



APPENDIX R

BUSHFIRE IMPACT ASSESSMENT



# Garoo Solar Farm and BESS

Bushfire Risk Assessment

**PREPARED FOR**

The Trustee for GreenPulse Solar  
Farm and BESS Unit Trust

**DATE**

5 November 2025

**REFERENCE**

0735137



## DOCUMENT DETAILS

DOCUMENT TITLE	Garoo Solar Farm and BESS
DOCUMENT SUBTITLE	Bushfire Risk Assessment
PROJECT NUMBER	0751705
DATE	5 November 2025
VERSION	Final
AUTHOR	Gabriella Drakopoulos
CLIENT NAME	The Trustee for GreenPulse Solar Farm and BESS Unit Trust

## DOCUMENT HISTORY

				ERM APPROVAL TO ISSUE		
VERSION	REVISION	AUTHOR	REVIEWED BY	NAME	DATE	COMMENTS
Draft	01	Gabriella Drakopoulos	Joanne Woodhouse	Lucy Baker	25.06.2025	Draft
Final	02	Gabriella Drakopoulos	Joanne Woodhouse	Lucy Baker	30.07.2025	Final

# Garoo Solar Farm and BESS

## Bushfire Risk Assessment

0751705



---

**Gabriella Drakopoulos**

Consultant



---

**Joanne Woodhouse**


Consulting Director



---

**Sophie Butcher**

Project Manager



---

**Lucy Baker**

Partner

Environmental Resources Management

Australia Pty Ltd

Level 14, 207 Kent St

Sydney NSW 2000

T +61 2 8584 8888

© Copyright 2025 by The ERM International Group Limited and/or its affiliates ('ERM'). All Rights Reserved.

No part of this work may be reproduced or transmitted in any form or by any means, without prior written permission of ERM.

## CONTENTS

<b>1.</b>	<b>INTRODUCTION</b>	<b>1</b>
1.1	DESCRIPTION OF THE PROJECT	1
1.2	AIMS AND OBJECTIVES	2
<b>2.</b>	<b>PLANNING FRAMEWORK</b>	<b>12</b>
2.1	RELEVANT LEGISLATION AND GUIDELINES	12
2.2	SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS	14
<b>3.</b>	<b>EXISTING SITE CONDITIONS</b>	<b>16</b>
3.1	LAND USE CONTEXT	16
3.2	CLIMATE AND FIRE WEATHER	16
3.3	TOPOGRAPHY	17
3.4	VEGETATION	18
3.5	INDICATIVE FIRE BEHAVIOUR	22
3.5.1	Grasslands	22
3.5.2	Grassy Woodlands	23
<b>4.</b>	<b>BUSHFIRE RISK FACTORS</b>	<b>25</b>
4.1	BUSHFIRE PRONE LAND	25
4.2	CLIMATE CHANGE AND BUSHFIRES	27
4.3	FIRE HISTORY	27
4.4	SUMMARY OF BUSHFIRE RISK FACTORS	28
<b>5.</b>	<b>MITIGATION STRATEGIES</b>	<b>29</b>
5.1	ASSET PROTECTION ZONE	29
5.2	ACCESS ROADS AND ROAD NETWORK	31
5.3	WATER STORAGE	32
5.4	SOLAR FARM AND BESS CONSTRUCTION	32
5.5	SOLAR FARM AND BESS OPERATION	33
5.6	CUMULATIVE IMPACTS	34
<b>6.</b>	<b>CONCLUSION</b>	<b>35</b>
<b>7.</b>	<b>REFERENCES</b>	<b>37</b>

APPENDIX A COMPLIANCE WITH THE OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION GUIDELINES

APPENDIX B TEMPORARY WORKFORCE ACCOMMODATION CAMP ADDENDUM

## LIST OF TABLES

TABLE 2-1	RELEVANT LEGISLATION AND GUIDELINES	12
TABLE 2-2	SEARS RELEVANT TO BUSHFIRE	14
TABLE 2-3	SEARS AGENCY ADVICE RELEVANT TO BUSHFIRE	15
TABLE 3-1	FIRE BEHAVIOUR INDEX, GRAZED PASTURE	23
TABLE 3-2	FIRE BEHAVIOUR, GRASSLAND	23
TABLE 3-3	FIRE BEHAVIOUR INDEX, GRASSY WOODLAND	23
TABLE 3-4	FIRE BEHAVIOUR, GRASSY WOODLANDS	24
TABLE 5-1	RADIANT HEAT FLUX EXPOSURE AND THE CORRESPONDING BUSHFIRE ATTACK LEVEL	30
TABLE 6-1	SUMMARY OF RECOMMENDED MITIGATION STRATEGIES AND ACTIONS	35

## LIST OF FIGURES

FIGURE 1-1	REGIONAL CONTEXT	3
FIGURE 1-2	DEVELOPMENT FOOTPRINT AND LAYOUT	4
FIGURE 3-1	LOW HUMIDITY AND HIGH TEMPERATURE WITHIN THE BUSHFIRE SEASON (BOM 2025)	17
FIGURE 3-2	VEGETATION CLASSIFICATION	20
FIGURE 3-3	SLOPE CLASSES	21
FIGURE 4-1	BUSHFIRE PRONE LAND	26

## ACRONYMS AND ABBREVIATIONS

Acronym	Description
AC	alternating current
AFDRS	Australian Fire Danger Rating System
AFAC	Australasian Fire and Emergency Service Authorities Council
APZ	Asset Protection Zones
AS 3959-2018	<i>Australian Standard 3959 - 2018 Construction of Buildings in Bushfire-prone Areas</i>
BC Act	<i>Biodiversity Conservation Act 2016</i>
BESS	battery energy storage system
BFMC	<i>Bushfire Management Committee</i>
BFRMP	<i>Bushfire Risk Management Plan</i>
BoM	Bureau of Meteorology
CFA	Country Fire Authority
DP	Deposited Plan
EIS	Environmental Impact Statement
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERM	Environmental Resources Management Australia Pty Ltd

Acronym	Description
FBI	Fire Behaviour Index
FDR	Fire Danger Rating
FRNSW	Fire and Rescue New South Wales
FSS	Fire Safety Study
ha	hectare
IPA	Inner Protection Area
km	kilometres
kV	kilovolt
LGA	Local Government Area
m	metres
MNES	Matter of National Environmental Significance
MW	Megawatt
MWh	Megawatt hours
NSW	New South Wales
NSW RFS	New South Wales Rural Fire Service
PBP 2019	Planning for Bushfire Protection 2019
PCT	Plant Community Type
PV	photovoltaic
RF Act	<i>NSW Rural Fires Act 1997</i>
SEARs	Secretary's Environmental Assessment Requirements
SSD	State Significant Development
TEC	Threatened Ecological Community
TOBAN	Total Fire Ban

### **Important Note:**

*Despite the mitigation measures and treatments that are put in place, it is noted that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact. The absence of any identified hazard or asset in the Project Area should not be interpreted as a guarantee that such hazards or impacts do not exist. It is also important that a Bushfire Emergency Management Plan is prepared prior to the commencement of any construction works in conjunction with relevant stakeholders, including local fire services, NSW RFS, NSW Fire and Rescue, landowners and adjoining property owners.*

# 1. INTRODUCTION

This Bushfire Risk Assessment has been prepared on behalf of The Trustee for the Greenpulse Solar Farm and BESS Unit Trust to consider bushfire risk in the vicinity of the proposed Garoo Solar Farm and Battery Energy Storage System (BESS) (the Project).

The need for a Bushfire Risk Assessment was identified within the Secretary's Environmental Assessment Requirements (SEARs), issued by the Department of Planning, Housing and Infrastructure (DPHI). The *Rural Fires Act 1997* (RF Act) imposes obligations on land occupiers to take all practicable steps to prevent the occurrence and spread of wildfire to adjoining lands from lands under their care and management.

