Fire and Hazard Assessment

Blayney 4C & 7C Solar Farm & BESS

DOCUMENT CONTROL

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ABOUT EDPR AUSTRALIA

EDPR Australia, formerly ITP Development, is a renewables developer focused on delivering clean energy to the Australian market. Based in Canberra with a regional office in Sydney, EDPR Australia has a growing portfolio of renewable developments across regional Australia, specialising in both large and town-scale solar farms and BESS projects designed to match current and future electricity demand.

Leveraging expertise from our focused team and specialist consultants, EDPR Australia holds extensive experiences in landholder engagement, planning approvals, systems design, financing, engineering, electrical connection approvals, and commissioning. We maintain relationships with multiple stakeholders to ensure projects are successfully delivered in accordance with their expectations.

EDPR Australia is part of EDP Renewables APAC group, which is headquartered in Singapore and has a pan-regional presence with approximately 1.3 GWp of committed solar capacity. EDP Renewables APAC is part of EDP Renewables (Euronext: EDPR), a global leader in the renewable energy sector with more than 15 GW installed capacity in 29 markets across Europe, North America, South America and Asia Pacific. EDP group is recognised as the world's most sustainable energy utility company with an ambition to be Net-Zero by 2040, under the new Science Based Targets initiative (SBTi) Net-Zero Standard.

ABBREVIATIONS

AC	Alternating Current
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ARI	Average Recurrence Interval
BESS	Battery Energy Storage System
BoM	(Australian) Bureau of Meteorology
DC	Direct Current
DCP	Development Control Plan
EDPR	EDP Renewables
EPI	Environmental Planning Instrument
Ha	Hectare
LEP	Local Environmental Plan
MW	Megawatt, unit of power (1 million Watts)
NDWI	Normalized Difference Water Index
NSW	New South Wales
PHA	Preliminary Hazard Assessment
PV	Photovoltaic
SES	State Emergency Service
SEPP (T&I)	State Environmental Planning Policy (Transport and Infrastructure) 2021

TABLES

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1. INTRODUCTION

The proposed Blayney 4C & 7C Solar Farms and BESS (referred to as the Project) is located about 1.5km north of the Blayney township (***Figure 1***). EDPR Australia (EDPR) is proposing to construct two 4.99 MW_{AC} solar facilities within the 32.8 ha site.

Table 1 – Site information

Parameter	Description
Project name	Blayney 4C & 7C
Development Type	2 x 5MW Solar Farm (Tracker System) + BESS
Lot/DP(s)	Lot 74 / DP750390 (Blayney 4C solar farm site) Lot 83 / DP750390 (Blayney 7C solar farm site)
Street address	180 Greghamstown Road, Blayney NSW 2799
Council	Blayney Shire Council
AC capacity	4.99 MW (per site)
Land area (total parcel)	32.8 ha
Project area (approx.)	16.4 ha (4C) – 15.6 ha after proposed subdivision 16.4 ha (7C) – 17.2 ha after proposed subdivision
Current land use	Cattle grazing

This report provides an assessment to support the Development Application for the project in relation to the safety in design in terms of fire and hazard. It provides a:

- Desktop review of the hazards and material handling risks of installing utility grade lithium-ion batteries.
- Desktop review of the design requirements to ensure appropriate setbacks and clearances between assets to act as a defendable area.
- Desktop review of the fire safety requirements of the automated fire protection and suppression systems built into the battery.

