plumbing Code of Australia* as Volume 3.

The NCC contains performance requirements and Deemed-to-Satisfy provisions relating to the construction of buildings in bushfire prone areas. These provisions apply to Class 1, 2, 3 and 4 and some Class 10 and Special Fire Protection Purpose (SFPP) buildings.

For the purposes of the BHA and in keeping with PBP, the project will be considered 'other development': that is, development which is not an 'integrated development' such as residential/rural residential subdivision, residential infill or special fire protection purpose. For BCA defined Class 5, 6, 7, 8 and 10 buildings (which include offices, factories, warehouses and other commercial or industrial facilities), the BCA does not provide for any bushfire specific performance requirements. Therefore, the *Australian Standard 3959 -2009 Construction of Buildings in Bushfire-prone Areas* (AS 3959 - 2009), does not apply as a set of 'deemed to satisfy' provisions, and only the aim and objectives of the PBP apply.

4 Assessment of impacts

Fire is capable of damaging the structures associated with the project and consequently impacting upon the safety of staff and contractors on the project. Fire emanating from the project poses a human safety and property threat within the locality, as well as threatening native flora, fauna and ecosystems within the locality of the project.

As outlined within Section 2.3, woodland fragments are sparse within the development footprint. Throughout the project refinement process (described in Chapter 1 of the EIS), UPC has adopted a preference for avoidance of woodland areas; however, the risk of grassland fire remains. The following section provides an assessment of the potential ignition sources during the construction, operation and decommissioning phases of the project.

The main potential sources of ignition of unplanned fires from the construction and decommissioning phases of the project are likely to be:

- diesel generators;
- storage of flammable liquids (eg fuel storage);
- vehicle and machine movement over long grass;
- sparks generated from hot works (eg welders and grinders); and
- human error, such as non-compliance of hot works procedures or incorrect disposal of cigarette butts.

The main potential sources of ignition of unplanned fires from the operation of the project are likely to be the same as those listed above, with the addition of fire risks associated with electrical equipment associated with the operation of the project (eg PCUs, BESSs, substations and connection infrastructure). Due to the electrical hazards associated with large-scale photovoltaic (PV) installations, there are additional health and safety considerations for the implementation of effective and appropriate risk control measures when managing an emergency incident that involves electrical fires.

The fire prevention and protection measures described in Section 5 will assist in mitigating bushfire and electrical fire risks during the construction, operation and decommissioning of the project.

5 Mitigation measures

The key principles for bushfire prevention and protection for the project are:

- the provision of clear separation between structures and bushfire hazards in the form of fuel-reduced APZs and/or defensible space;
- appropriate access and egress for staff, contractors, visitors and emergency services;
- adequate water supply;
- suitable location of services and other infrastructure that pose potential ignition risk;
- suitable construction standards and design of buildings; and
- suitable management plans for the provision and maintenance of mitigation measures as well as for appropriate emergency response.

The key principles for fire prevention and protection listed above will be applied as fire protection and prevention measures during the construction, operation and decommissioning of the project, as discussed in the following sections.

5.1 Defensible space

AS 3959 - 2009 and associated APZs are not considered as a set of 'deemed to satisfy' provisions for commercial and industrial facilities. However, in many instances, these types of developments will require access roads, on-site parking and hardstand/loading areas. In these cases, it is prudent to place these facilities in the most appropriate location in order to establish defensible space for fire fighting purposes, as well as to mitigate the potential for ignition of surrounding grassland from project sources.

Chapter 8 of the pre-release of *Planning for Bush fire Protection 2018* (RFS 2018), provides further advice on APZs for 'other development', including wind farm and mining (underground and open cut) and petroleum production. As a minimum, a 10 m APZ from the structures, associated buildings and infrastructure is recommended to be maintained to the standard of an Inner Protection Area (IPA) for the life of the development.

In consideration of the above, a minimum 10 m defensible space should be provided around the perimeter of each solar array area and around substations, BESSs and O&M infrastructure that permits unobstructed fire vehicle access and is maintained to the standard of an IPA. This will be in the form of mown or grazed grass or similar suitable ground cover. As a guide, grass within an IPA should be kept to no more than 100 mm in height, with leaves and vegetation debris removed (RFS 2018).

5.2 Fuel reduction

The fuel load within the development footprint will be:

- monitored; and
- mechanically slashed, sprayed with herbicides or grazed in liaison with project landholders.

This will reduce the risk of grass fires starting within the development footprint and ensure that fires originating from outside the development footprint do not intensify as a consequence of entering the development footprint.

UPC is currently in discussions with a number of the project landholders to enable sheep grazing to resume on portions of the three array areas following the completion of the construction of the project. Slashing and

spraying of grassland to reduce fuel load will be on an as-needed basis and will also be in liaison with the project landholders.

Vegetation management actions, as related to bushfire fuel reduction, for the construction, operation and decommissioning phases will be included a fire management plan (FMP) for the project. Section 5.7 provides further detail on the FMP.

5.3 Access

A number of local roads traverse the array areas and their surrounds, including Big Ridge Road, Munsies Road, Saumarez War Service Road, Elliots Road, Gostwyck Road, Salisbury Plains Road, The Gap Road, Carlon Menzies Road, and Hillview Road, and will provide access to the three array areas from the regional road network throughout the construction and operation of the project (refer Figure 1). These comprise a combination of sealed and unsealed roads.

The primary site access points will be from Big Ridge Road, Munsies Road, The Gap Road, Salisbury Plains Road, and Hillview Road (refer Figure 1). Emergency access points may also be required and will be identified as part of the project's emergency response plan (ERP). The primary site access points, emergency access points and project roads will comprise of a combination of sealed and unsealed roads, detailed design of which will consider:

- minimum carriageway width of 4 m;
- the capacity for fire fighting vehicles to pass by;
- avoiding grades greater than 15 degrees (°) if sealed and 10° if unsealed;
- minimum vertical clearance of 4 m to any overhanging obstructions, including tree branches;
- will not have a cross fall of more than 10°;
- the capacity to carry a fully loaded fire fighting vehicle (which may be up to 28 tonne);
- appropriate drainage and erosion controls; and
- all weather access is provided.

It is noted that a number of creek crossings are proposed for access to and from the three array areas. Indicative locations for higher order creek crossings (ie Strahler third order and above) are provided on Figure 1. As part of the detailed design of the project, consideration should be given to the capacity of the creek crossings in carrying a fully loaded fire fighting vehicle and proposed emergency arrangements in the scenario that a fully loaded fire fighting vehicle cannot cross these areas (see Section 5.8).

As part of the detailed design, and in consultation with RFS and FRNSW, requirements for emergency access points will be determined to provide additional emergency access and egress points in those areas that are a distance from the main project access point. During detailed design of the project, consideration should be given to the location of emergency access points so that there is an alternative access/egress point for each isolated section of the PV module arrays that is bound by perimeter fencing. This is in the context that staff, contractors, visitors and emergency services could become trapped in a bushfire or electrical fire emergency in any fenced off array areas that only contain one access/egress point.

Once inside each array area, the defensible space outlined within Section 5.1 will provide access around the entirety of each array. Considering the size of the development footprint and the potential size of each array area, as part of the detailed design stage of the project consideration should be given to the accessibility of fully loaded fire fighting vehicles attending structure fires within the three array areas. Access may be possible via the internal tracks used for servicing the inverters associated with individual blocks of PV modules within each array. Access within individual rows of modules will not be possible for fully loaded fire trucks.

The ERP for the project will detail the access and egress points for the project. Section 5.8.2 provides further detail on emergency planning for the project.

5.4 Location and adequacy of services

Adequate supply of water is essential for fire fighting purposes. In addition, electricity supply for the site should be located so as to not contribute to the risk of fire or impede the fire fighting effort.