This report identifies potential hazards and risks associated with the Project and has been prepared to support the preparation of the Project's Environmental Impact Statement (EIS). It contains management and mitigation measures designed to address these obligations, consistent with the NSW Rural Fire Service (NSW RFS) guidelines including 'Planning for Bush Fire Protection 2019' (PBP 2019) (NSW RFS, 2019) inclusive of the PBP Addendum (2022 and 2025).

It does not assess the individual design or engineering components of the solar farm (or other infrastructure as described in **Section 1.1**, but does consider locations of the infrastructure relative to the identified hazards and the requirements for separation distances. Electrical hazards, including battery fires, and transformer fires are addressed separately as part of the Preliminary Hazard Assessment (PHA) and are not included here.

## 1.1 DESCRIPTION OF THE PROJECT

The Project is located at 291 Bulls Road, situated in the rural locality of Garoo, New South Wales (NSW), approximately 40 kilometres (km) (by road) south of Tamworth and 370 km north west of Sydney. Located entirely within the Tamworth Regional Local Government Area (LGA), the Project Area extends across approximately 369 hectares (ha). This comprises 17 freehold lots across three Deposited Plans (DPs). The land is currently used for agricultural activities, predominantly livestock grazing and irrigated cropping.

**Figure 1-1** shows the Project locality in a regional setting. The Project layout is provided in **Figure 1-2**.

The Project involves the construction, operation, maintenance and where relevant, decommissioning of:

- Solar array, with an estimated generated capacity of up to 133.76 Megawatts (MW) Alternating Current (AC);
- Electrical reticulation infrastructure, including a centralised large-scale BESS with a storage capacity of 360 MW / 1,440 Megawatt hours (MWh);
- Permanent associated and ancillary infrastructure;
- Temporary Workers Accommodation Camp (**Figure 1-3**) and;
- Temporary construction facilities.

The Project proposes to connect to the national grid via the existing 330 kilovolt (kV) Liddell-Tamworth overhead transmission line, which traverses the Project Area in a general north-south alignment.

The Project will be accessed via Garoo Road, at the northeast corner of the Project Area. A network of internal tracks will provide access throughout the Project Area and, where possible, will be aligned along the route of existing farm tracks to reduce impacts and to provide upgraded access for ongoing agricultural activities. The layout of the internal access tracks is subject to further detailed design and will facilitate the safe construction and operation of the Project. Based on current design, the total length of internal tracks and access roads is approximately 26 km. It is recommended that an additional emergency gate is installed from Bulls Road to provide emergency access to the south western portion of the site.

A full description of the Project is provided in the Garoo Solar Farm EIS (ERM, 2025).

## 1.2 AIMS AND OBJECTIVES

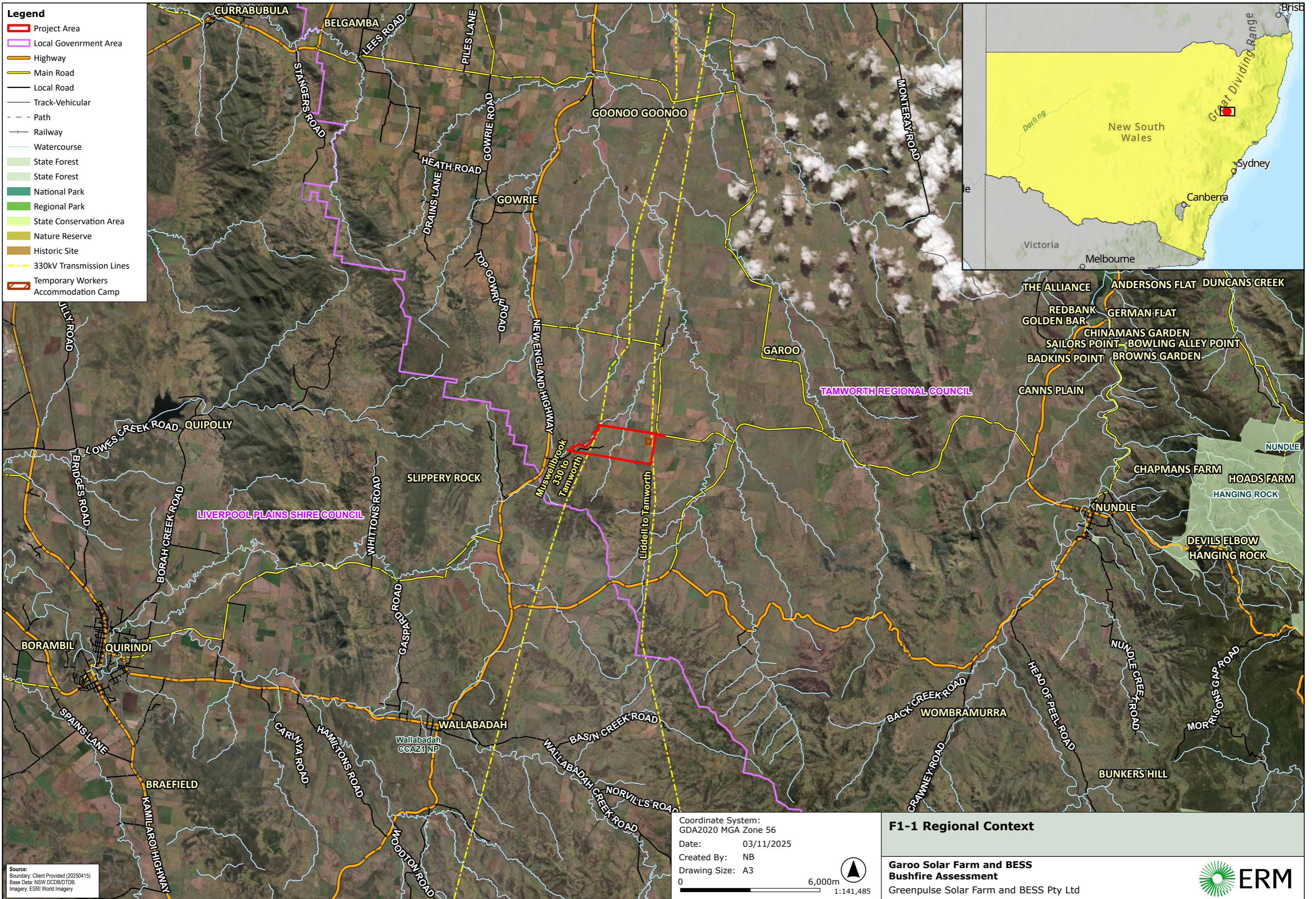
Bushfire presents a threat to both human life and assets and can adversely impact ecological values. Bushfire risk can be considered in terms of environmental factors that increase the risk of fire (e.g., fuel quantity and type, topography, and weather patterns), as well as specific activities (such as hot works and construction activities) or infrastructure components that exacerbate combustion or ignition risks (such as transmission lines and other electrical components).

This Bushfire Risk Assessment aims to address the requirements identified by the SEARs to identify potential hazards and risks associated with bushfires / use of bushfire prone land and demonstrate that the proposed solar farm can be designed, constructed and operated to minimise ignition risks and provide for asset protection consistent with relevant NSW RFS design guidelines, PBP 2019 and Standards for Asset Protection (available on the NSW RFS website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)). A separate bushfire risk addendum (ERM, 2025) has been created for the temporary Workers Accommodation Camp which will be constructed and decommissioned during the construction phase of the Project.

The objectives of this assessment are to identify, and where possible reduce, the likelihood of a bushfire impacting the Project Area or spreading from the Project Area to surrounding properties. Despite the mitigation measures and treatments that are put in place, it is noted that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.