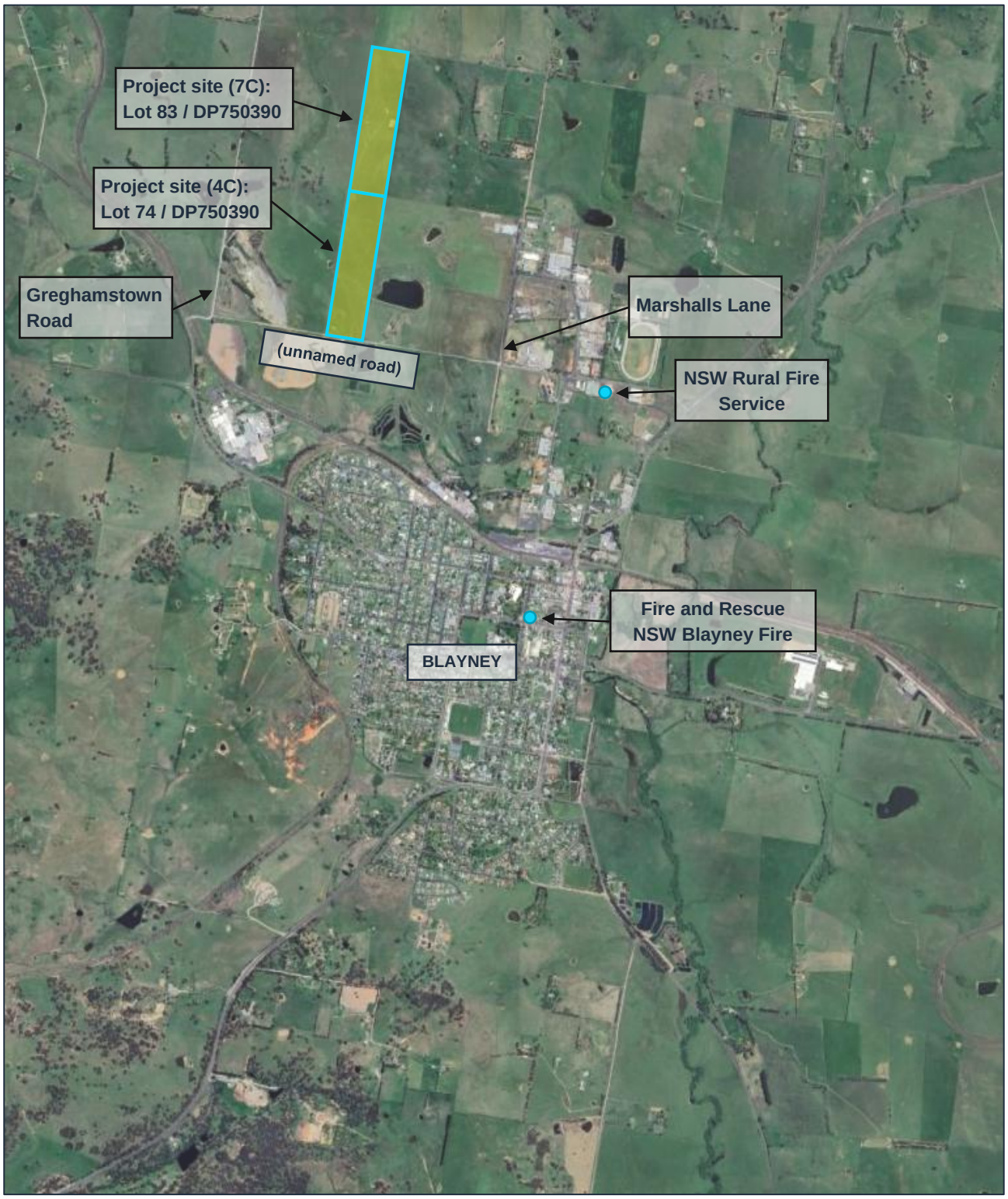

Figure 1 – Proposed 32.8 ha solar farm site and surrounding area with local fire stations identified.

2. PROJECT DESCRIPTION

EDPR Australia is proposing to develop two 4.99 MW_{AC} Tracker System solar farms at 180 Greghamstown Road, Blayney, NSW. The property consists of two existing lots: Lot 74/DP750390, designated for the Blayney 4C solar farm site, and Lot 83/DP750390, designated for the Blayney 7C site. The current sizes of the lots are 16.4 hectares and 16.4 hectares, respectively, and a minor boundary adjustment is proposed to provide access to the northern solar farm site (Blayney 7C). The land has been utilised for cattle grazing.

There are to be approximately 10,300 solar modules per site, installed in rows that are around 120 metres long running east to west. The height of each module is approximately 2.0 m to 2.75 m and the mounting system is constructed on piles that are driven into the ground, typically within the depths of 1.5 m to 3.0 m. Each row of solar photovoltaic (PV) modules will rotate to track the sun across the sky from east to west each day.

Each solar farm will also consist of an inverter station, which incorporates two inverter units, the high/medium voltage switchgear and transformers. The inverter station is ground mounted and incorporated on a 12.19 m skid. Allowance is made for a 2.9-metre-high battery energy storage system (BESS) on a 12.1m skid alongside the inverter stations.

During construction, there is expected to be approximately 50 personnel on site, with around 30 personnel present on-site at any one time, working from 7 am to 4 pm Monday through Friday. It is anticipated there will be up to around 40 light vehicle trips per day, with a maximum of around 30 light vehicles on site at any one time. The construction stage is expected to take approximately 4 months. Once operational, the sites will be unmanned, and maintenance is expected to be carried out quarterly by a crew of 2 – 3 people.

Solar panels and related infrastructure will be decommissioned and removed upon cessation of operations. This is likely to occur within two years of the end of the project. The site can then be returned to the pre-development land use or as agreed to.

3. LEGISLATIVE CONTEXT

3.1. Blayney Shire Local Environmental Plan 2012

The Blayney Shire Council Local Environmental Plan 2012 aims to make local environmental planning provisions for land in Blayney Shire Council in accordance with the relevant standard environmental planning instrument. The Plan provides the prohibited and permitted types of development within the local area. Some types of development are also regulated by specific state environmental planning policies.

