

Bookaar Solar energy facility and Battery Energy Storage System (BESS)

Fire Management Plan

June 2022



Document history and date

Revision	Date	Description	By	Review	Approved
V1 - DRAFT	10/6/2022	Initial draft following completion of the risk management plan	M Potter	G Taylor	G Taylor
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Fire Risk Consultants
PO Box 12, Glengarry VIC 3854
0487 790 287
www.fireriskconsultants.com.au

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Any fire safety work, including but not limited to planned burning, back burning and/or fire suppression, on any property or building is specifically excluded from this report.

*Where the term “**Bushfire prevention and mitigation related activities**” (or words to that effect) are used, this is to be defined as the clearance of vegetation in accordance with the Victorian State Government guidelines, including clearing and maintenance of existing fire breaks and/or fire access for fire fighters under electricity pylons and properties that have been constructed to Australian Standard AS3959 and/or the National Construction Code.*

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1 Introduction

Bookaar Renewables Pty Ltd has engaged fire Risk Consultants to develop a Fire Management Plan (FMP) for the Bookaar Solar Energy Facility and Battery Energy Storage System (BESS). The FMP has been developed to align with the requirements outlined with the CFA Guideline - *Design Guidelines and Model Requirements: Renewable Energy Facilities 2022* (CFA Guidelines).

The FMP is a critical component of the suite of documents that identifies, assesses and manages the fire risk associated with this development. This document is informed by the Risk Management Plan (RMP) and is aimed at outlining the plan to manage fire risk at the site.

This document has been developed based on the available information at the current time. Regular reviews will occur at various stages throughout the project, including before construction begins, during construction, commissioning and throughout operations.

2 Plan status and review

This FMP has been developed as per the CFA Guidelines and will be referenced in the Planning Permit and Emergency Management Plan. Any proposed changes to the site will be assessed against the RMP and this Plan. It is acknowledged that future changes may require CFA review and this will be facilitated as required.

The responsibility for the implementation and review of FMP will be allocated to the Site Manager. A review of the FMP must occur every three years or prior to major changes occurring.

3 Fire hazard and risk summary

An assessment of the hazards associated with the Bookaar solar energy facility and BESS is outlined within the RMP. The RMP identified the hazards related to fire, either impacting or threatening the development. These hazards were assessed, and a risk classification was determined.

The hazards identified and the outcome of the risk assessment are:

Hazard	Description	Risk assessment outcome
Electrical hazards causing a fire	Solar energy facility Electrical faults and/or hazards can be a key cause of fire in Solar energy facilities. Hazards include panel/inverter electrical faults, power surges, water ingress and loss of remote monitoring system. There is the potential for limited emergency response due to the proximity of panel banks to each other, on Site infrastructure and vegetation. BESS Electrical faults and/or hazards at a BESS can cause fires. The hazards include battery faults, overcharging, rapid discharge,	Medium

	internal short circuits and mechanical damage that may cause thermal runaway.	
Fire causing spread to adjoining infrastructure on the property	<p>Solar energy facility</p> <p>A fire that has started within the solar energy facility may spread to adjoining infrastructure. Infrastructure includes other solar panels, substation, inverters or the BESS. Rapid escalation of the fire size and complexity can create issues for on-Site staff and contractors, firefighters and the community.</p> <p>BESS</p> <p>A fire that has started within a component within the BESS may spread to adjoining BESS components or other infrastructure within the Solar Energy Facility. Rapid escalation of the fire size and complexity can create issues for on-Site staff and contractors, firefighters and the community.</p>	Low
Fire causing offsite impacts	Any fire at the Site that can spread to adjoining properties most likely through vegetation connectivity, on elevated bushfire risk days can start fires in the surrounding landscape that may threaten surrounding properties. The likely risk area is the solar energy facility. It is highly unlikely for a fire in the BESS area to cause off-Site impacts.	Low
Offsite fire impacting on the site	<p>Solar energy facility</p> <p>A bushfire burning through the surrounding landscape can enter the property and threaten the infrastructure or generate embers and land within the Solar Energy Facility and potentially start new fires.</p> <p>BESS</p> <p>A bushfire burning through the surrounding landscape can enter the property and threaten the BESS or generate embers and land within the BESS and potentially start new fires.</p>	Low
Dangerous goods	With reference to the Dangerous Goods (Storage and Handling) Regulations (Dangerous Goods legislation), there are quantities of Dangerous Goods at the Site within various components of the Proposal. There is the potential for a leak to occur that may cause a threat to people, the environment or be involved in a fire.	Low
Fire water runoff	In the event of a fire involving the BESS, firefighters will respond and use water to either extinguish or cool the surrounding area until the infrastructure is deemed safe. The CFA Guideline outlines the need to provide capacity for the management of fire water runoff for the BESS to ensure this water does not enter the environment.	Low