**Legend**

- Project Area
- Local Government Area
- Highway
- Main Road
- Local Road
- Track-Vehicular
- Path
- Railway
- Watercourse
- State Forest
- National Park
- Regional Park
- State Conservation Area
- Nature Reserve
- Historic Site
- 330kV Transmission Lines
- Temporary Workers Accommodation Camp



Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCOB/DTDB  
 Imagery: ESRI World Imagery

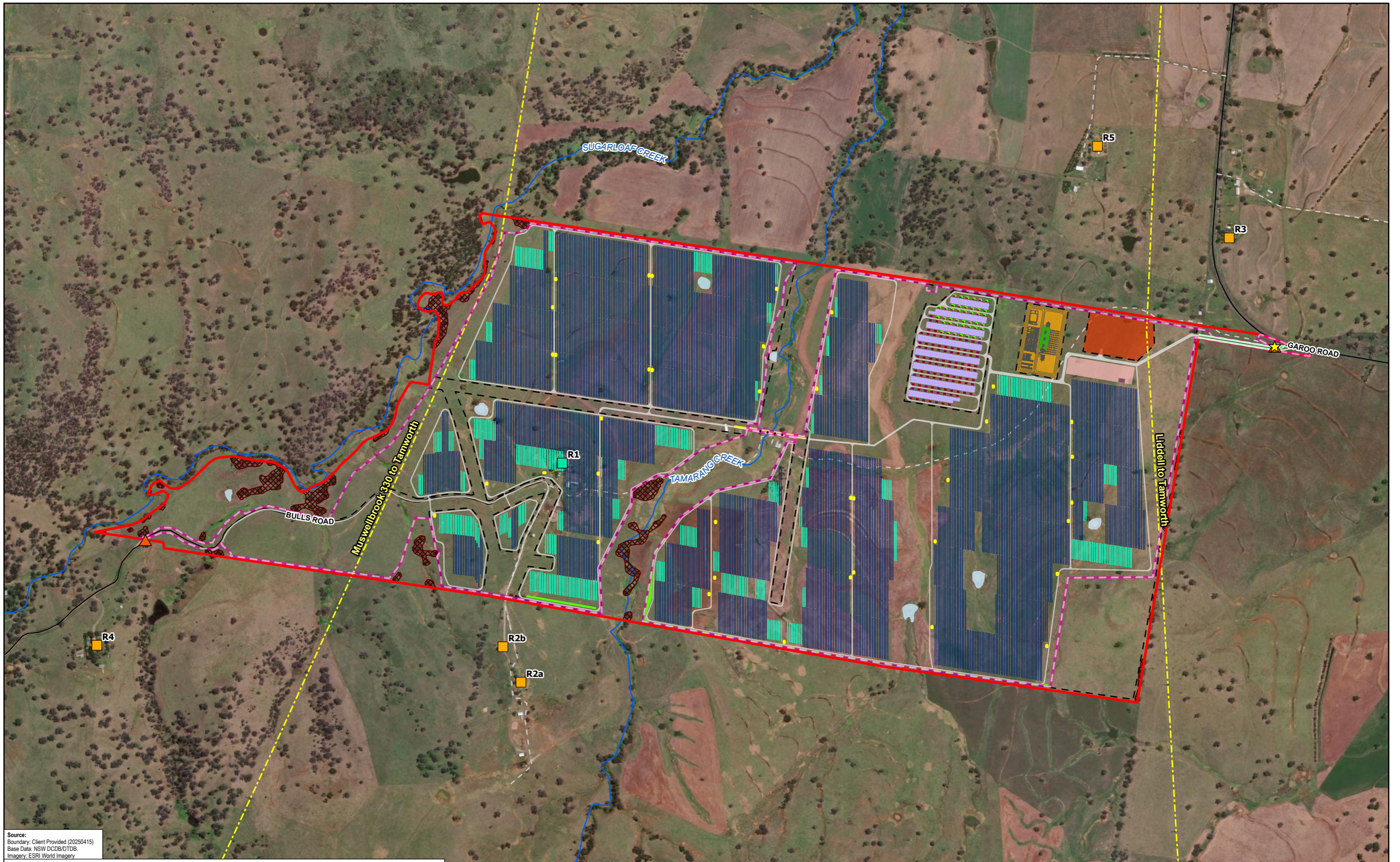
Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 03/11/2025  
 Created By: NB  
 Drawing Size: A3

0 6,000m 1:141,485

**F1-1 Regional Context**

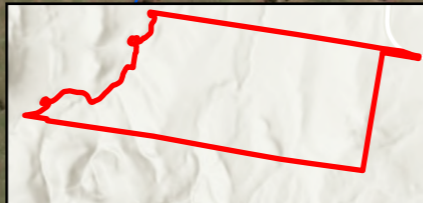
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 Greenpulse Solar Farm and BESS Pty Ltd





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDDB  
 Imagery: ESRI World Imagery

Legend			
Project Area	Transmission Lines (existing)	PV (Mounting Structure - Half Table)	Customer Substation
Development Footprint	Maintained Existing Water Dams	PV (Mounting Structure - Full Table)	Transgrid Substation Upgrade
Preferred access point	Avoidance Area	Internal Road	Inverters
Emergency Access point	Associated Dwelling	Parking and Laydown Area	Bridge
	Non-Associated Dwelling		PCS Station
			OHL Interconnection
			BESS Container
			Strategic Road Upgrade
			Fence
			O&M Building
			Bridge Piers
			Noise Walls - PCS Stations
			Noise Wall - High Voltage Transformer
			Mitigation Planting Areas
			Local Road
			Local Track-Vehicular



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3

0 400m

1:12,000

**F1-2 Development Footprint and Layout  
 Map 1 of 7**

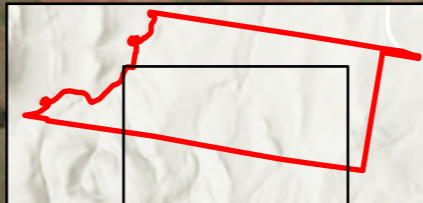
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Sources:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Legend			
Project Area	Maintained Existing Water Dams	PV (Mounting Structure - Half Table)	Inverters
Development Footprint	Avoidance Area	PV (Mounting Structure - Full Table)	Bridge
Transmission Lines (existing)	Associated Dwelling	Internal Road	PCS Station
Non-Associated Dwelling	Mitigation Planting Areas	Fence	OHL Interconnection
	Local Road	Local Track-Vehicular	BESS Container
		Bridge Piers	



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 200m  
 1:6,000

**F1-2 Development Footprint and Layout  
 Map 2 of 7**

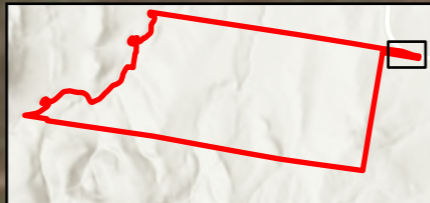
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Legend			
	Project Area		Strategic Road Upgrade
	Development Footprint		Local Road
	Preferred access point		Local Track-Vehicular
	Emergency Access point		



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 30m



1:1,000

**F1-2 Development Footprint and Layout**  
**Map 3 of 7**

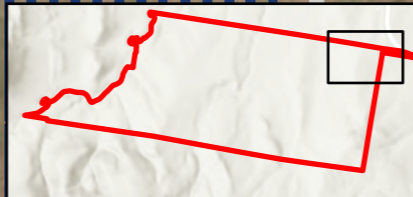
**Garoo Solar Farm and BESS**  
**Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Legend			
Project Area	PV (Mounting Structure - Half Table)	Internal Road	Transgrid Substation Area
Development Footprint	PV (Mounting Structure - Full Table)	Parking and Laydown Area	Inverters
Transmission Lines (existing)		Customer Substation Area	Strategic Road Upgrade
Avoidance Area		Fence	O&M Building
			Noise Wall - High Voltage Transformer
			Local Road
			Local Track-Vehicular