3.2. State Environmental Planning Policy (Transport and Infrastructure) 2021

Division 4 of the State Environmental Planning Policy (SEPP) (Transport and Infrastructure) 2021 relates to 'Electricity generating works or solar energy systems'. The policy states electricity storage falls into the same category as of electricity generating works. The policy within Division 4 does not specifically state the fire design requirements of a BESS system. However, within Division 5 of the SEPP 'Electricity transmission or distribution', some of the fire safety risks are mentioned. Other safety issues such as electrocution, fire risks, risks relating to voltage rises or risks to the integrity of an electricity transmission or distribution network are also considered.

3.3. State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 4 Hazardous and offensive development of SEPP (Resilience and Hazards) 2021 and the Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis require that a preliminary hazard assessment be prepared for potentially hazardous or offensive development. This assessment includes a hazard analysis and risk screening of the facility and processes.

4. HAZARD ANALYSIS

The purpose of this analysis is to outline a hazard assessment of the proposed BESS and hazardous goods associated with the Blayney 4C & 7C Solar Farm project undertaken by EDPR Australia. Although the project is not a State Significant Development, EDPR Australia has voluntarily undertaken a Hazard Analysis using ***State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapter 3 – Hazardous and Offensive Development***[1] (known hereon in as "SEPP (R&H) Ch3") and ***Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis***[2] as a framework.

This hazard assessment is intended to provide further context to the Development Application for the project to Blayney Shire Council and the Western Regional Planning Panel.

4.1. Methodology

SEPP (R&H) Ch3 requires a Preliminary Hazard Assessment (PHA) to be prepared for potentially hazardous or offensive development. ***SEPP (R&H) Ch3 (Part 2; Section 3.7)*** requires that consideration must be given to guidelines published by the Department of Planning relating to hazardous or offensive development. Appendix 3 of ***Hazardous and Offensive Development Application Guidelines – Applying SEPP 33***[3] (known hereon in as "the Guidelines") lists industries that may fall within SEPP 33. However, the list in Appendix 3 does not include solar farms and energy storage facilities. In instances where the applicability of SEPP (Resilience and Hazards) is not immediately apparent, projects can be assessed through the risk screening procedure outlined in Appendix 2 of the Guidelines.

4.2. Existing Environment

4.2.1. Risk Screening

SEPP (Resilience and Hazards) outlines the screening and risk assessment process for a potentially hazardous development. The document suggests that the potential risk of a proposed development typically depends on five main factors:

- the properties of the substance(s) being handled or stored;
- the conditions of storage or use;
- the quantity involved;
- the location with respect to the site boundary; and
- the surrounding land use.

[1] State Environmental Planning Policy (Resilience and Hazards) 2021 (Chapter 3 – Hazardous and Offensive Development)
[2] Hazardous Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis
[3] Hazardous and Offensive Development Application Guidelines – Applying SEPP 33

Incorporating these factors, and following the procedure outlined and detailed in the Guidelines, a risk screening analysis was completed for the Blayney 4C & 7C Solar and BESS project.

According to the ***Australian Code for the Transport of Dangerous Goods by Road and Rail***[4] ("ADG Code"), all dangerous goods are to be carried in a secure, safe and environmentally controlled manner. The ADG Code lists the following classes of dangerous goods:

- Class 1 – Explosives
- Class 2 – Gases
- Class 3 – Flammable liquids
- Class 4 – Flammable solids
- Class 5 – Oxidising substances and organic peroxides
- Class 6 – Toxic and infectious substances
- Class 7 – Radioactive material
- Class 8 – Corrosive substances
- Class 9 – Miscellaneous dangerous substances and articles, including environmentally hazardous substances

A development which exceeds the screening thresholds identified in Appendix 4 of the Guideline would be considered potentially hazardous, and a PHA would need to be submitted with a Development Application. Where quantities of dangerous goods are below the Appendix 4 thresholds, SEPP (Resilience and Hazards) indicates that there is unlikely to be a significant off-site risk, in the absence of other risk factors.

4.3. Potential Impacts

4.3.1. Dangerous Goods On-Site

The dangerous goods that would require transportation and storage during construction or operation of the Blayney 4C & 7C Solar Farm site are identified in ***Table 2*** below, detailing the ADG Code classification, the quantities, and applicable thresholds. The planned storage of the dangerous goods is within the proposed Laydown Area as shown on the General Arrangement Plan[5] submitted in the DA Drawing Pack. All dangerous goods on site will be stored at quantities that are lower than the *SEPP (R&H)* thresholds.