Staff and firefighters	The response to a fire by staff, contractors or firefighters can be dangerous due to the various safety hazards associated with a fire in this type of infrastructure.	Medium
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4 Control measures

The implementation of a wide range of control measures to manage fire risk is critical. Following the preparation of the RMP, a range of control measures have been identified and will be implemented at the required development phase and maintained. The ongoing maintenance or scheduled checks of the control measures are equally important.

The following control measures are aimed at mitigating the risk of fire from both internal and external fires.

Table 1 - Control measures - policy, procedures and checklists

Ref	Theme	Control measure	Description	Review
4.1	Policy, procedures and checklists	<p>4.1.1</p> <p>Risk Management Plan (RMP)</p>	<p>The RMP has identified the hazards and assessed them to determine a risk level. It includes strategies to lower risk if required. The RMP has been developed in accordance with the CFA Guideline.</p>	<p>This is prepared for each stage of development. Thereafter reviewed every 3 years or before any site changes occur.</p>
		<p>4.1.2</p> <p>Fire Management Plan (FMP)</p>	<p>The FMP outlines the control measures to reduce the risk of fire occurring and is developed in accordance with the CFA Guideline.</p>	<p>This is prepared for each stage of development. Thereafter reviewed every 3 years or before any site changes occur.</p>
		<p>4.1.3</p> <p>Emergency Management Plan (EMP)</p>	<p>An EMP will be established, reviewed and updated as required to reflect the different stages of the development including construction, commissioning, and operations. It will recognise the differences between the Solar Energy Facility and the BESS. The EMP will be developed in accordance with the CFA Guidelines and AS3745 <i>Emergency Planning for facilities</i>. This will include the following as provided in the CFA Guidelines (2022) at Section 10.1.2:</p> <p style="text-align: center;"><i>a. Emergency prevention, preparedness and mitigation activities.</i></p>	<p>This is prepared for each stage of development. Thereafter reviewed annually.</p>