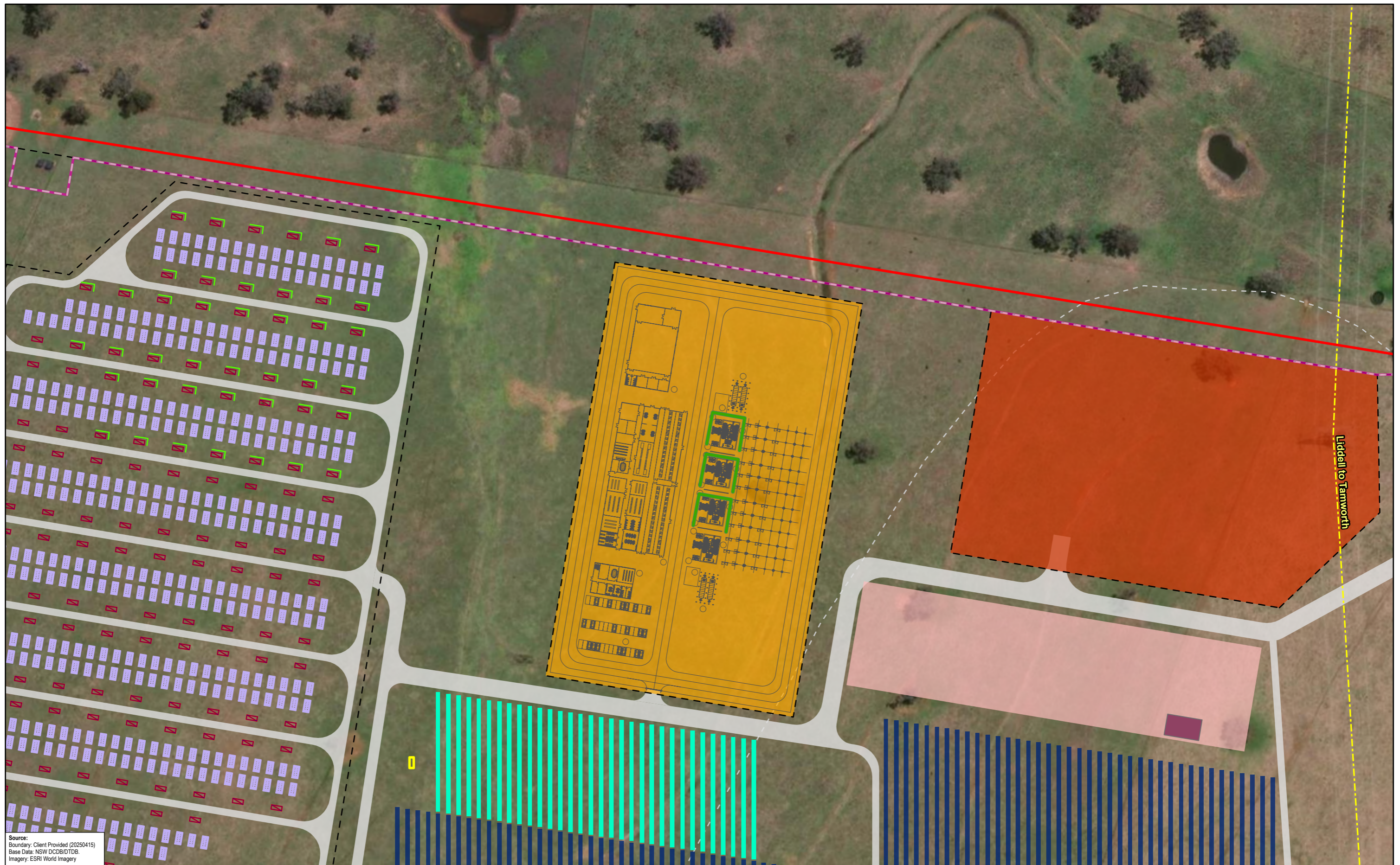


Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 60m  
 1:2,000

**F1-2 Development Footprint and Layout  
 Map 4 of 7**

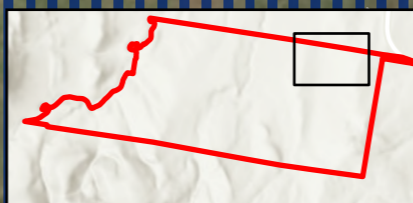
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Legend			
	Project Area		PV (Mounting Structure - Half Table)
	Development Footprint		Parking and Laydown Area
	Transmission Lines (existing)		Customer Substation Area
	Internal Road		O&M Building
	Inverters		PCS Station
	PV (Mounting Structure - Full Table)		OHL Interconnection
	Transgrid Substation Area		BESS Container
	Fence		Noise Wall - High Voltage Transformer
	Local Track-Vehicular		Noise Walls - PCS Stations



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 60m  
 1:2,000

**F1-2 Development Footprint and Layout  
 Map 5 of 7**

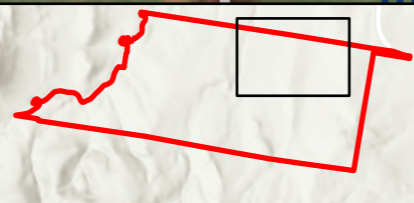
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Legend			
Project Area	PV (Mounting Structure - Full Table)	Customer Substation Area	PCS Station
Development Footprint	Internal Road	Transgrid Substation Area	OHL Interconnection
PV (Mounting Structure - Half Table)	Parking and Laydown Area	Inverters	BESS Container
		Bridge	Fence
			O&M Building
			Bridge Piers
			Noise Walls - PCS Stations
			Noise Wall - High Voltage Transformer
			Local Track-Vehicular