Whilst there are no specific provisions for the location and adequacy of services for 'other development' within PBP, the following objectives will be applied to project infrastructure in relation to water and services:

- to provide adequate supplies of water for the protection of infrastructure during and after the passage of bushfire; and
- to locate electricity supply so as not to contribute to the risk of fire.

There are a number of farm dams located within the three array areas and surrounds that may be accessible to fire fighting vehicles. However, due to potential access constraints associated with dam water supply, as part of the detailed design stage consideration should be given to:

- static water supplies (in the form of water tanks) that comply with the provisions as set out in PBP and in liaison with RFS and FRNSW - the water tanks should be positioned across the three array areas so as to provide strategic areas of fire protection advantage for fire fighting vehicles and should comply with the provisions as set out in PBP in terms of construction materials, fittings and access for fire trucks; and
- the tanks should be topped up at the beginning of the fire season and repeatedly throughout the season as required (refer to Section 5.7).

The vegetation within the electricity transmission line (ETL) corridors proposed for the project should be:

- managed, either by the O&M contractor directly, by the relevant network service provider or via arrangement with the project landholders, so as to limit the possibility of ignition of surrounding vegetation and vegetation within the ETL corridors; and
- managed as per the specifications in ISSC3 Guide for the management of vegetation in the vicinity of electricity assets (Resources and Energy NSW 2016).

The FMP for the project will detail the specifications and maintenance of dedicated fire water sources to assist in fire suppression, as well as the appropriate vegetation management procedures (in relation to the ETL corridors) to prevent fires igniting during the construction, operation and decommissioning of the project. Section 5.7 provides further detail on the FMP for the project. The ERP for the project will also detail the locations of the water supply. Section 5.8 provides further detail on emergency planning for the project.

5.5 Location of hazardous materials and ignition sources

Section 4 identified potential ignition sources related to the construction, operation and decommissioning of the project, including diesel generators, fuel storage, sparks generated from hot works, vehicle movement over long grass and potential fire events associated with electrical hazards. In relation to potential ignition sources, the FMP for the project will include:

- the provisions for diesel generators and associated fuel storage tanks to be designed, housed and maintained so as not serve as an unacceptable risk to surrounding grassland – diesel generators and associated fuel storage tanks should be located away from the hazard, wherever possible; and
- the provisions for specific measures and procedures to prevent ignition of grassland from hot works or from vehicles driving over long grass.

The FMP for the project will detail measures and procedures to minimise the risk of fires igniting during the construction, operation and decommissioning of the project. Section 5.7 provides further detail on the FMP.

Due to the electrical hazards associated with large-scale PV installations, there are additional health and safety considerations for the implementation of effective and appropriate risk control measures when managing an emergency incident that involves electrical fires. The ERP for the project will specifically address potential fire events associated with electrical hazards. Section 5.8 provides further detail on emergency planning for the project.

5.6 Construction standards and design

The BESS and O&M infrastructure (namely an operations and control room, meeting facilities, a temperature-controlled spare parts storage facility, SCADA facilities, a workshop and associated infrastructure) are industrial and commercial and, therefore, do not have bushfire construction levels specified in AS 3959 – 2009. Notwithstanding, PBP requires that such buildings comply with the general bushfire construction requirements in section 3 of AS 3959 – 2009. Further, to prevent embers, buildings that enclose combustible infrastructure will include ember protection similar to AS 3959 - 2009 BAL 12.5 standards (including the additional construction requirements outlined in Appendix 3 Addendum of PBP, in relation to ember protection). This generally requires no gaps greater than 3 mm and sealing or screening areas with gaps exceeding this.

Further, commercial buildings must also have fully compliant fire safety systems in accordance with AS and BCA requirements and as appropriate to each building, including some or all of the following features:

- fire extinguishers;
- fire hose reels;
- fire hydrant systems; and
- automatic sprinkler systems.

The commercial buildings for the project will be constructed and routinely serviced to comply with the specific requirements, as relevant to each building.

5.7 Bushfire preparedness and procedures

Specific management actions will be undertaken to ensure suitable bushfire preparedness is undertaken as part of the project and ahead of the bushfire season, as well as specific procedures to limit the risk of ignition of surrounding grassland resulting from the project.

5.7.1 Maintenance

Maintenance is critical in the prevention of property losses during and following a bushfire. Table 2 outlines the measures that will be implemented as part of the FMP for the project, and in advance of and throughout the bushfire season (typically running from August to March).

Table 2 Building and property maintenance measures

Feature	Responsibility	Maintenance strategy (including frequency/timing)
Access	UPC or construction / O&M site manager	All access roads and tracks must be inspected annually and management actions undertaken if roads and tracks are considered unsuitable for emergency vehicle passage (inspect for erosion, fallen timber, locked gates, and dead end tracks). Where locked gates are required, keys will be provided to RFS and FRNSW (if required).
		Ensure gates are in good condition for entry and exit of fire fighting vehicles (in advance of bushfire season).
		Ensure that there are no overhanging branches or objects that would prevent access within the development footprint, ie minimum 4 m vertical clearance (in advance of and throughout bushfire season).
		Ensure all pumps and water sources are working, clearly marked and easy to find (in advance of and throughout bushfire season).
		Ensure all fittings are compatible with RFS and FRNSW fire trucks (in advance of bushfire season).
		Ensure all security clearances, communication and access arrangements have been updated and confirmed with RFS and FRNSW in readiness for upcoming season (in advance of bushfire season).
		Ensure perimeter roads and defensible space is free of obstacles to provide access for RFS and FRNSW fire fighting appliances and personnel (in advance of and throughout bushfire season).
Building maintenance	UPC or construction / O&M site manager	Ensure hoses and hose reels are not perished and fittings are tight and in good order (in advance of and throughout bushfire season).
		Ensure removal of material such as litter from roofs and gutters (in advance of and throughout bushfire season).
		Store flammable liquids away from buildings or in approved storage compounds (in advance of and throughout bushfire season).
		Ensure combustible materials are well away from the buildings (in advance of and throughout bushfire season).
		Ensure rooflines have no broken or dislodged roofing material and there are no gaps in the roof or eaves (in advance of and throughout the bushfire season).
		Ensure screens on windows and doors are in good condition without breaks, tears or holes that allow penetration of airborne embers into the building in the event windows are open (in advance of and throughout the bushfire season).
		Commercial buildings must have fully compliant fire safety systems in accordance with AS and BCA requirements and as appropriate to each building (in advance of and throughout the bushfire season).
		Ensure that, where fitted, drenching or spray systems are regularly tested (before the commencement of the bushfire season).
		Ensure doors are fitted with draught seals and well maintained (before the commencement of the bushfire season).
		Fire systems must be regularly serviced and audited in accordance with AS 1851 – 2012 Routine Service of Fire Protection Systems and Equipment, and AS 2293 Set – 2005 Emergency Escape Lighting and Exit Signs (in advance of and throughout the bushfire season).
Maintenance of active fire safety systems such as hose reels or external facade spray systems would be expected to require ongoing maintenance in order to ensure that they perform effectively in the event of an emergency (in advance of and throughout the bushfire season).		
Fuel reduction	UPC or construction / O&M site manager	Inspect and maintain the defensible space as per IPA and <i>Standards for Asset Protection Zones</i> (NSW RFS 2005) (in advance of and throughout the bushfire season).
		The ETL corridors are managed as per the specifications in <i>ISSC3 Guide for the management of vegetation in the vicinity of electricity assets</i> (Resources and Energy NSW 2016) (in advance of and throughout the bushfire season).
Water supply	UPC or construction /	Inspect static water supply levels and top up if required (in advance of and throughout the bushfire season).