The proposed Blayney 4C & 7C Solar and BESS facility configuration will be of Lithium-ion technology, sourced from a tier-one international equipment manufacturer which possesses certification and compliance with applicable Australian standards, licences, and codes.

[4] Australian Code for the Transport of Dangerous Goods by Road and Rail
[5] Drawing No. G-300

The system will comprise multiple containerised systems of approximately 3 MWh capacity per container, mounted on an engineered foundation and electrically connected together on-site. Each container has a fire detection and suppression system (usually inert gas or water deluge) to contain and help prevent the spread of fire.

Irrespective of the technology deployed, the BESS facility will include a series of foundations, suitably spaced for optimum operations and maintenance and separated by gravel/road-base to assist in fire management. The final decision on the preferred technology provider and detailed technology specification would be confirmed during the detailed design phase of the project, and as stated will comply with applicable Australian standards, licences and codes.

Table 2 – List of hazardous materials on site, quantities and screening thresholds (per site)

Hazardous Material	Storage Threshold	Transport Threshold		Storage	Project Compliance
		Movements	Quantities		
Class 3 – Flammable liquids: **Fuel (petrol)**	5 tonnes	Approx. 50/week	3-5 tonnes	Stored in tanks on the site service vehicles and would not be stored at quantities greater than the storage or transport thresholds.	Yes, final quantity to be determined during detailed design but will not exceed storage or transport thresholds.
Class 6.1 – Toxic Substances **Pesticides (herbicides)**	2.5 tonnes	All	1-3 tonnes	Stored at the laydown area (refer General Arrangement Plan) in appropriately bunded area designed in accordance with AS1940-2004.	Yes, final quantity to be determined during detailed design but will not exceed thresholds.
Class 9 – Miscellaneous dangerous substances and articles **Li-ion batteries certified to UN 34.80**	No storage threshold listed (UN Code 3480)	No limit (for Blayney solar and BESS project, an estimated 5 deliveries are anticipated)	No limit (for Blayney solar and BESS project, an estimated 3.5MW batteries per delivery, in addition to other equipment)	Batteries will be stored within the BESS Station compound.	Yes, no threshold applies.

4.3.2. Summary of Screening Method

The *SEPP (R&H)* screening process does not specify a screening threshold for ADG Code Class 9 materials (Miscellaneous Hazardous material). As Lithium-Ion batteries are categorised as Class 9 goods, a PHA is not triggered based solely on the screening threshold.

The *SEPP (R&H)* documentation states that the hazardous materials screening method applied in Table 3 will not be considered in isolation when determining whether an industry is considered potentially hazardous and would therefore require a PHA to be carried out. The *SEPP (R&H)* documentation refers to 'other factors', however, what is included as 'other factors' is not specifically defined. Examples are, however, provided indicating that it must include issues such as the risk to people, property or environment if two hazardous goods were to combine, even if the quantities of both were below the threshold. This is something that is not captured in the ADG code.

Taking a precautionary approach, other factors that may warrant consideration in the screening process to determine whether the proposed lithium-ion batteries could be considered potentially hazardous are described in ***Table 3*** and an assessment of the risk of the Blayney 4C & 7C Solar and BESS project is provided.

Table 3 – Other factors assessment for the Project

Other factors	Assessment of risk for Project
The inherent risk of fire when storing large volumes of electro-chemical energy on site. These risks can and would be mitigated, but without control systems in place the risk could be significant.	The cubicle or container type of BESS facility as described above limits the potential risk of this factor, given the system will have fire mitigation controls.
The possibility of a cascading failure involving the battery system. This could be in the form of an externally initiated bushfire or electrical surge.	It is envisaged that the nature of the battery design with sufficient separation distance and fire mitigations would manage any potential risk should a bushfire or electrical surge occur. The batteries are designed to contain or suppress fire within each individual cubicle or container as appropriate and are not anticipated to spread to other parts of the system.

4.3.3. Results of Screening Method

As a result of numerous factors, including the preliminary screening, it is considered that a PHA is not required for dangerous goods to be stored on the Blayney 4C & 7C Solar and BESS site. However, in the interests of adopting a conservative approach, a number of management measures have been recommended to be implemented at the Blayney 4C & 7C Solar and BESS site, as described in Section 4.4 below.

4.4. Management and Mitigation

The risk of potentially hazardous materials will be addressed through the management and mitigation measures presented in ***Table 4.*** These high-level measures will form the basis for a construction environmental management plan, which will be developed and implemented by the contractors engaged for the Engineering, Procurement and Construction (EPC) phase of the project.

A decommissioning plan will also be developed prior to the construction phase, in order to ensure that any hazardous material is removed from the site and disposed of appropriately at the end of the operational life of the project.