			<p>b. <i>Activities for preparing for, and the prevention of emergencies (eg. training and maintenance).</i></p> <p>c. <i>Control and coordination arrangements for emergency response (eg. evacuation procedures, shelter-in-place arrangements, emergency assembly areas and procedures for response to emergencies).</i></p> <p>d. <i>The agreed roles and responsibilities of on-site personnel (eg. equipment isolation, fire brigade liaison, evacuation management, shelter-in-place management, if applicable).</i></p> <p><i>To facilitate fire brigade response, CFA’s expectation is that EMPs include:</i></p> <p>e. <i>A facility description, including infrastructure details, operations, number of personnel, and operating hours.</i></p> <p>f. <i>A site plan depicting infrastructure (solar panels, wind turbines, inverters, battery energy storage systems, generators, substations, grid connection points, dangerous goods storages, buildings, bunds), site access points and internal roads; fire services (water tanks, pumps, booster systems, fire hydrants, fire hose reels); drainage; and neighbouring properties.</i></p> <p>g. <i>Up-to-date contact details for facility personnel, and any relevant off-site personnel that could provide technical support during an emergency.</i></p> <p>h. <i>Details of emergency resources, including fire detection and suppression systems and equipment; gas detection; emergency eye-wash and shower facilities; spill containment systems and</i></p>	
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			<p><i>equipment; emergency warning systems; communication systems; personal protective equipment; first aid.</i></p> <ul style="list-style-type: none"> <i>i. A manifest of dangerous goods (if required under the Dangerous Goods (Storage and Handling) Regulations 2012).</i> <i>j. Evacuation procedures.</i> <i>k. Shelter-in-place procedures for facilities at-risk of bushfire or grassfire, in the event that it is too late to safely evacuate.</i> <i>l. Emergency procedures for all credible hazards and risks, including building, infrastructure and vehicle fire, grassfire and bushfire. i) A Fire (or Bushfire) Management Plan (refer to Section 9). Procedures must include details for notifying the emergency services, at the earliest possible stage of the emergency. The person or role responsible for making or verifying the notification must be specified. '000' must be included in the procedure.</i> <i>m. A Fire (or Bushfire) Management Plan</i> <p><i>Procedures must include details for notifying the emergency services, at the earliest possible stage of the emergency. The person or role responsible for making or verifying the notification must be specified. '000' must be included in the procedure. Where your facility is within a Bushfire Prone Area or the Bushfire Management Overlay, refer to Section 11 for CFA's advice on bushfire emergency planning.</i></p> <p>Specific to Solar Energy Facilities the EMP will include:</p>	
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			<ul style="list-style-type: none"> n. Emergency procedures for isolation and shutdown where solar panels and/or related infrastructure are involved in fire. o. Emergency procedures for fires within the vicinity of solar energy facilities. p. Specifications for safe operating conditions for temperature, and the hazards related to electricity generation at the facility. q. Procedures developed that align with the fire danger ratings to ensure that only necessary personnel are on-Site during Extreme and Code Red days. <p>Specific to the BESS the EMP will include:</p> <ul style="list-style-type: none"> r. Contact information for 24/7/365 specialist technical support for the battery energy storage system. s. Procedures developed that align with the fire danger ratings to ensure that only necessary personnel are on-Site during Extreme and Code Red days. t. Emergency procedures based on identified risks and hazards of the battery energy storage system and related infrastructure, including but not limited to: <ul style="list-style-type: none"> u. Electrical infrastructure faults and fire. v. Battery energy storage system damage or faults, including battery monitoring faults, temperature increases above normal operating 	
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			<p>parameters, electrical faults, chemical spills or reactions, offgassing, thermal events/runaway, smoke and fire.</p> <p>w. Bushfire and grassfire.</p> <p>x. The management of fire water runoff.</p> <p>y. A plan for partial and full decommissioning of the battery energy storage system in the event of an emergency incident that renders the facility inoperable or unsafe, prior to its anticipated end-of life.</p>	
		<p>4.1.4</p> <p>Emergency Information Book and Emergency Information Containers</p>	<p>An Emergency Information Book will be developed and available for emergency responders. Emergency Information Books will be located in Emergency Information Containers, provided at each vehicle entrance point to the facility (x 8).</p> <p>As per section 10.2.1 of the CFA Guidelines (2022), the Emergency Information Book will include:</p> <p><i>a. A description of the premises, its infrastructure and operations.</i></p> <p><i>b. Site plans that include the layout of the entire site, including buildings, internal roads, infrastructure, fire protection systems and equipment, dangerous goods storage areas, battery energy storage systems, substations/terminals, grid connections, drains and isolation valves, neighbours and the direction of north.</i></p> <p><i>c. Up-to-date contact details for site personnel, regulatory authorities and site neighbours.</i></p>	<p>This is prepared for each stage of development. Thereafter reviewed annually.</p>

- d. A manifest of dangerous goods (if required) as per Schedule 3 of the Dangerous Goods (Storage and Handling) Regulations 2012.*
- e. Safety Data Sheets (SDS) for dangerous goods stored on-site.*
- f. Procedures for management of emergencies, including evacuation, shelter-in-place (for facilities at risk of bushfire/grassfire), containment of spills and leaks, and fire procedures (including infrastructure/plant fires, vehicle fires, grassfire/bushfire).*