Table 2 Building and property maintenance measures

Feature	Responsibility	Maintenance strategy (including frequency/timing)
	O&M site manager	

5.7.2 Procedures

The FMP should also include appropriate work procedures, so as to limit the potential of ignition of surrounding grassland, and will include:

- specific storage and maintenance procedures for potential ignition sources;
- a hot works procedure;
- hot work activities will be required to attain internal work permits;
- no hot works on total fire bans and/or conditions associated with severe fire weather to minimise the chance of fires being started;
- all vehicles will be provided with portable fire extinguishers that comply with AS 2444 – 2001;
- fire fighting equipment will be kept on active sites at all times for potential ignition of grassland. Equipment may include (but not be limited to) a 4WD striker with slip on water unit equipped with diesel pump, hoses, extinguishers, knap sacks, hand tools and appropriate personal protective equipment (PPE) (refer Section 5.8.2 for more detail on response to electrical fires);
- to reduce the risk of ignition of surrounding grassland, it is recommended that project staff are comprehensively and regularly trained to undertake safe first attack fire fighting operations. Training is recommended to specifically include the extent of first attack fire operations that can be undertaken without endangering the safety of persons engaged in fire fighting activities. The maintenance of equipment related to this requirement (the point above) will be specifically addressed in the FMP;
- provide local RFS with regular updates (frequency to be determined as needed) on activities that have the potential to ignite surrounding grassland, particularly during the bushfire season, to ensure weather conditions are appropriate;
- immediate notification to the local RFS of the location and nature of any accidental ignition of surrounding grassland, that was either able to be successfully extinguished using the fire fighting equipment or that otherwise has spread into surrounding grassland; and
- assist RFS in the investigation of the cause of any unplanned grass fires in proximity to the project, should they occur.

The hazards and risks assessment prepared by Sherpa Consulting (refer Appendix L of the EIS) also provides recommendations that should be considered during preparation of the FMP.

5.7.3 Monitoring and review

The FMP should be reviewed after incidents of bushfire or other fire as well as annually at the end of each bushfire season (April through July). The FMP should be amended after the review process, if required, to increase the effectiveness of the FMP. This process will allow any scheduled tasks not undertaken when originally planned to be incorporated into subsequent management activities. A monitoring and review process should include, as a minimum:

- monitor against the aims and objectives of the FMP;
- update the FMP based on current best practice guidelines;
- assess the risk, obligations and management measures against any new legislative changes;
- ensure the reporting of any fires including ignition source, location, size and assets impacts, response and suppression activities and if RFS, FRNSW or other emergency services attended, is captured; and
- review and update of management actions should be undertaken annually at the end of each bushfire season (April through July).

5.8 Emergency planning

The project has the potential to expose staff and contractors to bushfire, structure fire or electrical fire. In the event that grassland vegetation is ignited from a project-related source, the project has the potential to impact upon neighbouring landholders and the community more generally. Fire emergency management procedures are proposed that include fire awareness, emergency response and evacuation, and monitoring and review procedures.

5.8.1 Fire awareness

Fire awareness planning is based on predicted potential bushfire behaviour for combinations of fuel types and fire danger levels, as well as awareness on the specific fire hazards (electrical fire or structure fire) associated with a large-scale PV installation. Table 3 outlines the minimum recommended mechanisms to develop fire awareness at the project, to be included as part of the ERP.

Table 5 Fire awareness measures

Feature	Responsibility	Awareness strategy and frequency/timing
Induction process	UPC or construction / O&M site manager	Provide bushfire, electrical fire and structure fire awareness training to all new staff members and contractors, prior to and during the bushfire season for bushfire specific awareness and regularly for electrical fire and structure fire awareness.
Staff briefings and pre-season drills	UPC or construction / O&M site manager	Provide details of requirements for staff briefings and pre-season fire drills in the ERP and work procedures. Briefings and fire drills to be coordinated by UPC (or suitably qualified delegate), prior to the bushfire season.
Formal meetings	UPC or construction / O&M site manager	Formal meetings to be conducted prior to the bushfire season (as part of bushfire awareness), when higher fire weather is forecast or there are fire events in the surrounding area. Potential participants to include staff, contractors, neighbouring community representatives and external fire authorities and land managers (eg RFS and FRNSW).
Monitor fire weather	UPC or construction / O&M site manager	Communicate fire weather warnings, severe weather warnings and total fire bans daily during the bushfire danger season to all staff, contractors and visitors at the project. Information can be found on the fire information page (Fire danger ratings and total fire bans) of the RFS website. The recognition of very high or greater fire danger days triggering a requirement to view the fire information page (Fires Near, Major fire updates) on the RFS website. Staff, contractors and visitors to be aware of and to respond accordingly to the three levels of alert under the national bushfire warning system (Advice, Watch and Alert, Emergency Warning).
Standard procedures	UPC or construction / O&M site manager	Prepare and implement standard procedures associated with potential ignition sources.

5.8.2 Emergency response plan

In the case of a fire emergency, the optimal mitigation response to protect human life is evacuation. Therefore, there will be a high reliance on the procedures for emergency response and off-site evacuation. Further, if project activities ignite surrounding vegetation it has the potential to impact upon neighbouring communities and therefore response planning should include those areas outside of the development footprint.

An ERP will be required for the project and should incorporate all relevant safety procedures and normative management recommendations detailed in the relevant acts, regulations and AS.

The project is potentially exposed to bushfire threat in the form of grass fire, and has the potential to cause unplanned ignition of surrounding grassland. Due to the electrical hazards associated with large-scale PV installations, there are additional health and safety considerations for the implementation of effective and appropriate risk control measures when managing an emergency incident that involves electrical fires.

Therefore, the ERP as a minimum (but not necessarily limited to) will:

- include the requirements for pre-bushfire season and continual fire awareness of staff and contractors (see Section 5.8.1);
- include the requirements for immediate notification to the local RFS and FRNSW of accidental ignition of surrounding grassland (see Section 5.7.2);
- include the mechanisms for notification of neighbouring landholders and the community more generally of accidental ignition of surrounding grassland leading to bushfire that may impact upon them. This will allow neighbouring landholders and the community more generally to appropriately implement their own emergency response and evacuation plans, noting that on days of catastrophic fire weather, RFS recommends leaving early as the only safe option;
- detail the appropriate risk control measures that would need to be implemented in order to safely mitigate potential risks to the health and safety of fire fighters and other first responders (eg first attack fire fighting operations by project staff members);
- detail measures including the PPE required to be worn, the minimum level of respiratory protection required, minimum evacuation zone distances and a safe method of shutting down and isolating the PV system (either in its entirety or partially, as determined by risk assessment);
- identify the circumstances under which different evacuation types are to be implemented, in response to a bushfire or fire emergency;
- include a mechanism for the early relocation of staff in the event of a bushfire in the locality, noting that on days of catastrophic fire weather, RFS recommends leaving early as the only safe option;
- contain detailed plans of all Emergency Assembly Areas including 'on-site' and 'off-site' arrangements;
- include requirements for appropriate on-site refuge area signage and communications;
- contain details of infrastructure layout within the three array areas that show all relevant information (ie access points, fences, locked gates, water supply, areas of electrical hazard);
- include transportation arrangements (eg number of vehicles required), designated assembly points and time required to have transportation available;
- identify the specific structure and role of emergency control on-site (eg fire wardens) - relevant staff will require training consistent with their responsibilities within the emergency control organisational structure and with the equipment provided;

- include the requirements for training in preparation for response to an emergency, including trial emergency evacuations;
- include the requirements for clarifying a safe egress route and an understanding of the extent/spread of local fires before allowing the evacuating persons to leave the site;
- include the requirements for egress and communication in the scenario that persons are leaving the project as emergency services are attending;
- include details on appropriate egress routes from the different array areas;
- consider emergency access/egress arrangements in the scenario that a fully loaded fire fighting vehicle cannot cross the proposed creek crossings proposed for access into parts of the three array areas;
- include mechanisms for communication with RFS, FRNSW and neighbouring communities on suitable egress routes and an understanding of the impacts that the egress of high numbers of project staff may have on the local road network and the local community's ability to safely egress from the locality; and
- two copies of the ERP are to be stored in a prominent 'Emergency Information Cabinet' which is in a position directly adjacent to each of the main entry points for the three array areas.