Table 4 – Recommended mitigation measures for potential hazardous materials risks

No.	Safeguard and mitigation measures
HM1	The Blayney 4C & 7C Solar and BESS site would manage the fire risks associated with the BESS by: • Installing reliable, automated monitoring and control systems, with an alarm and shutdown response capability. • Taking reasonable and safe measures to prevent the risks of external heat effects in the event of a bushfire. • Designing appropriate separation and isolation between battery cubicles, and between the BESS and other infrastructure, in accordance with the manufacturers' recommendations, and including gravel set-off areas around the facility. • Compliance with all applicable Australian codes and standards. • Preparation of a BESS-specific fire response plan, in conjunction with the NSW Rural Fire Service. • Installing an adequate automatic fire suppression system integrated into the detection and control system. • Disposal (and where possible, recycling) of any potentially hazardous material in accordance with the best international practices available at that time.
HM2	Fuels and pesticides/herbicides in use at the site will be stored at the laydown area in appropriately bunded areas designed in accordance with AS1940-2004.

5. PROJECT DESIGN

The proposed Solar Farm Project at Blayney incorporates a number of fire safety in design principles embedded into a number of aspects such as the:

- Project layout and location
- Site access
- Inverter and battery station arrangement
- Material/equipment selected and onboard technology
- Installation
- Operation and maintenance of hazardous material

Each of the above criteria will be detailed within this report considering strategy, implementation, and compliance in terms of fire safety effectiveness.

5.1. Project Layout and Location

As of writing, the NSW Rural Fire Service (RFS) data indicates that the proposed solar farm site is not located in a bushfire prone area (***Figure 2***). However, ***Draft RFS Mapping*** provided by Blayney Shire Council through email correspondence with the EDPR identifies the site as bushfire prone land (***Figure 3***). The proposed development takes into consideration the guidelines and regulations relevant to land that is considered to be bushfire prone land, including building precautions into the design of the project.

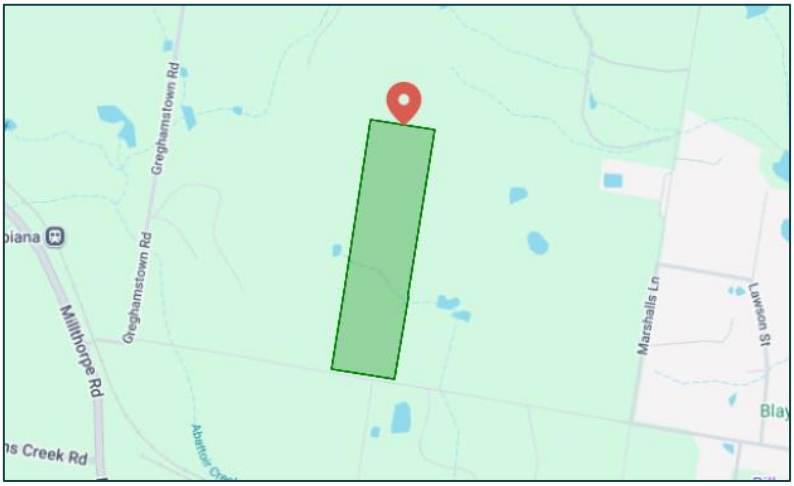

Figure 2 – NSW RFS Search

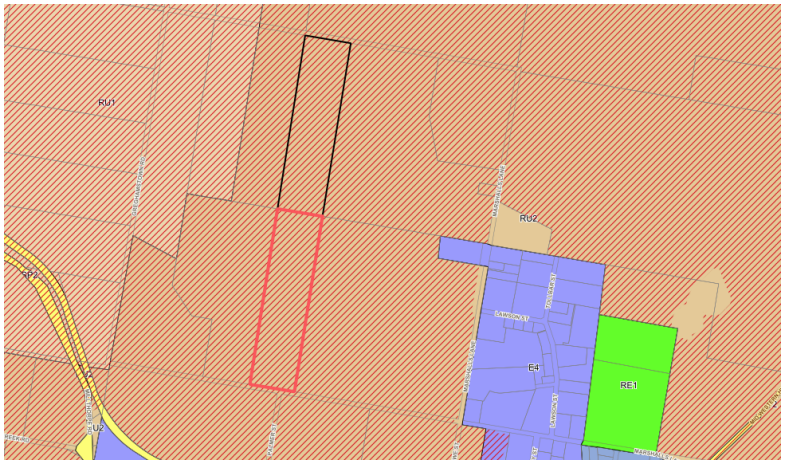

Figure 3 – Bushfire Prone Land, Blayney Shire Council Draft RFS Mapping

The design of the solar farm is proposed to include a minimum 10-metre Asset Protection Zone (APZ) surrounding the solar arrays and BESS/inverter stations, and to be contained within a non-combustible chain-link fence. The APZ will not be located on land exceeding a slope of 18 degrees. This APZ is also intended to act as a defendable space and a buffer against radiant heat effects for emergency services.