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3

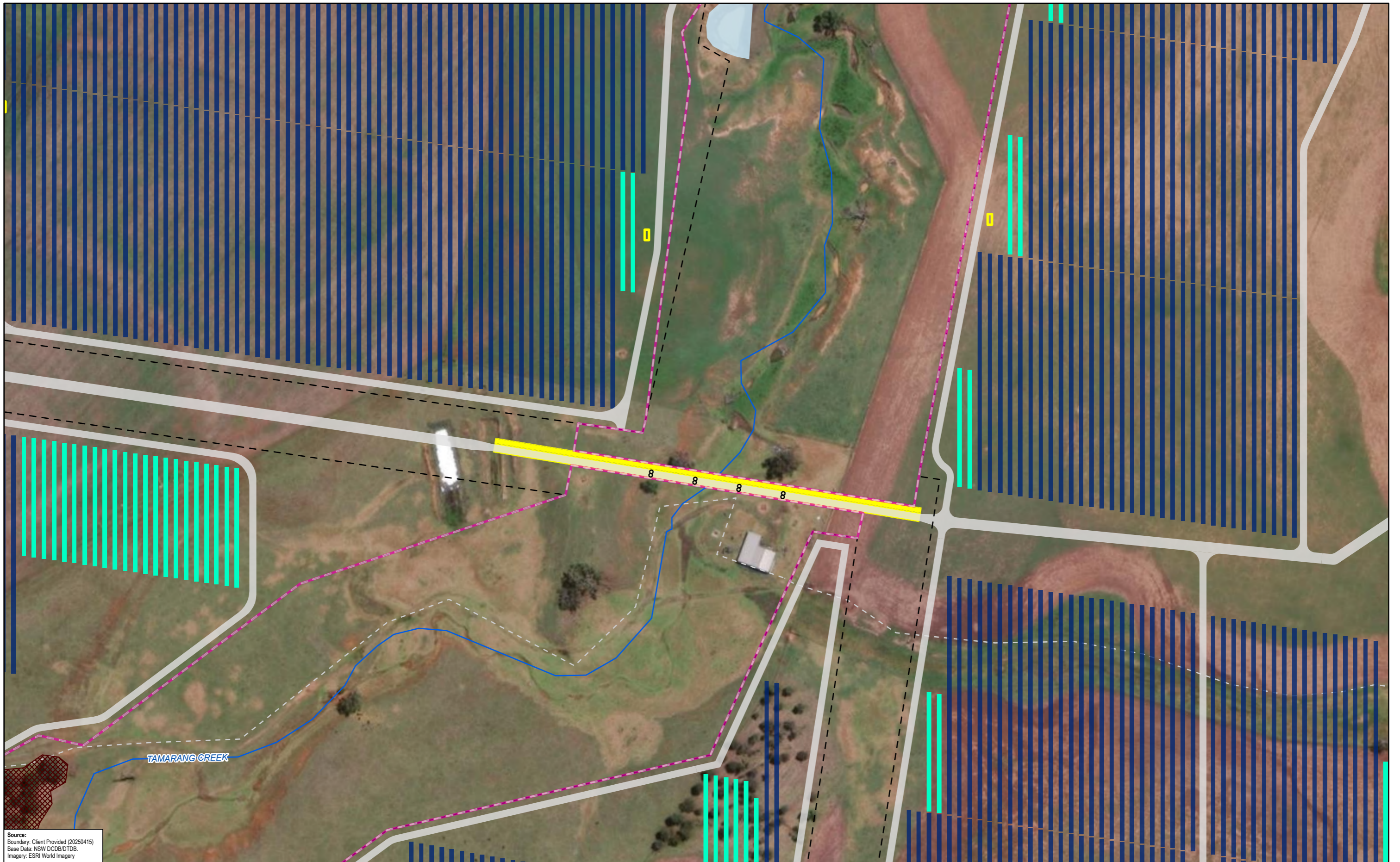
0 100m

1:3,000

**F1-2 Development Footprint and Layout  
 Map 6 of 7**

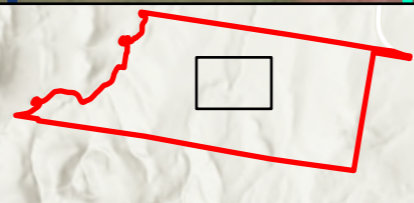
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDDB  
 Imagery: ESRI World Imagery

Legend			
Project Area	Avoidance Area	PV (Mounting Structure - Full Table)	Bridge
Development Footprint	PV (Mounting Structure - Half Table)	Internal Road	Fence
Maintained Existing Water Dams	Inverters	Bridge Piers	Local Track-Vehicular



Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 60m  
 1:2,000

**F1-2 Development Footprint and Layout  
 Map 7 of 7**

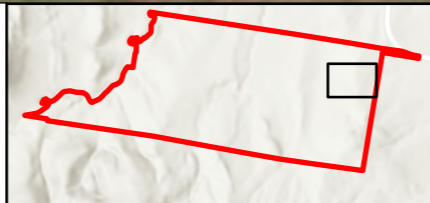
**Garoo Solar Farm and BESS  
 Bushfire Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust





Legend	
Project Area	Verandah
Development Footprint	Fire Hydrant
Transmission Lines (existing)	Loading Area
Internal Road	Accommodation Area
Admin & First Aid	Amenities & Services
Potable Water	Fence
WWTP	Accommodation Area
Car Parking	Waste Area
Fire Suppression	Machinery Area
Gas hazard area	Generators and fuel store
Maintenance containers	

Source:  
Boundary: Client Provided (20250415)  
Base Data: NSW DCDB/DTDB.  
Imagery: ESRI World Imagery



Coordinate System:  
GDA2020 MGA Zone 56  
Date: 04/11/2025  
Created By: NB  
Drawing Size: A3  
0 50m 1:1,300

**F1-3 Temporary Workers Accommodation Camp**

**Garoo Solar Farm and BESS Bushfire Assessment**

GreenPulse Solar Farm and BESS Unit Trust

## 2. PLANNING FRAMEWORK

### 2.1 RELEVANT LEGISLATION AND GUIDELINES

**Table 2-1** outlines the relevant legislation and guidelines and how they have been considered in this Bushfire Risk Assessment.

**TABLE 2-1 RELEVANT LEGISLATION AND GUIDELINES**

Relevant Legislation/Guideline	Description
<i>Environment Planning and Assessment Act 1979</i>	<p>The Project was declared a State Significant Development (SSD) and will be assessed under Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> (EP&amp;A Act). The SEARs issued for this Project require an assessment of bush fire risk in accordance with PBP 2019.</p> <p>Section 4.41 of the EP&amp;A Act excludes projects approved under Part 4 of the EP&amp;A Act from requiring "a bush fire safety authority under section 100B of the <i>Rural Fires Act 1997</i>".</p>
<i>NSW Rural Fires Act 1997</i>	<p>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 and to minimise the danger of the spread of bushfires on or from, that land. This assessment considers the risk of spreading bushfires from the Project to the surrounds and provides measures to minimise the risk of bushfires.</p> <p>In accordance with Section 64 of the RF Act, if a fire is burning on any land at any time during a bushfire danger period, the solar farm operators must:</p> <ul style="list-style-type: none"> <li>• Immediately, on becoming aware of the fire and whether the occupier has lit or caused the fire to be lit or not, take all possible steps to extinguish the fire; and</li> <li>• If the occupier is unable without assistance to extinguish the fire and any practicable means of communication are available, ensure that the fire is reported immediately to the 000 emergency telephone number.</li> </ul> <p>The operators of the Project must also be aware of operations that can be carried out on days of Total Fire Ban (TOBAN) and any prohibited activities or exemptions that are notified by the Commissioner of the NSW RFS under Section 99 of the RF Act.</p> <p><u>Bushfire Management Committee</u></p> <p>Set up under the RF Act, Bushfire Management Committees (BFMCs) coordinate fire management planning, prevention and suppression in local areas. The relevant committee for the Project is the Tamworth BFMC. Each BFMC is required to prepare and submit to the Bush Fire Risk Management Plan (BFRMP). The relevant plan to the Project is the Tamworth BFRMP (Tamworth BFMC, 2020).</p>
<i>Planning for Bushfire Protection 2019</i>	<p>PBP 2019 (NSW RFS, 2019) is a planning document to link responsible planning and development control with the protection of life, property and the environment. Consideration has been given to the following overall aims and objectives of PBP 2019:</p> <ul style="list-style-type: none"> <li>• Afford buildings and their occupants protection from exposure to a bushfire;</li> <li>• Provide for a defensible space to be located around buildings;</li> <li>• Provide appropriate separation between a hazard and buildings which, in combination with other measures, minimises material ignition;</li> <li>• Ensure that appropriate operational access and egress for emergency service personnel and residents is available;</li> </ul>