The hazards and risks assessment prepared by Sherpa Consulting (refer Appendix L of the EIS) also provides recommendations that should be considered during preparation of the ERP.

Although the project is not classified as Special Fire Protection Purpose (SFPP under PBP, the construction stage of the project will require large numbers of staff (up to 700 people during peak construction), some of whom may have little or no previous experience with bushfire or other fire. In addition, there may be communication barriers and logistical problems with high numbers of people. Hence, it is critical that UPC ensures its construction contractors apply suitable measures to prepare staff and subcontractors for any potential bushfire, structural fire or electrical fire event. Where applicable, the ERP should be developed to be consistent with the requirements and approach of:

- *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan* (NSW RFS 2014); and
- Australian Standard 3745-2010 Planning for emergencies in facilities (Standards Australia 2010).

It may be suitable to develop an ERP that is specific to the construction of the project, and once constructed, another ERP that is specific to the operation of the project, which encompasses the control measures specific to the unique hazards (eg electrical hazards) associated with operation.

During the preparation of the ERP, UPC or its contractors will make contact with:

- the relevant local emergency management committee (LEMC), via Uralla Shire Council. This is required to proactively develop a comprehensive inter-agency local emergency procedure for the project; and
- liaise with New England BFMC in regards to the New England BFRMP (New England BFMC 2016) to ensure that the project is incorporated into future risk management plans.

Copies of the ERP for the project should be provided to RFS, FRNSW, the LEMC and the New England BFMC for information prior to commencement of construction. Any subsequent versions of the ERP, as a result of updates to the plan (as a minimum on a yearly basis), should be re-issued to the agencies and committees.

5.8.3 Monitoring and review

The ERP should be reviewed after incidents of bushfire or other fires as well as annually at the end of each bushfire season (April through July). The ERP should be amended after the review process, if required, to increase the effectiveness of the plan. A monitoring and review process should include, as a minimum:

- monitoring against the aims and objectives of the ERP;
- updating the ERP based on current best practice guidelines;
- assessing the risk, obligations and management measures against any new legislative changes; and
- reviewing and updating emergency procedures annually at the end of each bushfire season (April through July), and after any fire incident.

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Appendix A – Preliminary bushfire report - construction accommodation village (Australian Bushfire Protection Planners Pty Limited)

PRELIMINARY BUSHFIRE REPORT

NEW ENGLAND SOLAR FARM

**FOR THE TEMPORARY CONSTRUCTION WORKFORCE
ACCOMMODATION VILLAGE (CAV)**

ON LOT 2 in DP 174053

BIG RIDGE ROAD,

URALLA NSW

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Bushfire Mitigation Consultants

PRELIMINARY BUSHFIRE REPORT

**FOR THE PROPOSED TEMPORARY
CONSTRUCTION WORKFORCE
ACCOMMODATION VILLAGE (CAV)
ASSOCIATED WITH THE NEW ENGLAND
SOLAR FARM PROJECT**

**ON LOT 2 in DP 174053,
BIG RIDGE ROAD,

URALLA NSW**

Assessment Number	Document	Preparation Date	Issue Date	Directors Approval
B183257 - 3	Final	09.10.2018	19.11.2018	<i>G.L.Swain</i>

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SECTION 1

INTRODUCTION

1.1 Background

UPC Renewables Australia Pty Ltd (UPC) proposes to develop the New England Solar Farm; a significant grid-connected solar farm and battery energy storage system (BESS) along with associated infrastructure, approximately 6 kilometres (km) east of the township of Uralla in the Uralla Shire local government area (LGA) (the project).

The project is a State Significant Development (SSD) under the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). Therefore, a development application (DA) for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act).

The preliminary environmental assessment (PEA) for the project was submitted to NSW Department of Planning and Environment (DPE) on 18 April 2018. Secretary's Environmental Assessment Requirements (SEARs) for the project were subsequently issued by DPE on 8 May 2018.

Revised SEARs were issued for the project on 11 October 2018 in response to UPC's request for a revision to the project description to include a temporary construction accommodation village (should it be required). The revised SEAR's are provided in Appendix A of the EIS.

As noted within the revised SEARs (Appendix A of the EIS), UPC is seeking development consent for the New England Solar Farm, which includes:

- The construction and operation of a photovoltaic energy facility within an estimated capacity of up to 800 MW;
- Development of associated infrastructure, including a substation and battery storage facilities; and
- A temporary construction accommodation facility.

Section 6.7.2 of the PEA noted that it is anticipated that accommodation for the project's construction workforce will be sourced from nearby townships, such as, Armidale, Uralla, Walcha and Tamworth, or through workers camps to be established on-subject land, or via a combination of these two approaches.

At the time of submitting the PEA, UPC had commenced discussions with potential contractors and the local community on the optimal approach for the construction of the project and noted that they would investigate this further as part of the preparation of the environmental impact statement (EIS).

The location of the workers camp (herein referred to as the construction accommodation village or CAV) was not described in the PEA. UPC has undertaken further investigation and is now in a position to clarify the location of the CAV and provide justification for the inclusion of this additional infrastructure in the EIS and DA.

A CAV for non-local construction workers (where skills cannot be sourced locally) may be established as part of the early stages of the project's construction. The CAV will accommodate 250 - 500 workers (subject to demand). A significant proportion of the project's non-local construction workers may be required to reside at the CAV while they are rostered on.

To build the CAV, topsoil will be stripped where necessary, hardstand constructed and walkways and car parks constructed.

The CAV will be managed by an experienced operator (most likely to be a contractor to the lead contractor appointed for the construction of the project).

The CAV is expected to be dismantled and its footprint rehabilitated once the project is built and it moves into the operational phase.

The CAV will be on part of Lot 2 of DP 174053 in the northern array area (refer Figure 1 – herein referred to as the subject land). The subject land is currently primarily used for sheep grazing for production of wool and lambs and is zoned RU1 Primary Production under the Uralla Local Environmental Plan 2012.

The subject land is accessible from Big Ridge Road (Figure 1). The exact location of the CAV within the subject land will be determined during the detailed design stage of the project.

The area that is used for the CAV on Lot 2 of DP 174053 may also be utilised for PV modules and supporting infrastructure following the removal of the construction accommodation village. A separate bushfire hazard assessment has been performed by EMM Consulting Pty Ltd (EMM) as part of the EIS and provides an assessment of the potential hazards associated with bushfire, electrical fire and structure fire within the development footprint.