Figure 4 illustrates the APZ encompassing the solar farm site (highlighted in yellow). A 3-metre landscape vegetation screening is proposed adjacent to the eastern and southern property/lot fence line.

Furthermore, a minimum 10m APZ shall be established around the battery station (***Figure 6***) (which includes the cubicles, switching station and associated structures of the BESS) and other infrastructure including gravel off-set areas. Road access to the site and fencing are excluded from the APZ. Internal curves of the APZ and Inner Protection Area (IPA) are designed with minimum 6m radius turning circles to assist in vehicle access. Additionally, the vertical clearance above the APZ/IPA exceed 6m in height.

Figure 4 – Blayney 4C & 7C Solar and BESS project General Arrangement with APZ Highlighted

There will be no infrastructure within the APZ. The ongoing maintenance of APZs are recognised under 100C of the *Rural Fires Act* 1997 and supported by 2.8(1)(d) of the *Biodiversity Conservation Act* 2016. Any clearing of vegetation within the site to allow the development to occur may require assessment under the *Biodiversity Conservation Act* 2016.

At the commencement of building works and for the life of the development, a 10m APZ around the solar panels, BESS station and other infrastructure shall be managed as an IPA, in accordance with Appendix 4 of Planning for Bushfire Protection 2019 and NSW Rural Fire Service 'Standards for Asset Protection Zones'.

The presence and ongoing maintenance of the APZ assists in lowering the impact of direct flame contact and spread, as well as radiant heat effects on the development.

5.2. Site Access

The proposed Blayney 4C & 7C Solar Farm is a Class 10b, non-habitable structure that is remotely monitored and controlled but, in general, physically unmanned on site. For this reason, and being a non-residential development, the Planning for Bush Fire Protection (PBP2019) section 8.3.2 (Class 10 structures) forms part of the assessment criteria along with section 8.3.5 (Wind and solar farms) in relation to site access.

As per section 8.3.2, there are no specific bushfire protection requirements for Class 10a buildings and, by extension, Class 10b structures. However, section 8.3.5 of the PBP2019 does state specific requirements for solar farms: firefighting vehicles are provided with safe access to structures and hazard vegetation. Access to the site is designed based on the general access requirements provided in Appendix 3 of PBP 2019.

The external 'unnamed road' (located between Greghamstown Road to the east and Marshalls Lane to the west) is proposed as the primary access route for construction vehicles. The external access roads, Marshalls Lane and Greghamstown Road (off the Mid-Western Highway) are, respectively, sealed and unsealed two-way roads. In the absence of specific access requirements from section 8.3.2 and 8.3.5, access to the site is proposed through an open, cleared paddock where there is adequate clearance from combustible vegetation, excellent vision and ample passing areas provided along the internal access track. The internal access track will not be utilised to access any dwellings; therefore, traffic congestion is not assessed as an issue.

The following access provisions incorporating elements of Appendix 3 and A3.9.2 of PBP2019 have been integrated into the design to sufficiently mitigate risk:

- Vehicle access provided within the APZ surrounding the solar panels;
- Minimum 5.5m carriageway between obstructions such as roadside fencing, bollards, and trees;
- Parking is provided outside of the carriageway width;
- Curves of roads have a minimum inner radius of 6m;

- The maximum grade road is 15 degrees and average grade of not more than 10 degrees;
- The road crossfall does not exceed 3 degrees, and;
- A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.

To ensure compliance with the relevant requirements for bushfire management afooternd ensure compliance with *Section 4.47(3) of the Environmental Planning and Assessment Act 1979:*

- A 20,000-litre static water supply (tank) fitted with a 65mm Storz fitting will be located adjoining the internal property access road within the required APZ.

The static water supply is intended to mitigate the risk of bushfire attacks and safeguard emergency services personnel, residents, and other individuals involved in firefighting efforts to protect assets on-site and prevent the potential spread of fires.

In the absence of an access path load rating within 8.3.2 and 8.3.5 of PBP2019 in non-residential development, this fire assessment does not consider any specific fire requirements in the design load specification of the internal access track proposed for the operative phase of the project beyond what was built and used during construction.

A bushfire assessment study may be required and would be conducted by a BPAD accredited fire assessor once the detailed design of the solar farm is completed to recognise any specific risk and hazards that apply from PBP2019, if required.