Specific to the BESS the Emergency Information Book will provide information on hazards to emergency responders including:

- a. Specifications for safe operating conditions for temperature.*
- b. Schematics and technical data for battery energy storage system containers/enclosures, the number of containers/enclosures on-site, and the number of battery racks or modules within each container/enclosure.*
- c. Details of the hazards for the battery energy storage system, including thermal events/runaway, electrical safety hazards, explosion hazards, dangerous goods hazards (including off-gassing), and the effects of fire on the battery energy storage system (eg., explosion, release of toxic gases).*
- d. Details of all provided battery failure/safety and protective systems, including a description, the activation process/automatic trigger, and any hazards associated with these systems.*
- e. The shut down and/or isolation procedures if the batteries are involved in fire, and appropriate personnel contact details for verifying that the*

		<p><i>battery enclosure/container system has been isolated/shutdown and de-energised during emergencies.</i></p> <p>The Emergency Information Containers will be:</p> <ol style="list-style-type: none"> <i>a. Painted red and marked 'EMERGENCY INFORMATION' in white contrasting lettering not less than 25mm high.</i> <i>b. Located at all vehicle access points to the facility, installed at a height of 1.2 metres – 1.5 metres.</i> <i>c. Accessible with a fire brigade standard '003' key.</i> <i>d. Kept clear of obstructions, including products, rubbish, vehicles, vegetation and any hazards (eg. pest infestation).</i> 	
	<p>4.1.5 Hazard analysis</p>	<p>A system will be introduced that requires any changes or alterations to the site to be fully assessed against the RMP and if required ensures the RMP, FMP and EMP are updated.</p>	<p>As required</p>
	<p>4.1.6 Personnel Training</p>	<p>All personnel, contractors and where appropriate visitors, will be provided with site specific information, instruction and training in accordance with the Occupational Health and Safety Act 2004.</p> <p>In Line with the CFA Guidelines (10.3) this will include:</p> <ul style="list-style-type: none"> • <i>Facility and operational risks and hazards.</i> • <i>Facility emergency management roles, responsibilities and arrangements (as per the Emergency Management Plan).</i> 	<p>Site induction for all new personnel and contractors;</p> <p>Annual refreshers for all personnel and contractors</p>

		<ul style="list-style-type: none"> • <i>The on-site emergency (occupant) warning systems and location of evacuation assembly areas.</i> • <i>The safe and effective use of any fire-fighting equipment where there is an expectation for staff to undertake first aid firefighting.</i> • <i>The storage, handling and emergency procedures for dangerous goods at the facility.</i> • <i>The location of first aid facilities and application of first aid equipment.</i> <p>As the proposal is at risk from bushfire and grassfire the following will be included in the personnel training:</p> <ul style="list-style-type: none"> • the Vic Emergency App will be downloaded and ‘watch zones’ will be set for the facility location and any related areas of travel. • Information and training on the warning levels and messages issued by CFA and Emergency Management Victoria will be carried out. • CFA’s free ‘Bushfire Safety for Workers’ e-learning module prior to the Fire Danger Period will be mandatory for all personnel at the facility. 	
	<p>4.1.7</p> <p>Site access including induction</p>	<p>Site access arrangements will be introduced that require all new staff, visitors and contractors to be inducted into the property. This induction will include an overview of the EMP, and where appropriate the training procedures listed above.</p>	<p>Every 3 years or before site changes.</p>
	<p>4.1.8</p>	<p>Ensure all Contractors:</p>	<p>As required.</p>