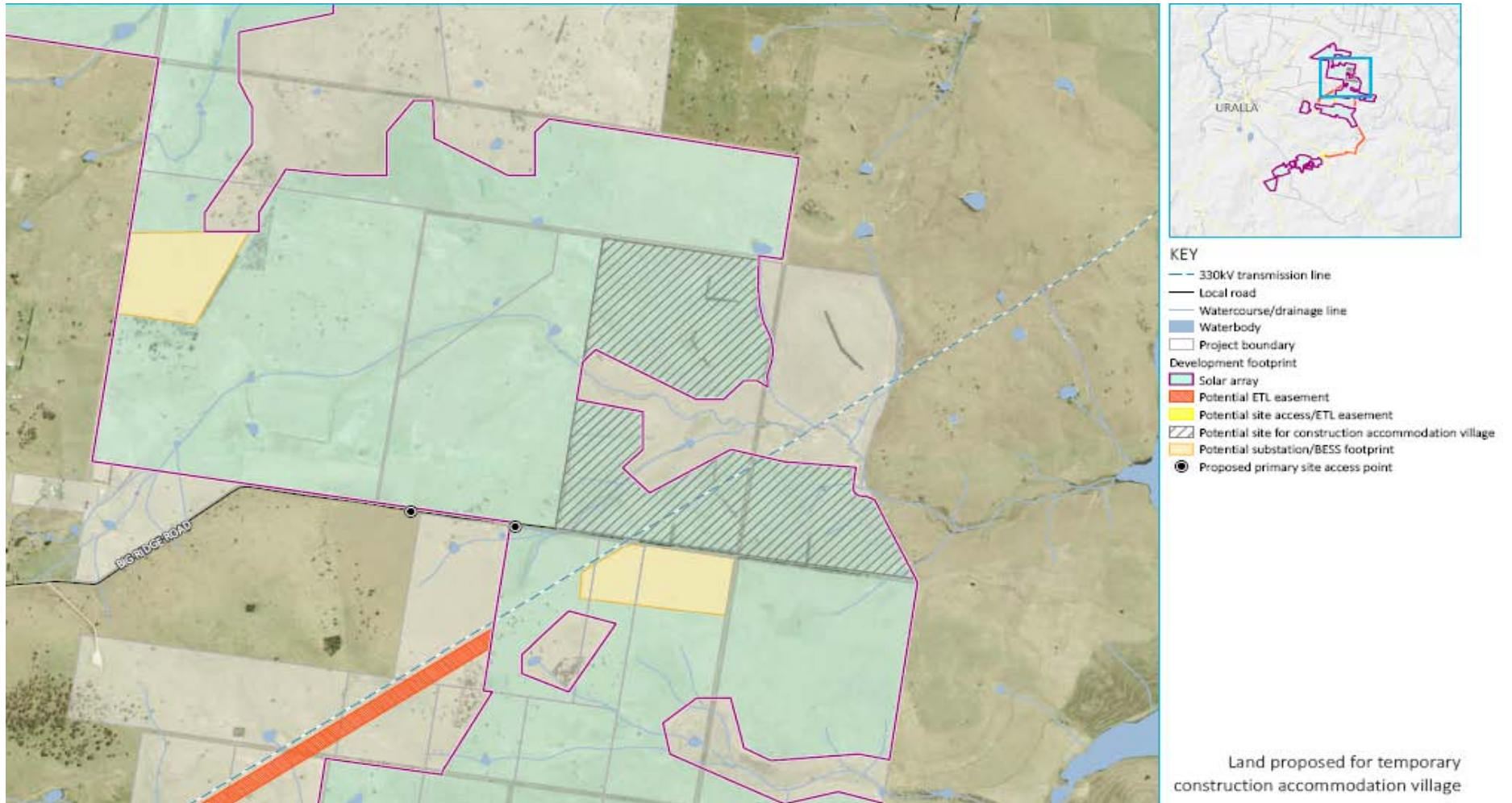
Photograph 1 – General condition of the subject land – looking south-west



Photograph 2 – General condition of the subject land – looking south-east



Figure 1 – Plan showing the location of the subject land within the development footprint for the northern array area.



Identification of the proposed location for the CAV has considered a range of constraints and issues identified and informed by field survey and assessment work undertaken to date in support of preparation of the EIS. Further consideration in determining placement of the CAV within the subject land will include, but not be limited to the following criteria:

- Setback from watercourses and associated riparian corridors (where required);
- Setback from TransGrid's existing 330 kV transmission line;
- Proximity to existing services;
- Setback from sensitive receptors (i.e. neighbouring dwellings);
- Avoiding potential impacts on native vegetation, land mapped as BSAL and/or identified items of Aboriginal cultural heritage and historic heritage significance;
- Accessibility from Big Ridge Road; and
- Detailed design of the project, namely placement of PV modules and associated infrastructure.

UPC and the selected construction contractor will assess the requirement for a CAV closer to the commencement of construction once there is more clarity around the source and volume of the project's construction workforce.

1.2 Aim of this Report.

The aim of this report is to examine the requirements of Section 4.14 of the NSW *Environmental Planning & Assessment Act 1979* in respect to the bushfire hazard to the CAV and provide preliminary advice on bushfire protection measures that shall be applied to the CAV.

1.3 Planning Policies.

Planning for Bushfire Protection – (NSW Rural Fire Service – RFS 2006).

This document provides guidance on the planning and development control processes in relation to bushfire protection measures for development in bushfire prone areas.

1.4 Subject Land Assessment.

Graham Swain of ***Australian Bushfire Protection Planners Pty Limited*** undertook a desk-top assessment of the subject land prior to the preparation of this report.

1.5 Documentation reviewed in this Assessment.

The following documents were reviewed in the preparation of this report:

- CAV Location Plan prepared by EMM;
- Plant community type (PCT) and vegetation zone mapping prepared by EMM;
- Slope analysis mapping prepared by EMM;
- *Planning for Bushfire Protection* prepared by the NSW RFS 2006;
- Australian Standard A.S. 3959 – 2009 – ‘*Construction of Buildings in Bushfire Prone Areas*’.

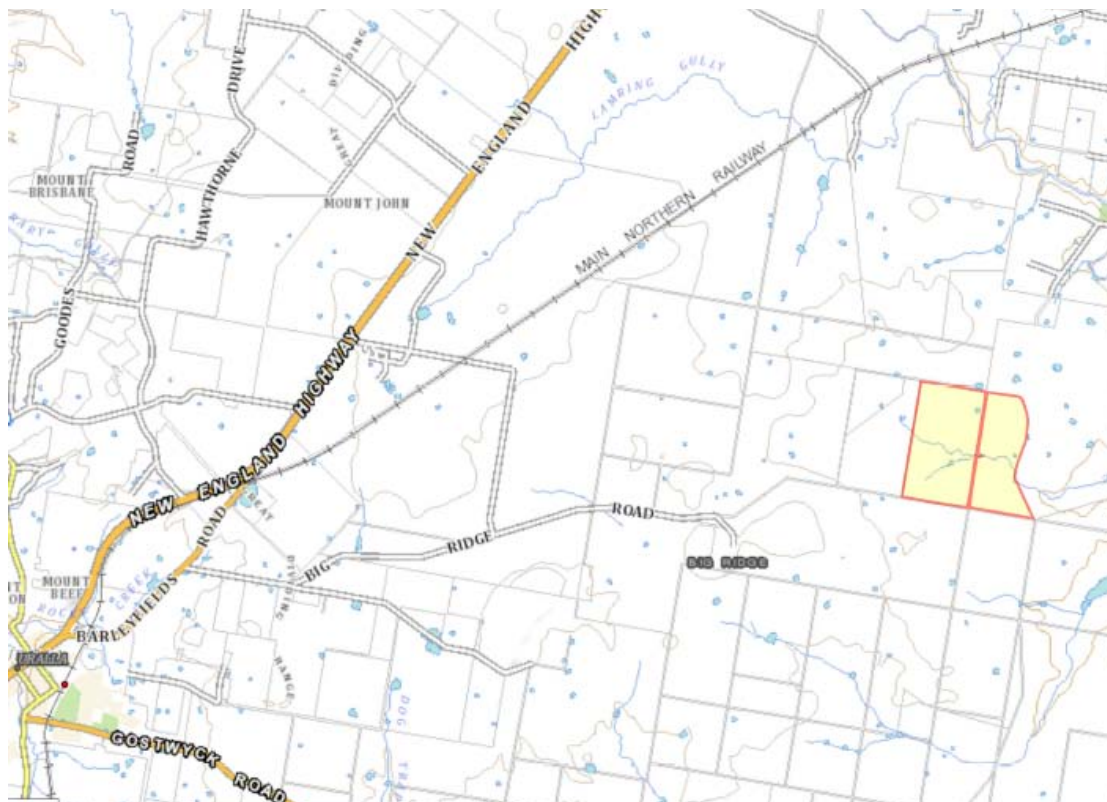
SECTION 2

PROPERTY DESCRIPTION

2.1 Location & Description.

The subject land consists of vacant land within Lot 2 in DP 174053, Big Ridge Road, Uralla, NSW 2358.