Relevant Legislation/Guideline	Description
	<ul style="list-style-type: none"> <li>• Provide for ongoing management and maintenance of bushfire protection measures; and</li> <li>• Ensure that utility services are adequate to meet the needs of firefighters.</li> </ul> <p>Section 8.3.5 of PBP 2019 provides specific requirements for solar farm development and notes that solar farms require special consideration and should be provided with adequate clearances to combustible vegetation as well as firefighting access and water. The following <i>minimum</i> standards should be provided for solar farms:</p> <ul style="list-style-type: none"> <li>• 10 m Asset Protection Zone (APZ) from the structures / associated buildings / infrastructure; and</li> <li>• The APZ will be maintained to the standard of an Inner Protection Area (IPA) for the life of the development to provide adequate access for firefighting purposes.</li> </ul> <p>Section 8.3.9 of PBP 2019 identifies that some developments are considered by their very nature to be hazardous, as much for their ability to start bush fires as their susceptibility to bush fire impacts. New developments of this nature may require the preparation of a performance-based solution, including a bushfire design brief and Fire Safety Study (FSS) prepared under the DPHI Hazardous Industry Planning and Assessment Papers (HIPAPs). Electrical hazards including battery fires, and transformer fires are addressed separately as part of the PHA and are not included here.</p> <p>Section 8.3.10 of PBP 2019 confirms that where no residential component is included, commercial and industrial development is addressed through the aim and objectives of PBP 2019. A suitable package of bushfire protection measures should be proposed commensurate with the type/scale of the development and number of people likely to be occupying the building/space. Essential equipment should be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It should also be designed and maintained so that it will not serve as a bush fire risk to surrounding bush.</p> <p>A separate Addendum is provided for the Temporary Workers Accommodation Camp (Appendix B).</p>
<p><i>Design Guidelines and Model Requirements for Renewable Energy Facilities v4 2023</i></p>	<p>The Victorian Country Fire Authority (CFA), in conjunction with industry and regulatory authorities, has developed the Design Guidelines and Model Requirements for Renewable Energy Facilities (CFA, 2023) to support designers and operators of facilities to consider and mitigate fire risk. This includes fires which originate within the facility itself as well as bush fire impact on the site from external factors.</p> <p>While these were developed in a Victorian context, the guidance represents the current leading practice and has been referred to in this assessment as it builds upon the principles and knowledge from recent fires at large-scale renewable energy facilities.</p>

Relevant Legislation/Guideline	Description
<p><i>Commonwealth Environment Protection and Biodiversity Act 1999</i></p>	<p><i>The Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) is the primary piece of Federal legislation relating to the environment. Under the EPBC Act any action that has, or is likely to have, a significant impact on a Matter of National Environmental Significance (MNES) requires approval from the Commonwealth Minister for the Environment. An action is defined as a project, development, undertaking activity (or series of activities), or alteration to any of these.</p> <p>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland occur within the Subject Area. Consideration of the impact of the proposed activity on MNES has been provided in the Garoo Solar Farm and BESS Biodiversity Development Assessment Report (BDAR) (ERM, 2025).</p>
<p><i>Biodiversity Conservation Act 2016</i></p>	<p>The <i>Biodiversity Conservation Act 2016</i> (BC Act) requires the consideration of threatened species and their habitats in the developmental planning process. Schedule 3 of the BC Act lists Key Threatening Processes for species, populations and ecological communities within NSW. 'Clearing of native vegetation', 'high frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition' and 'removal of dead wood and dead trees', are listed as Key Threatening Processes.</p> <p>There is one threatened Plant Community Type (PCT) occurring within the Project Area- PCT 599 Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion that has been avoided through detailed design (ERM, 2025).</p>

## 2.2 SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

The SEARs were issued for the proposed development on 4 March 2025 (SSD-79747209). The SEARS state the following about bushfire risk:

**TABLE 2-2 SEARS RELEVANT TO BUSHFIRE**

SEARs	Section where addressed
<p>Bushfire – a bush fire hazard assessment completed by a suitably qualified consultant and identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a solar farm and BESS would cause a bush fire and demonstrate compliance with Planning for Bush Fire Protection 2019.</p>	<p>This report.</p>

Two Government agencies also provided bushfire related advice on the SEARs, as reproduced in **Table 2-3** below.

TABLE 2-3 SEARS AGENCY ADVICE RELEVANT TO BUSHFIRE

Agency	Date	Advice	Where addressed
Fire and Rescue NSW	12 February 2025	A Fire Safety Study (FSS) be developed in accordance with the Hazardous Industry Planning Advisory Paper No 2 <sup>1</sup> as a condition of consent, including: <ul style="list-style-type: none"> <li>• Initial Fire Safety Report (IFSR) and/or;</li> <li>• Performance-Based Design Brief / Fire Engineering Brief Questionnaire (FEBQ); and</li> <li>• Suitable additional provisions are likely to be required in accordance with E1D17 and E2D21 of the National Construction Code 2022<sup>2</sup>.</li> </ul>	Bushfire emergency management and response planning, including the preparation of a FSS, will be undertaken in consultation with NSW RFS and FRNSW following project approval and based on the final development design.
Rural Fire Service	26 February 2025	A bushfire assessment report shall be prepared which identifies the extent to which the proposed development conforms with or deviates from the relevant provisions of Planning for Bush Fire Protection 2019.	This Report has been prepared with specific reference to Sections 8.3.5 and 8.3.10 of PBP 2019. A separate Addendum is provided for the Temporary Workers Accommodation Camp (Appendix B).

1. <https://www.planning.nsw.gov.au/sites/default/files/2023-03/hazardous-and-offensive-planning-advisory-paper-no-2-fire-safety-study-guidelines.pdf>
2. <https://ncc.abcb.gov.au/editions/ncc-2022>

## 3. EXISTING SITE CONDITIONS

### 3.1 LAND USE CONTEXT

The study area falls within the Garoo locality within the Tamworth Regional LGA and has been subject to a long history of vegetation clearing and sheep grazing. Analysis of the historical aerial imagery determined that significant agricultural activity occurred within the Project Area and surrounds. Spatial imagery shows that significant groundcover disturbance has occurred through cropping activities and pasture modification, including clearing of woody vegetation up until the present day (ERM, 2025). The Project Area is zoned in its entirety as RU1 – Primary Production within the Tamworth Regional Local Environmental Plan (LEP) 2010. Solar farms and agricultural production can co-exist, and it is the intent of the Applicant that the majority of the Project area will remain available for grazing during operation.

The Project Area is located on the eastern side of the New England Highway and will be accessed from Garoo Road, an unsealed link road between the New England Highway and Lindsays Gap Road. There is one associated dwelling located within the Project Area; however, this property will be removed as part of the proposed development.

Several existing farm dams occur across the Project Area, with Tamarang Creek bisecting the central portion of the site in a north south direction. Two 330 kV overhead transmission lines traverse the Project Area in a general north-south alignment.

### 3.2 CLIMATE AND FIRE WEATHER

Weather conditions influence the size, intensity, speed, and predictability of bushfires and how dangerous they can be to the community. While bushfires can happen at any time of the year in Australia, the time of peak bushfire activity varies across the country, with the changes in the seasonal weather patterns. Within the region, the prevailing weather conditions associated with the bushfire season in the Tamworth BFMC are usually north-westerly winds accompanied by high daytime temperatures and low relative humidity. There are also frequent dry lightning storms occurring throughout the area during the bushfire season (Tamworth BFMC, 2020).