	Contractor management	<ul style="list-style-type: none"> • Go through an induction process before working on the Site for the first time. The induction process should be renewed annually. • Are appropriately briefed and understand their legal obligations in relation to managing fire risks. • Have appropriate procedures, safe work practices, contingency plans, and Safety Data Sheets (SDS) for the operation of all equipment, chemicals, and flammable materials that may contribute to fire risk. <p>Have appropriate “initial” suppression equipment available on Site, this will include two 4WD vehicles fitted with ‘Slip On’ units that contain a water tank and firefighting pump. Additional equipment including fire extinguishers, hoses and branches to be provided.</p>	
	4.1.9 Fire danger period activities	Assessments are required to ensure that any activities that may require a permit issued by CFA, Corangamite Shire Council, or any other statutory authority during the fire danger period are obtained prior to the period. Any hot works or other high-risk activities may require a permit to be issued.	Annually – for fire danger period.
	4.1.10 Hot Works Permit system	A hot works permit system will be established for the life of the Proposal that will ensure that any hot works, including welding, cutting or grinding will only occur after a hot works procedure permit has been granted by site management.	Every 3 years
	4.1.11 Fire Indicator Panel (FIP) isolation procedure	During construction, operation and maintenance at the Site, there may be a requirement to isolate the FIP to prevent unnecessary activation of the IR heat and flame detection system. A procedure will be established that outlines the steps taken to isolate the FIP and to ensure it is reinstated prior to the technician leaving the site.	As required

		<p>4.1.12</p> <p>Emergency service liaison</p>	<p>At least annually, contact the local emergency services including CFA, SES and Victoria Police to offer a familiarization visit and explanation of emergency procedures for the Site.</p>	<p>Annually</p>
		<p>4.1.13</p> <p>Community contact process</p>	<p>A process will be established and maintained to ensure the local community can contact a Site representative of the Proposal directly. Any issues raised will be recorded in a community liaison register and a response will be provided. The process will include updating contact details of members of the community within 2km of the Proposal boundary so that the community can be contacted in relation to fire risk issues, or in the case of an emergency.</p>	<p>Annually</p>
		<p>4.1.14</p> <p>Site commissioning procedure – electrical equipment</p>	<p>Ensure all electrical equipment is fully commissioned and maintained as per the manufacturer’s specifications and other legislative requirements.</p>	<p>Ongoing</p>
		<p>4.1.15</p> <p>Post seismic activity procedure</p>	<p>Seismic activity is a trigger for inspecting, testing, and servicing the battery energy storage system and its related infrastructure. Any damages or changes in operating parameters must be immediately assessed and rectified by a suitably qualified person.</p>	<p>As required</p>

Table 2 - Control measures – maintenance

Ref	Theme	Control measure	Description	Review
4.2	Maintenance	<p>4.2.1</p> <p>Fire system maintenance</p>	<p>The fire safety systems are to be maintained as per AS1851. Any identified issues are to be rectified immediately. Systems include:</p> <ul style="list-style-type: none"> • 8 x 100,000 litre static water supplies including tank outlets and adaptors, water level gauges, storage levels and valves provided for the Solar Energy Facility. • 3 x 150,000 litre static water supplies including tank outlets and adaptors, water level gauges, storage levels and valves provided for the BESS. • IR heat and flame detection system including the Fire Indicator Panel and accompanying monitoring system that is installed within the BESS area. • Vehicle based fire extinguishers. • Pump for Fire water Runoff System. • Building fire safety systems including: <ul style="list-style-type: none"> ○ Exit signs ○ Emergency lighting ○ Bushfire safety measures ○ Fire extinguishers 	<p>As required by the Occupancy Permit/s and AS1851.</p>