Figure 2 – Location of the Subject land.



2.2 Vegetation within the Subject land.

Lot 2 of DP 174053 (the subject land) is mostly cleared with dominant vegetation of low diversity native pasture.

A limited number of scattered native trees are present, including Blakely's Red Gum (*Eucalyptus blakelyi*) and Rough-barked Apple (*Angophora floribunda*). Historically, the vegetation present on the subject land would have likely been representative of PCT 510 - Blakely's Red Gum - Yellow Box grassy woodland of the New England Tableland Bioregion.

A number of planted wind breaks are also present, mostly comprising exotic species.

There is also a planted native wind break, composed of both indigenous and non-indigenous species (refer Figure 4).

Figure 3 – Aerial photograph of the subject land.

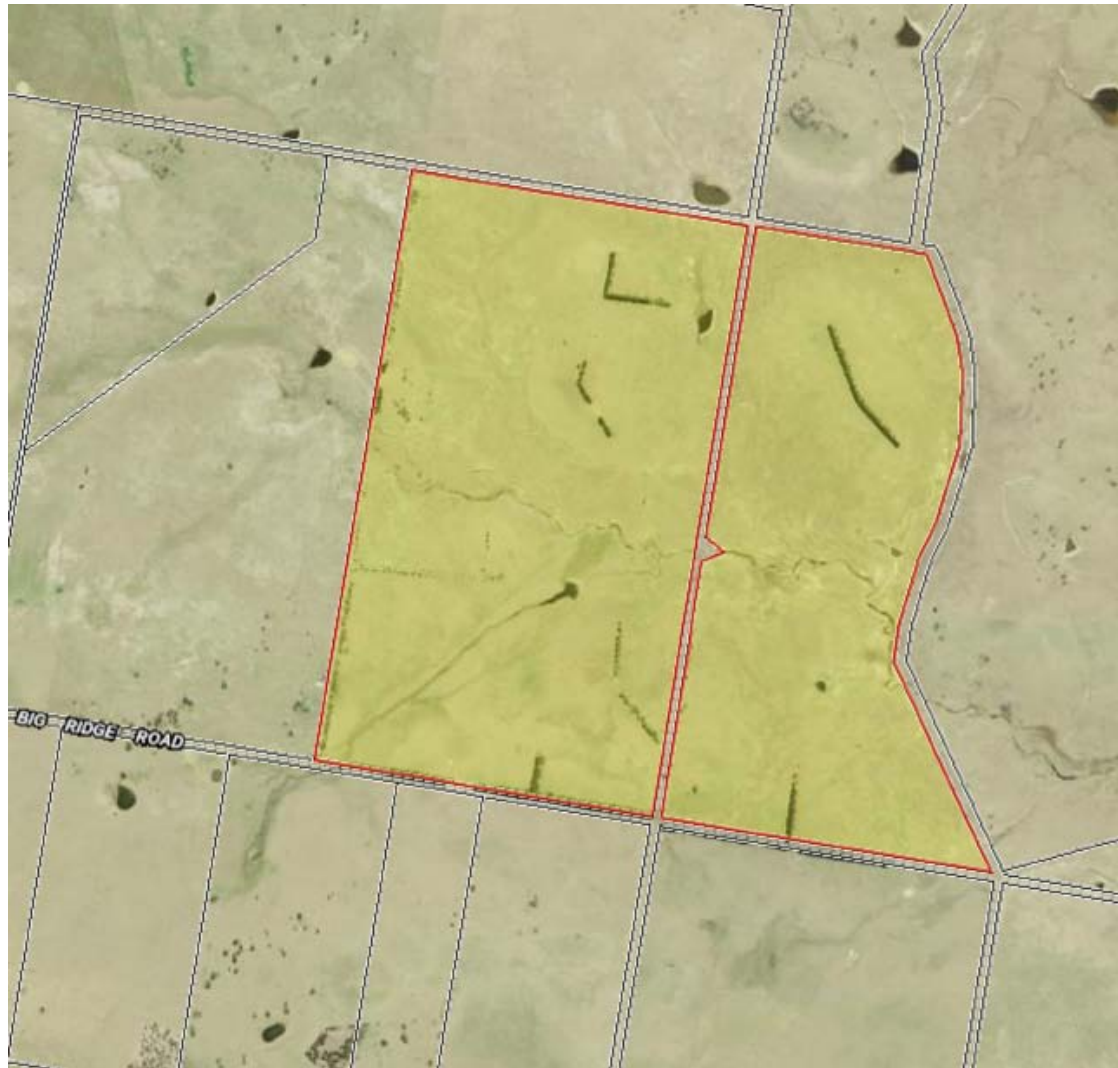
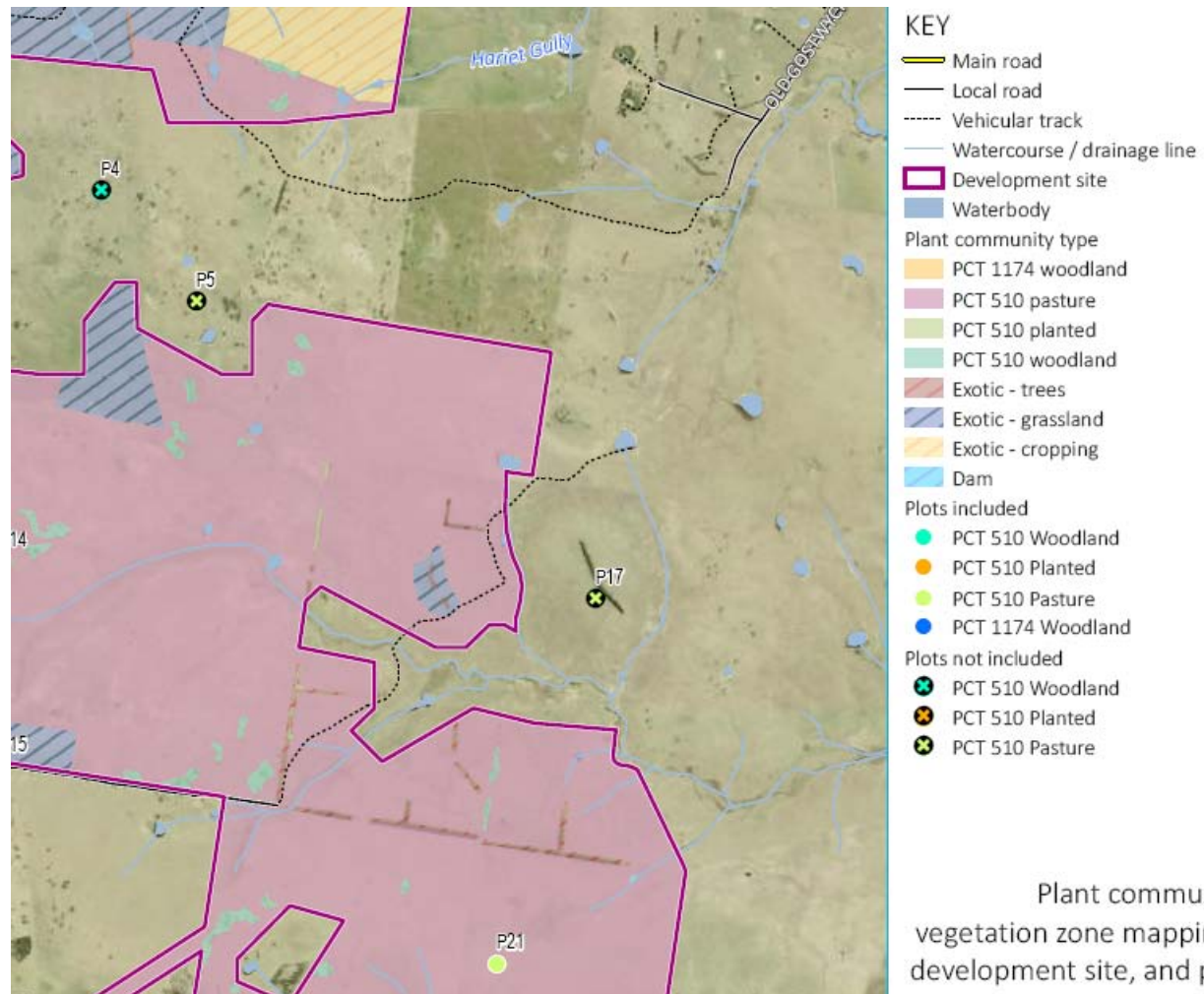