Data from the Bureau of Meteorology (BoM) weather stations confirm that both low humidity and high temperature occur within the bushfire season and would contribute to the fire hazard within this region (refer **Figure 3-1**)

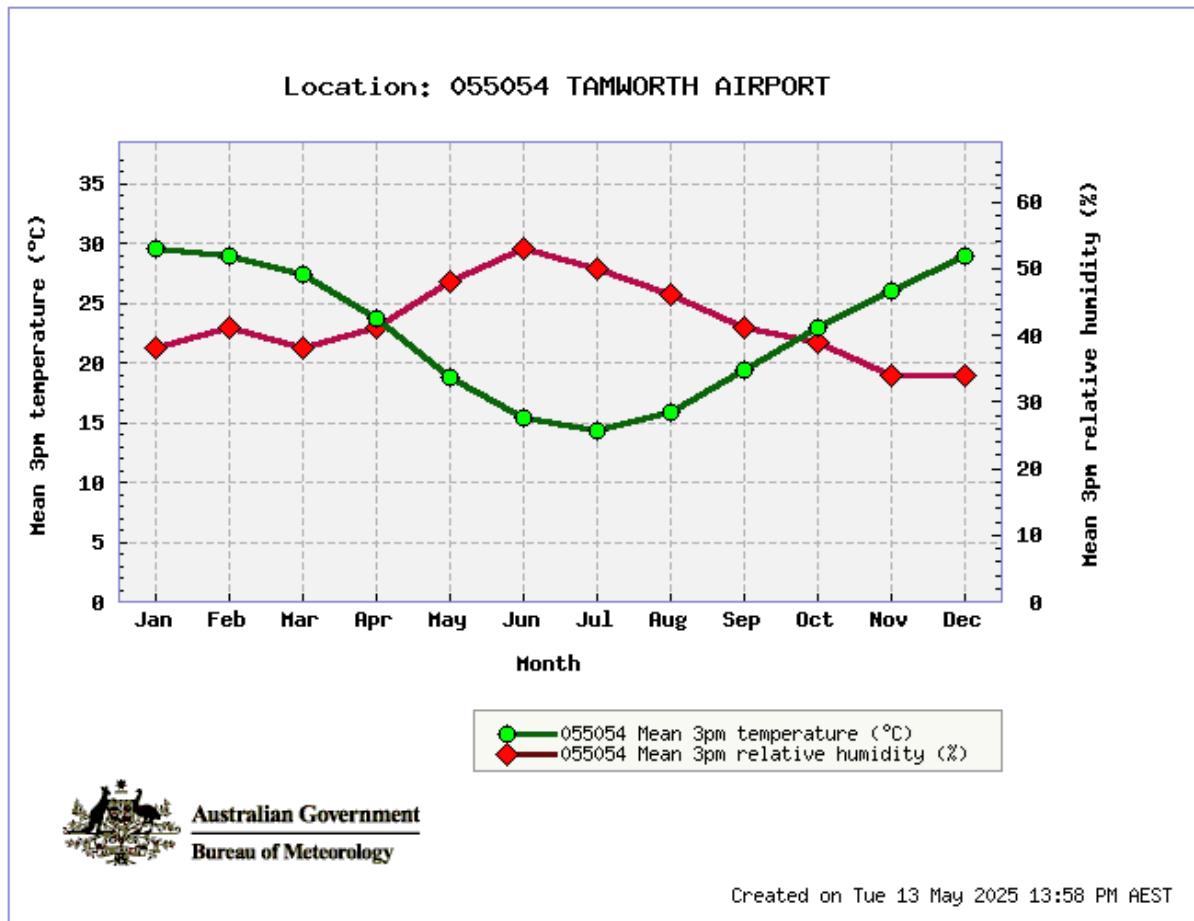


FIGURE 3-1 LOW HUMIDITY AND HIGH TEMPERATURE WITHIN THE BUSHFIRE SEASON (BOM 2025)

### 3.3 TOPOGRAPHY

The slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the level of radiant heat flux. A fire will burn faster uphill. Radiant heat pre-heats the fuel in front of the fire, making the fuel even more flammable. As described by CFA (2023), for every 10° slope, the fire will double its speed. By increasing in speed the fire also increases in intensity, becoming even hotter. The opposite applies to a fire travelling downhill. The flames reach less fuel, and less radiant heat pre-heats the fuel in front of the fire. For every 10° of downhill slope, the fire will halve its speed.

In accordance with the requirements of PBP 2019, the effective slope of the land is categorised into one of the following classes, relative to the location of the hazard:

- All upslope vegetation (considered 0 degrees);
- >0 to 5 degrees downslope vegetation;
- >5 degrees to 10 degrees downslope vegetation;
- >10 degrees to 15 degrees downslope vegetation; and
- >15 degrees to 20 degrees downslope vegetation.

In identifying the effective slope, it may be found that there are a variety of slopes covering different distances within the vegetation. The effective slope is considered to be the slope under the vegetation which will most significantly influence the bush fire behaviour for each aspect. As described in PBP 2019, this is usually the steepest slope.

The effective slope over 100 m from the proposed development is relatively flat to gently undulating as shown in **Figure 3-3** and has been calculated as:

- >0 degrees downslope to the west, north and north east; and
- >5 to 10 degrees upslope to the south, south east.

There is also a steep vegetated range over 2 km to the south (Tamarang Mountain) and west (Sugarloaf Mountain), outside of the Development Footprint, elevating up to 800 meters (m) in parts. This range represents bushfire prone vegetation and is located uphill from the Project Area which will help to slow down the spread of any fires from the south or west.

### 3.4 VEGETATION

Descriptions of the vegetation types including species composition and structural diversity are provided in the Garoo Solar Farm and BESS BDAR (ERM, 2025).

A 140 m buffer has been applied to the Development Footprint and vegetation classifications have been determined using ground-verified PCT mapping carried out by ERM ecologists during field surveys and the NSW Department of Climate Change, Energy, the Environment and Water's (DCCEEW's) State Vegetation Type Mapping (SVTM) (2024) (NSW DCCEEW, 2024). For the purposes of this bushfire risk assessment, the vegetation has been simplified in line with the vegetation formations as per Vegetation Formation (Keith, 2004).

The vegetation classifications are shown in **Figure 3-2**. The dominant vegetation types having the potential to affect the proposed infrastructure is exotic grassland as shown in **Photographs 3.1 to 3.4**. Fragmented patches of grassy woodland also occur along the central riparian corridor and to north of the proposed BESS location. Potential fire runs of more than 20 km extend in all directions, predominantly relating to the connectivity of grassland and grassy woodland communities within the region.