		<ul style="list-style-type: none"> ○ Other essential safety measures as required by the Occupancy Permit. 	
	<p>4.2.2</p> <p>Fire Water Runoff system</p>	<p>The following activities must be completed:</p> <ul style="list-style-type: none"> • Physical inspection of the 150mm Rollover for the Fire Water Runoff System for signs of cracks or other integrity failures. • Physical inspection of the concrete floor of the Fire Water Runoff System for signs of cracks or other integrity failures. • Clean out the sump and remove all silt and other debris. • Ensure that the stormwater isolation vales are functional. • Ensure the fire water runoff storage tank is empty and the fill pipe is functional. 	Monthly
	<p>4.2.3</p> <p>Waste and other combustible materials management</p>	<p>Regular inspection and removal of all combustible and other waste materials within the vicinity of the BESS, substation and inverter areas and related infrastructure.</p>	As required
	<p>4.2.4</p> <p>Solar Energy Facility Components and associated equipment</p>	<p>Regular inspections of Solar Energy Facility Components and associated equipment for physical damage. Any damage must be immediately assessed and rectified by a suitably qualified person.</p>	As required, otherwise Monthly
	<p>4.2.5</p>	<p>The systems that monitor the Solar Energy Facility (described in 5.4.1) will be regularly tested as per manufacturers' specifications to ensure they are</p>	As required

	Solar Energy Facility Monitoring Systems	maintained in working order. This will ensure that faults are detected and resolved early and, if necessary, the solar energy facility can be shut down remotely in the event of an emergency.	
	4.2.6 BESS Monitoring Systems	The systems that monitor the BESS (described in 5.4.2) will be regularly tested as per manufacturers' specifications to ensure they are maintained in working order. This will ensure that faults are detected and resolved early and, if necessary, the solar energy facility can be shut down remotely in the event of an emergency.	As required
	4.2.7 Battery enclosures and mechanical damage protection.	Regular inspections of battery enclosure containers and related infrastructure for physical damage. Any damage must be immediately assessed and rectified by a suitably qualified person.	As required, otherwise Monthly
	4.2.8 Battery infrastructure	In accordance with the manufacturer's specifications, undertake maintenance of the Tesla Megapacks, transformers, and associated equipment.	As required
	4.2.9 Battery monitoring system	The system that monitors the battery operation will be regularly tested as per the manufacturer's specifications to ensure all remote operations capabilities are maintained. This will ensure that the solar energy facility and BESS can be shut down remotely in the event of an emergency.	As required
	4.2.10 Access and security	Regular checks will occur of the boundary fence, the CCTV system, and other security measures to ensure unauthorised access is prevented.	Ongoing
	4.2.11	Regularly check the provision of emergency vehicle access to the Site. No equipment or other materials are left blocking or impeding emergency vehicle access.	Ongoing

		<p>Emergency vehicle access to the Site</p>	<p>All access roads are to be maintained to ensure they meet the following requirements:</p> <ul style="list-style-type: none"> • A four (4) metre perimeter road within the perimeter fire break. • Must be of all-weather construction and capable of accommodating a vehicle of fifteen (15) tonnes. • Be a minimum of four (4) metres in trafficable width with a four (4) metre vertical clearance for the width of the formed road surface. • The average grade should be no more than 1 in 7 (14.4% or 8.1°) with a maximum of no more than 1 in 5 (20% or 11.3°) for no more than fifty (50) metres. • Dips in the road should have no more than a 1 in 8 (12.5% or 7.1°) entry and exit angle. • Must incorporate passing bays at least every 600 metres, which must be at least twenty (20) metres long and have a minimum trafficable width of six (6) metres. Where roads are less than 600 metres long, at least one passing bay must be incorporated. • Must enable responding emergency services to access all areas of the facility, including fire service infrastructure, buildings, and battery energy storage systems and related infrastructure. • The provision of eight (8) access points to the facility, to ensure safe and efficient access to and egress from areas that may be impacted or involved in fire. 	
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		<p>4.2.12</p> <p>Dangerous Goods safety systems</p>	<p>The Dangerous Goods safety system is outlined within the RMP and complies with the Dangerous Goods (Storage and Handling) Regulations.</p> <p>Ensure all identified Dangerous Goods on the Site are regularly reviewed as per the following:</p> <ul style="list-style-type: none"> • If any changes occur to the quantities or equipment that houses the Dangerous Goods, the RMP will be reviewed prior to the works commencing. Any relevant legislative obligations following the changes will be implemented. • Check that the HAZCHEM and dangerous goods signs at the property entrance are current and legible. • The equipment containing dangerous goods are checked in accordance with the manufacturer’s specifications to ensure dangerous goods are contained within the environment. <p>Note: other maintenance requirements are included within other areas of this Fire Management Plan including the Emergency Information Book / Container and relevant equipment maintenance.</p>	<p>Annually</p>
		<p>4.2.13</p> <p>On site firefighting capability</p>	<p>Ensure the on-Site first attack capability consisting of two first attack vehicles is maintained and available during the fire danger period. The minimum capability includes:</p> <ul style="list-style-type: none"> • 2 x ‘slip on’ units on the rear of two 4WD vehicles (utes) that includes a water tank and pump. 	<p>Annually before the fire danger period</p>