Figure 4 – PCT & Vegetation Zone Mapping – EMM



Plant community type and vegetation zone mapping within the development site, and plot locations

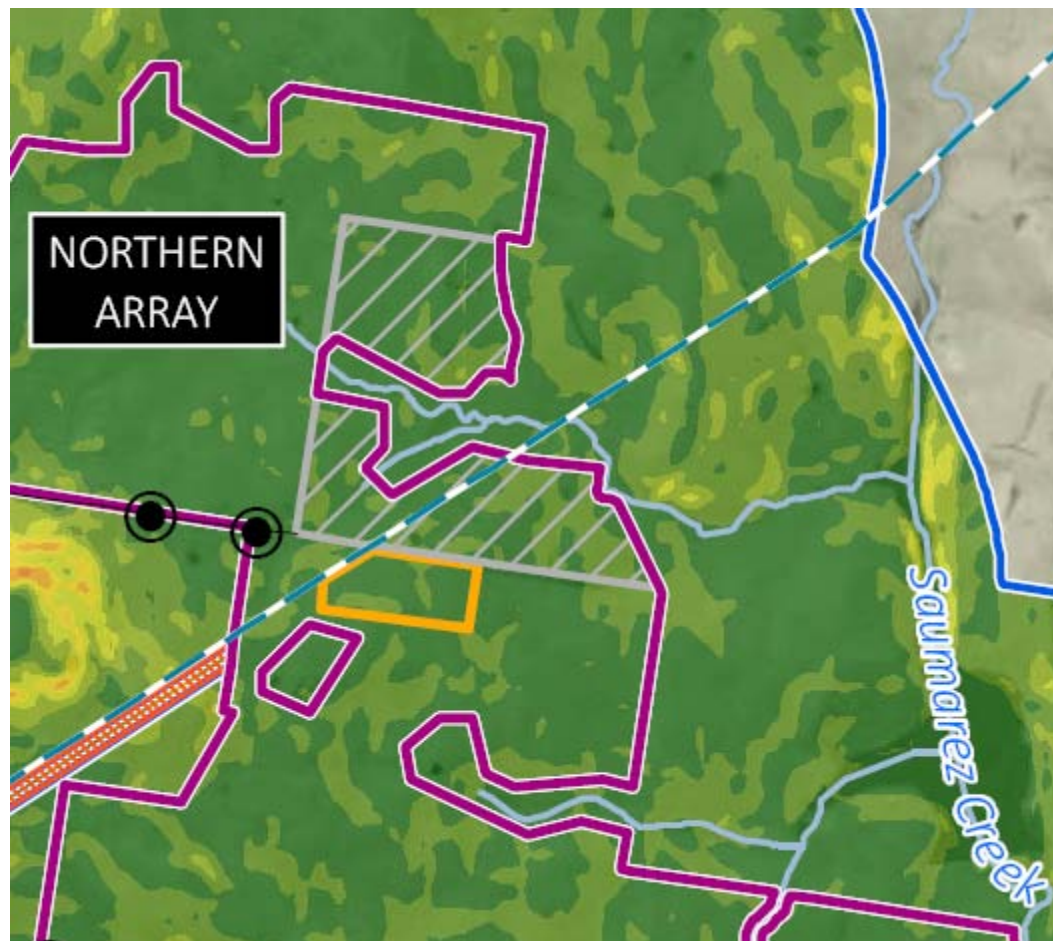
2.3 Topography.

The topography within the subject land is dominated by a gently undulating landscape with some areas of steeper slopes associated with low hills and various permanent and ephemeral water courses.




Slopes vary in gradient from 0 degrees (°) (flat land) to 7.5 degrees. The steeper gradients are associated with larger hills and lower lying areas associated with the permanent and ephemeral watercourses.

The steepest slopes occur under either cropped land or grassland vegetation and also some areas with widely spaced paddock trees.