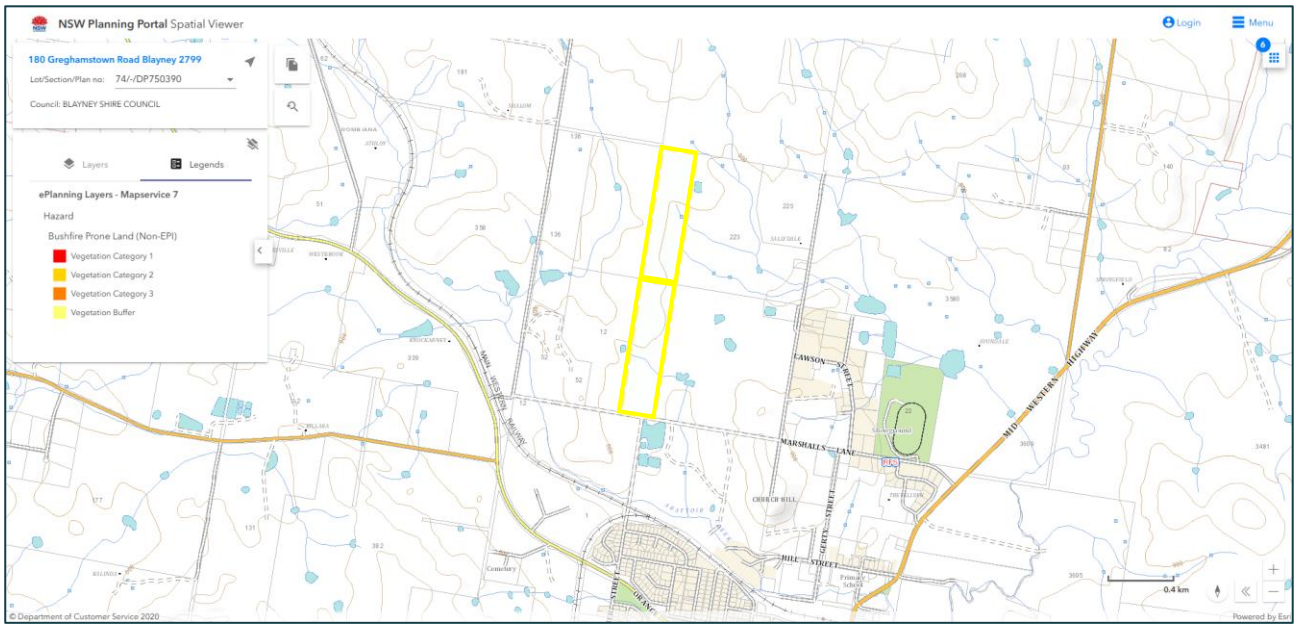

Figure 5 – Bushfire Prone Land Map

5.3. Inverter and Battery Station Arrangement

Figure illustrates the indicative layout plan for the battery station, which is comprised of three 40-foot containers housing the battery cells, and a switchgear station in the centre. Similarly, it is intended a 10m APZ will surround the inverter station and battery station/electrical kiosk to act as a defendable area and buffer against heat effects between the equipment and solar array.

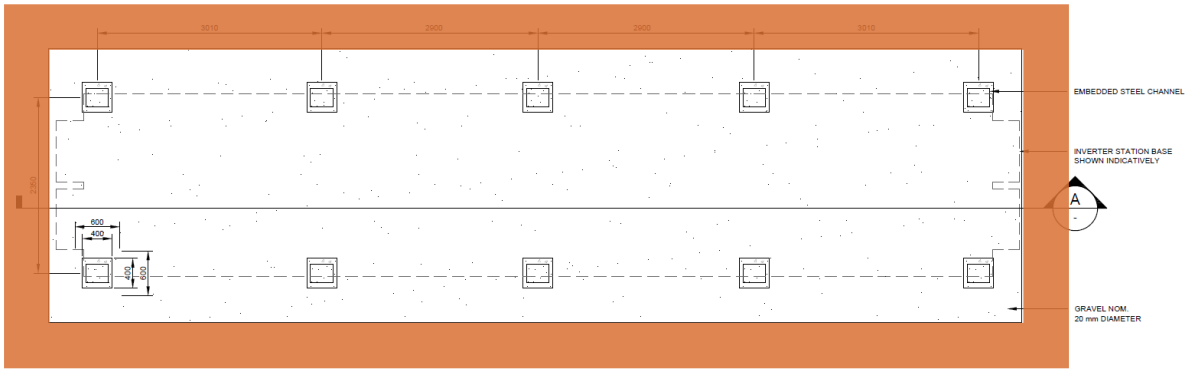

Figure 6 – Blayney BESS Infrastructure Setout with APZ in Highlight

Wood piles, wooden sheds, combustible material storage areas, large areas/quantities of garden mulch and stacked flammable building materials are not proposed as part of this development.

5.4. Material/Equipment Selected and Onboard Technology

The proposed solar farm is comprised of equipment, plant and material designed to be installed outdoors in the elements to suit a variety of environmental challenges and operate continuously for over 40 years.