			<ul style="list-style-type: none"> • Fire extinguishers for all onsite vehicles, hoses, branches and other required equipment to be provided. 	
		<p>4.2.14 Site signage</p>	<p>All road signage and any other emergency related signage is to be checked to ensure they haven't degraded and are still current. This may include:</p> <ul style="list-style-type: none"> • Fire orders • Emergency site plans/Evacuation procedures • Directional signage to the static water supplies. 	Annually

Table 3 - Control measures - vegetation management

Ref	Theme	Control measure	Description	Review
4.3	Vegetation management	4.3.1 Asset Protection Zone	Regular inspections will occur of the 10 metre fire break around the perimeter of the Solar Energy Facility along with the APZs around the substation, the inverters the operation and maintenance area and the BESS. Any vegetation is to be removed from the Asset Protection Zones during the fire danger period.	As required and regularly during the fire danger period.
		4.3.2 Ground's management – other areas	All areas will be regularly maintained, and ground cover across the Site (including the drains) will be kept at a maximum of 100mm during the fire danger period. Any vegetation accumulation will be cleared as soon as possible and removed from the Site.	During the fire danger period.
		4.3.3 Vegetation screens	<p>Check all vegetation screens prior to the fire danger period and ensure they comply with Schedule D of the Risk Management Plan. As a minimum this will include:</p> <ul style="list-style-type: none"> • Removal of dead vegetation including fallen branches. • Maintain the ground cover fuels to a maximum of 100mm during the fire danger period. • Remove all branches within two meters of the ground. <p>Any replacement vegetation planted within the Vegetation Screens needs to be selected in line with the requirements outlined within Appendix D of the RMP.</p>	Annually before the fire danger period.

5 Equipment and resources to manage fire at the Site

The following fire safety equipment is installed on the Site:

5.1 Static water supplies

The Site will be provided with static water supplies across the Energy Solar Facility and the BESS area. The static water supplies will comply with AS2419.1:2005 and the CFA Guidelines and be maintained as per AS1851. The static water supplies will include:

- Above ground tanks constructed of concrete or steel
- 150mm full bore isolation valve equipped with a Storz connection. Adapters to include 125mm, 100mm, 90mm, 75mm, 65mm Storz tree adapters with a matching blank end cap to be provided and is protected from mechanical damage through the provision of bollards.
- Quick fill connection
- Tank contents indicator
- Tank signage including the tank capacity
- Access openings and ladders
- Hardstand area that enables a firefighting appliance to park within four meters of the tank outlet. All-weather road access and hardstand must be provided to the hard-suction point. The hardstand must be maintained to a minimum of 15 tonne GVM, eight (8) metres long and six (6) metres wide or to the satisfaction of the CFA.

Tanks to be supplied in accordance with the following:

Number of tanks and capacity	Location
8 x 100,000 litres	Tanks to be located at each site entrance point as per the Site plan.
3 x 150,000 litres	To the north, east and west of the BESS area with the eastern tank adjacent to the substation as per the Site Plan.

5.2 Fire Water Runoff Storage System

The battery area is provided with fire water runoff provisions that will enable the collection of up to 450,000 litres of fire water runoff using a combination of the 150,000 litre fire water runoff tank and additional fire water tanks as they are depleted of water.