Figure 5 – Slope Classes – EMM



Slope ranges

-  0.0 - 2.5 degrees
-  2.5 - 5.0 degrees
-  5.0 - 7.5 degrees

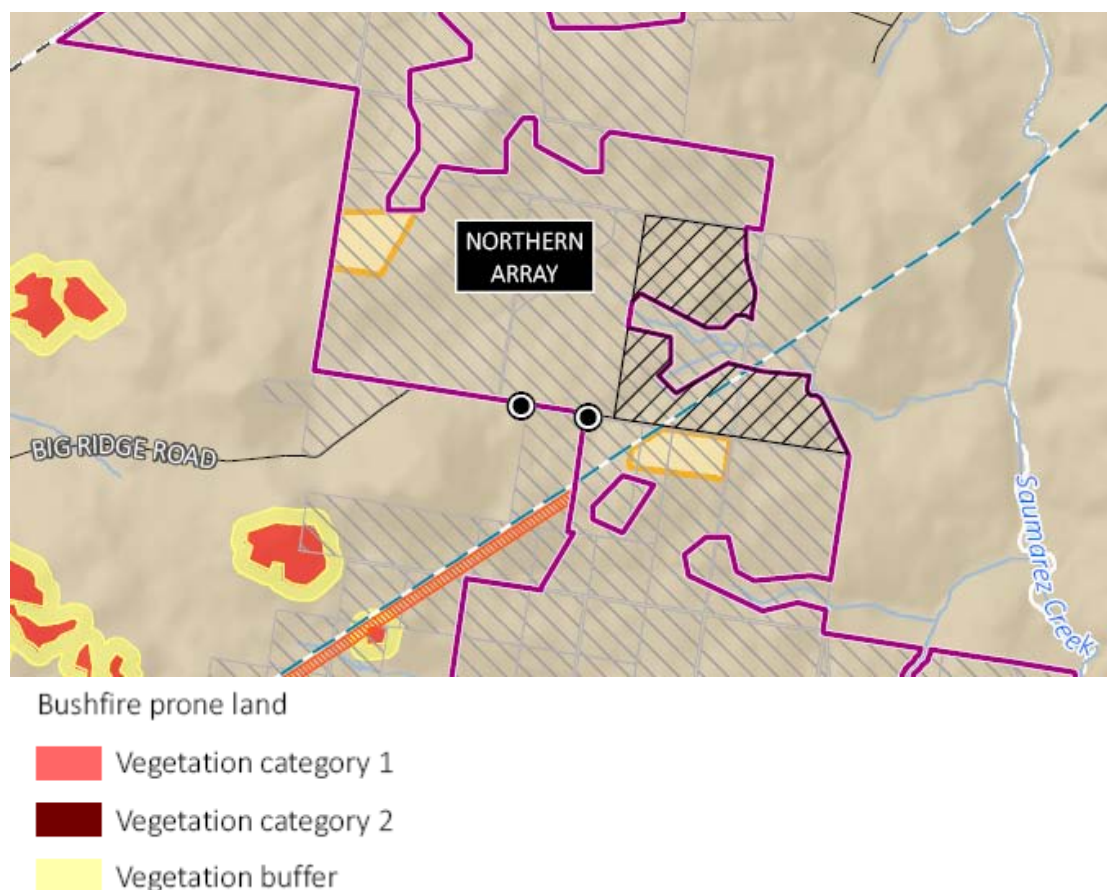
SECTION 3

BUSHFIRE ASSESSMENT

3.1 Introduction.

Uralla Shire Council has confirmed that the subject land is not recorded as containing bushfire prone vegetation.

Figure 6 – Extract from the Uralla Council Bushfire Prone Land Map.



As the subject land is not located in, or within 100 metres of vegetation that can be lawfully recorded on a Bushfire Prone Land Map as being “Bushfire Prone Vegetation” the CAV is not required to address the provisions of *Planning for Bushfire Protection 2006*.

However, changes made to the Bushfire Prone Land Mapping Guideline (RFS) require councils to record grassland vegetation as being bushfire prone. Australian Standard A.S. 3059 – 2009 also includes grassland vegetation as bushfire prone vegetation.

As grassland vegetation is present on the subject land, this report assumes the presence of Bushfire Prone Vegetation and therefore gives consideration to the provisions of *Planning for Bushfire Protection 2006*.

3.2 Assessment of Asset Protection Zones to the CAV.

Planning for Bushfire Protection (RFS 2006) does not provide prescriptive requirements for the provision of Asset Protection Zones to development within grassland vegetation and recommends that a 10 metre wide separation should be provided between the asset and the grassland vegetation.

Table 2.4.4 of A.S. 3959 – 2009 provides a range of recommended distances from predominant grassland vegetation, depending on the effective slope of the land.

Table 1 – Extract from Table 2.4.4 of A.S 3959 – 2009 (FDI 80) for Grassland Vegetation

Slope	Construction Standard BAL FZ	Construction Standard BAL 40	Construction Standard BAL 29	Construction Standard BAL 19	Construction Standard BAL 12.5
<i>Level - Upslope</i>	< 6m	6 – 8m	8 – 12m	12 – 17m	17 – 50m
<i>0 – 5 degrees downslope</i>	< 7m	7 – 9m	9 – 14m	14 – 20m	20 – 50m
<i>5 – 10 degrees downslope</i>	< 8m	8 – 10m	10 – 16m	16 – 23m	23 – 50m
<i>10 – 15 degrees downslope</i>	< 9m	9 – 12m	12 – 18m	18 – 26m	26 – 50m
<i>15 – 20 degrees downslope</i>	< 10m	10 – 14m	14 – 21m	21 – 30m	30 – 50m

In order to provide protection against a fast moving grass fire it is recommended that a minimum 50 metre wide managed Asset Protection Zone be provided to the perimeter of the CAV. This zone shall be regularly maintained to provide a maximum grass height of 100mm-150mm during the prescribed Bushfire Danger Period and when the grassland fuel reaches 70% cured.

(Note: Existing wind breaks and scattered trees can be retained with the grass fuels maintained to the standard as detailed above).

It is also recommended that the vegetation inside the CAV be regularly maintained to a maximum height of 75mm.

There shall also be a managed corridor to both sides of the access driveway and any internal services roads. This corridor shall be slashed and/or grazed to provide a maximum height of 150mm during the prescribed Bushfire Danger Period and when the grassland fuel reaches 70% cured.

3.3 Assessment of Bushfire Attack (Construction Standards).

The provision and maintenance of a 50 metre wide Asset Protection Zone to the perimeter of the CAV precinct reduces the radiant heat levels to permit the buildings to be constructed to comply with Section 3 and Section 5 (BAL 12.5) of A.S. 3959 – 2009 –‘Construction of Buildings in Bushfire Prone Areas’ and Addendum Appendix 3 of *Planning for Bushfire Protection 2006*.

In addition, and to address the potential for ember attack, the sub-floor space of each building shall be enclosed with stainless steel flymesh securely fixed to the external wall/s and buried into the ground. All joints shall be overlapped and sealed.

External cladding shall be non-combustible (ie no plastic cladding).

3.4 Access.

The main entrance road to the CAV shall be designed and constructed to provide a trafficable width of at least 6.5 metres (two-way), capable of carrying a 28 tonne (Gross Vehicle Mass or GVM) bulk water tanker. A turning head shall be provided at the closest Static Water Supply Tank.

There shall be a two-way loop road at least 6.5 metres width provided to the perimeter of the CAV. This road shall be designed and constructed to carry a 15 tonne (GVM) Rural Fire Service Category Tanker.

The internal road network within the subject land shall be designed to permit access by fire-fighting appliances (minimum trafficable width of 4.0 metres) with access provided to the Static Water Supply Tanks.

3.5 Static Water Supply.

A static water supply having a minimum storage capacity of 2 x 22,500 litres shall be provided. The static water supply tanks shall be concrete or steel fitted with a 65mm outlet, 65mm ball valve and Stortz Coupling and Blanking Cap and located at opposite ends of the CAV.

External fire hose reels, mounted in hose boxes, shall be provided in locations clear of the buildings with the final position/number of the hose reels being determined so that all aspects of the buildings can be reached by a 30 metre un-obstructed hose length plus a 10 metre hose stream.

There shall be a diesel powered pump set installed, with automatic start, connected to the static water supply tanks with a reticulated supply to the fire hose reels.

All weather access having a minimum width of 4.0 metres shall be provided to the static water supply tanks.

3.6 Fire Management Plan

A fire management plan (FMP) will be prepared for the project and will detail the measures and procedures to minimise the risk of fires igniting during the construction, operation and decommissioning of the project.

Recommendations provided within this assessment will be included within the FMP, which will be prepared in consultation with NSW Rural Fire Service and Fire & Rescue NSW.


3.7 Emergency Management for Fire Protection / Evacuation.

The CAV may be established to provide short term accommodation for non-local construction workers throughout the project's construction.

Therefore, there shall be an Emergency Response Plan (ERP) prepared which provides advice and protocols on the evacuation of the CAV during emergencies that may impact the CAV and its occupants.

A copy of the ERP shall be provided to the local NSW Rural Fire Service District Office, Fire & Rescue NSW and NSW Police.

A copy shall also be provided to the Local Emergency Management Committee.



Graham Swain
Managing Director
Australian Bushfire Protection Planners Pty Limited.
19/11/2018

REFERENCES

- N.S.W Rural Fire Service – *Planning for Bushfire Protection 2006*;
- *Rural Fires Act – 1997*;
- *Rural Fires and Environmental Assessment Legislation Amendment Act 2002*;
- NSW Rural Fire Service – *Guideline for Bushfire Prone Land Mapping 2015*;
- Building Code of Australia;
- Australian Standard A.S. 3959-2009 “*Construction of Buildings in Bushfire Prone Areas*”.