The solar arrays are connected to the inverter station which contains comprehensive remote monitoring and automatic protection systems that operate 24x7 with dual redundant back to base alarm systems to advise of any faults and issues. The system is also designed with onboard sensors and fail-safes that are pre-programmed to trip the generating plant, isolating it from the grid should any operating parameters fall outside of the normal range.

The generating plant also features 24x7 constant isolation resistance monitoring which electronically checks the integrity of all the cabling within the arrays against the environment, air and moisture, including those underground. This provides an early warning measure for issues such as earth faults which could potentially lead to a fire. In the event of fault alarms, the system's internal fail-safes will activate, isolating the system from the grid and the system will not operate until the fault is acknowledged and cleared. The isolating procedure will ensure any faults that may develop remain local and do not spread.

These fail safe and safety systems provide early indications of issues and automatically activate safety measures to prevent uncontrolled outbreaks of hazards such as electricity disturbances on the grid or localised issues such as fire.

The solar array tracking system is based on self-powered motors energised by internal batteries and charged by individual and independent solar panels, not requiring a grid connected power supply. The system operates on 24V DC which is regarded as extra low voltage (ELV), a comparable voltage to small domestic technology products such as laptops. The ELV component ensures the voltages involved are not hazardous should issues develop. In the solar farm, the piles are driven into the ground and form a self-grounding network by acting as natural conductors. These piles are connected to the ground and to each other through the metal framework, creating an integrated system that safely dissipates electrical faults or surges into the earth, providing effective grounding (earthing).

As a last line of defence, the generation system features its own circuit breakers which can trip in the event of overcurrent. The distribution network service provider (DNSP) at Blayney 4C & 7C Solar Farm and BESS, Essential Energy, also has remote access and trip authorisation via SCADA controls to the plant with inhibit rights, which prevents the plant from re-energising the grid without a physical confirmation from the owner to the Essential Energy control room.

The BESS system contains a self-integrated automated fire detection and suppression system to guard against an unlikely event of a fire. Common systems include Novec 1230 Fire Fighting (Suppression) System (FFS) with IEC, ISO and NFPA 2001 certifications that are located inside the battery container and integrated into the solar system's monitoring systems. The FFS includes smoke detectors, temperature detectors, alarm devices and gas release devices.

The system operates through the use of clean fire suppression gas. Before the gas blowout action, the fire system controller will issue a signal to the HVAC main power switch to stop operating, also powering down the fans and thus achieving a self-containing fire suppression process upon the release of the gas.

Compliance of the off-the-shelf BESS system is achieved with AS 4214-2002 Gaseous fire extinguishing systems and the appropriate sections in AS1670.1-2018 Fire detection, warning, control, and intercom systems. Certificates and Schedules of conformity for the FSS are also available.

5.5. Installation

The solar farm is comprised of ready-made off-the-shelf components that meet Australian standards and are certified for use in Australia.

The installation and construction process will involve minimal hot works, with the exception of the use of hand-held power tools and a drop saw for cutting excess metal off.

The solar arrays are constructed using prefabricated components and nuts, bolts and screw fixings which are installed with battery powered drivers and wrenches. The solar piling is a dry percussion process in which there are no heat procedures/hot works other than the piling and excavator rigs which are diesel powered.

The inverters, switchgear, BESS and transformer skids are all prefabricated components that arrive from overseas in containers which are craned into position on site and electrically connected.

The main sources of fire ignition during the construction will be localised to a cutting station to be setup in a controlled environment where excess metal cutting/grinding can take place equipped with hand-held fire extinguishers and fire blankets. Works are also subject to any total fire bans which may be in place and are to be integrated into safety procedures in Safe Word Method Statements (SWMS), Job Hazard Analysis (JHA) and Construction Environmental Management Plans (CEMPs).

5.6. Bushfire Assessment

Although there are similar design aspects, this fire assessment does not assess the design criteria requirements against the effects of a bushfire. An important fact to note is the Blayney Rural Fire Service NSW fire station is located at Marshalls Lane, just 1.5 km east of the development site (an approximately 3-minute drive) (see Figure 1). The Fire and Rescue NSW Blayney Fire Station is located at 23 Church Street in the middle of Blayney town, 2.5 km south-east of the site (an approximately 4-minute drive).

6. SUMMARY

The proposed solar project with BESS integration is an emerging form of renewable energy infrastructure in NSW that has an associated set of fire safety requirements.

As detailed within this report, the Blayney 4C & 7C solar farm and BESS can be made safer through the integration of safety in design principles from the bushfire standards including APZ clearances, Internal Protection Areas, comprehensive system fault monitoring, automated fire detection and suppression systems and safety procedures built into WHS policies and procedures to ensure these solar farm assets and the surrounding area is protected from the risk of fire.

7. REFERENCES

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