The Fire Water Runoff Storage System consists of the following infrastructure:

- A Fire Water Runoff Storage area including

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- A impervious concrete floor beneath the BESS units
 - A 150mm high rollover at its perimeter
 - 4 stormwater drains along the southern side of the rollover, each controlled by a isolation valve
 - A sump in the South East corner of the Fire Water Runoff Storage Area
 - A 150,000 litre fire water runoff storage tank
 - A fire fighting pump mounted on a trailer

In case of an emergency the following procedures will be followed:

1. Isolation valves for the storm water drains will be closed (this will result in any fire water used for the BESS area being collected in the Fire Water Runoff Storage Area)
2. The fire water runoff will be pumped via the fire fighting pump from the sump pit into the adjacent fire water runoff storage tank.
3. If the fire water runoff storage tank is filled, additional fire water tanks will be utilised (as they are depleted of water – up to three each with 150,000 liters capacity).
4. The procedure for the removal of fire water runoff from the BESS area, testing of the fire water and if required, its disposal will be outlined within the Emergency Management Plan.

5.3 BESS IR heat and flame detection system

Within the BESS area a system that will detect heat or flames will be installed. The detectors will be installed externally to the Tesla Megapacks and will provide the ability to detect hot gases, smoke or flames.

A Fire indicator Panel will be installed that will connect to the SCADA to allow for the site operators to monitor and respond to any alarms that may be activated.

5.4 Other monitoring systems

5.4.1 Solar energy facility

Across the solar energy facility there are other monitoring systems that assist with managing the risk of fire. The systems include:

1. A Solar energy facility management system (SCADA) provided that will detect various fluctuations and provide early notification of faults.
2. CCTV cameras surrounding the Site to monitor activity at the access points and surrounding area. These CCTV cameras will provide Site management the ability to actively monitor the Site, and should a fire occur gather information on a fire to report to the emergency services if required.
3. Remote alarms and notification systems within the energy storage facility.
4. Implement remote shut down possibilities of solar energy facility operations during high bushfire risk days, actual bushfires or during times of electrical fault.

5.4.2 BESS

Across the BESS area there are other monitoring systems that assist with managing the risk of fire. The systems include:

1. The Site will be provided with a SCADA system that will monitor the day to day operations of the batteries and associated infrastructure. The system includes a range of sensors that are preprogrammed to send alert messages and includes:
 - a. Over temperature
 - b. Under temperature
 - c. Under voltage warning
 - d. Power off fault
 - e. Voltage and current changes.

These alerts are automatically transmitted to a monitoring centre. There are appropriate levels of back up communication systems installed in the event of power failures or other events that may interrupt the communications connections.

5.5 Asset Protection Zones (APZs)

APZs are provided around the perimeter of the Solar Energy Facility, around the array areas, the substation, the inverters, the operations and maintenance buildings and the BESS. APZs will be clear of vegetation and are designed to prevent a fire from leaving the property/area or limiting a bushfire entering the property/area.

5.6 Emergency Management Plan (EMP)

The EMP will comply with the CFA Guideline and AS3745 *Emergency planning for facilities* (refer to Table 1). The EMP will be reviewed annually and at the construction, commissioning and operations phases.

5.7 Emergency Information Containers (EICs)

There will be eight EICs located at each of the access points into the property. Refer to Table 1 for detail.

5.8 First response firefighting equipment

The Site operator will provide first attack firefighting capability that consists of two first attack vehicles. These vehicles will be maintained and available during the fire danger period. The minimum capability includes:

- 2 x 'slip on' units onto the rear of two 4WD vehicles (utes) that includes a water tank and pump.

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- Staff will be trained to use the firefighting equipment in addition to basic fire behaviour and suppression training.

All vehicles and heavy equipment must carry at least a nine (9)-litre water stored-pressure fire extinguisher with a minimum rating of 3A, or firefighting equipment as a minimum when on-Site during the Fire Danger Period.