PHOTOGRAPH 3-1 CROPPED OATS IN THE CENTRAL NORTH OF THE SITE



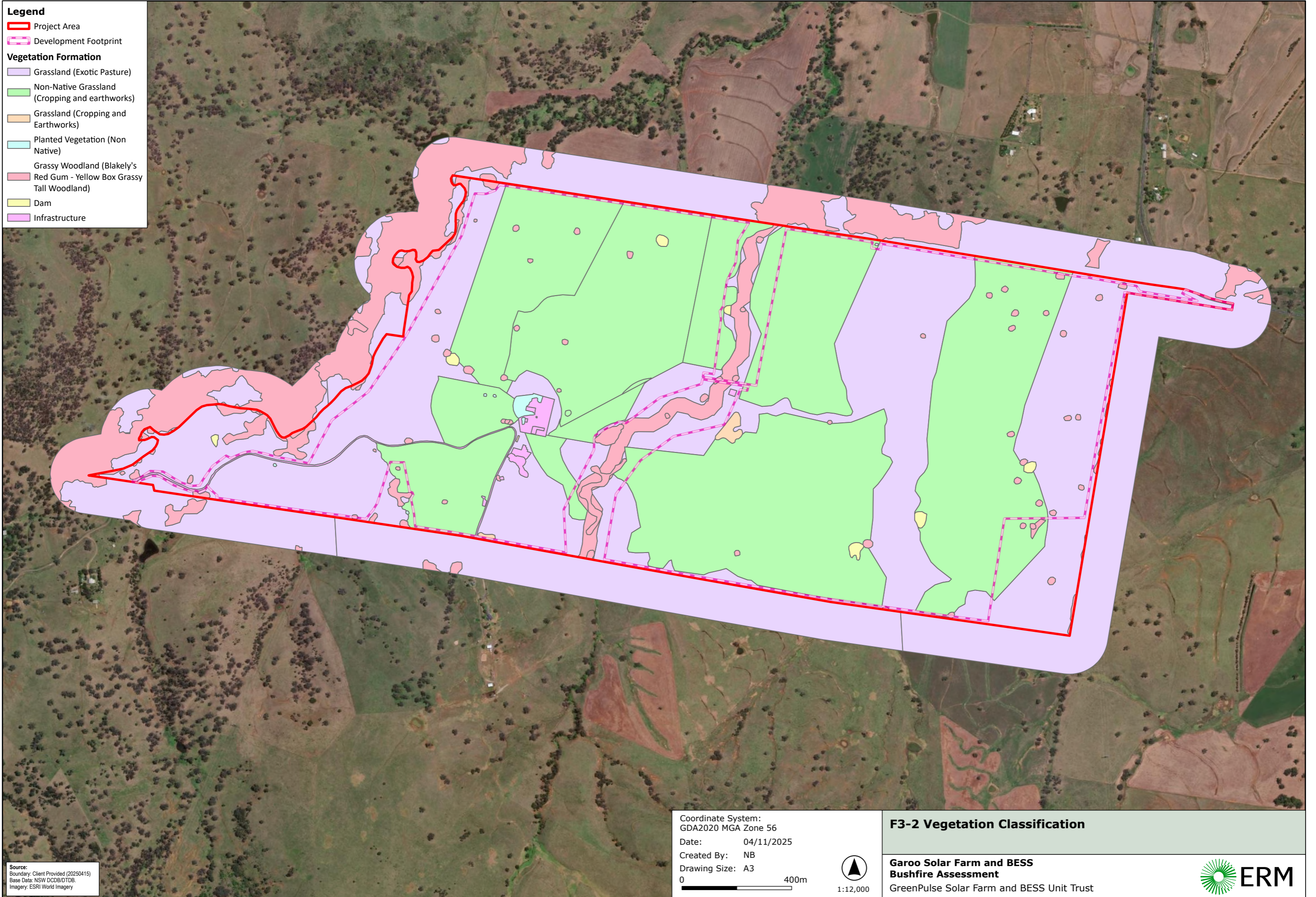
PHOTOGRAPH 3-2 CLEARED GRASSLAND IN THE NORTH WESTERN PORTION OF THE SITE



PHOTOGRAPH 3-3 EXAMPLE OF REMNANT TREES WITHIN THE CENTRAL RIPARIAN CORRIDOR



PHOTOGRAPH 3-4 DOMINANCE OF CLEARED GRASSLAND ACROSS THE SITE



**Legend**

- Project Area
- Development Footprint

**Vegetation Formation**

- Grassland (Exotic Pasture)
- Non-Native Grassland (Cropping and earthworks)
- Grassland (Cropping and Earthworks)
- Planted Vegetation (Non Native)
- Grassy Woodland (Blakely's Red Gum - Yellow Box Grassy Tall Woodland)
- Dam
- Infrastructure

Coordinate System:  
GDA2020 MGA Zone 56

Date: 04/11/2025

Created By: NB

Drawing Size: A3


0  400m

1:12,000

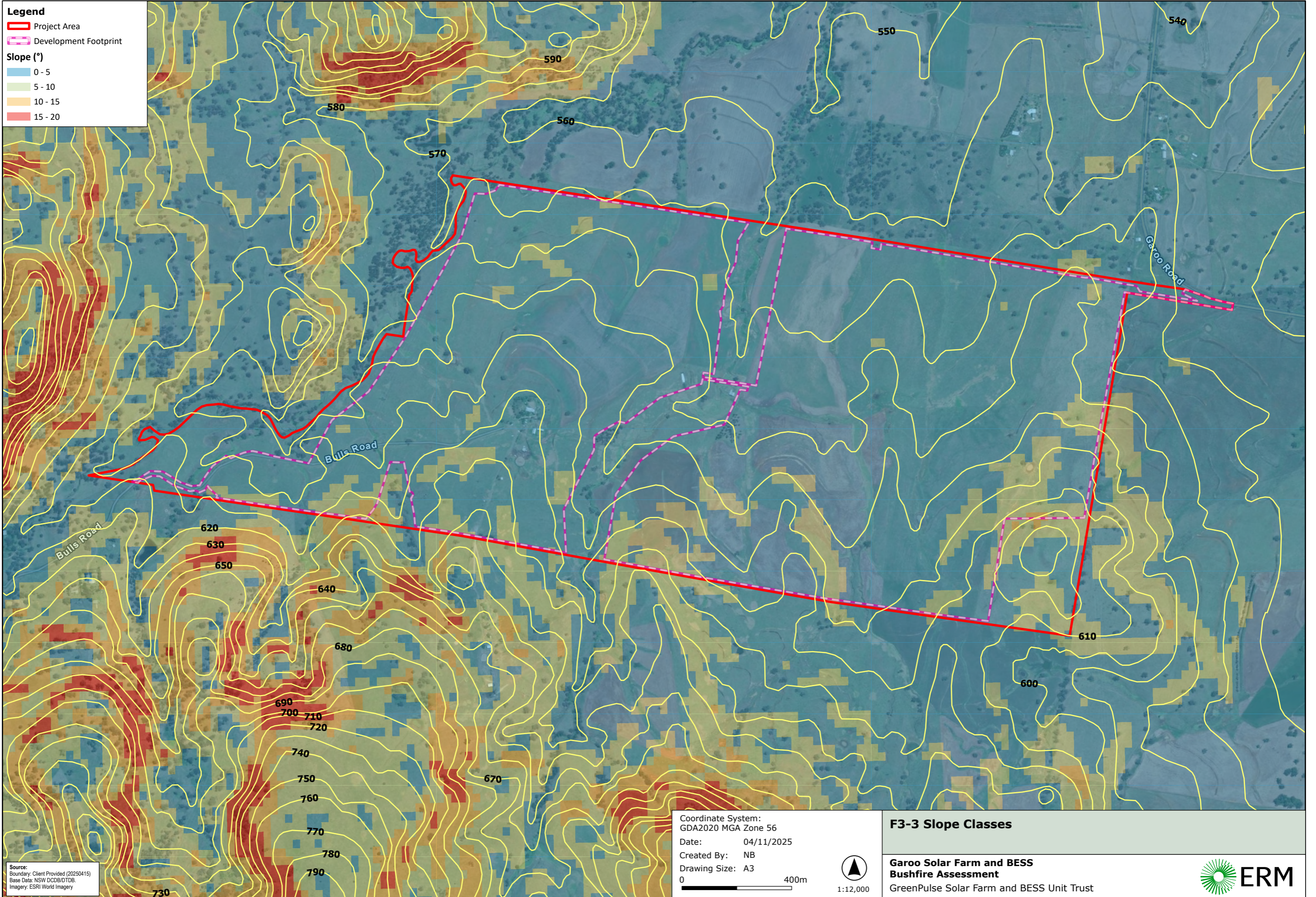
**F3-2 Vegetation Classification**

**Garoo Solar Farm and BESS  
Bushfire Assessment**

GreenPulse Solar Farm and BESS Unit Trust



Source:  
Boundary: Client Provided (20250415)  
Base Data: NSW DCDB/DTDB  
Imagery: ESRI World Imagery



**Legend**

- Project Area
- Development Footprint

**Slope (°)**

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20

Source: Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 04/11/2025  
 Created By: NB  
 Drawing Size: A3


0  400m

1:12,000

**F3-3 Slope Classes**

**Garoo Solar Farm and BESS  
 Bushfire Assessment**

GreenPulse Solar Farm and BESS Unit Trust



### 3.5 INDICATIVE FIRE BEHAVIOUR

Vegetation growth can be encouraged by periods of wet weather, which can increase the amount of fuel available (e.g., grass, leaf litter, twigs, bark). When the weather is hot, the humidity low and there's been little recent rain, this vegetation dries out and becomes more flammable. A fire is more likely to start, and continue to burn, in hot, dry and windy weather.

Most of the Project Area and surrounding agricultural lands have some level of management by cropping, grazing and/or slashing. Fuel load is dependent on several factors including the amount of rainfall in the spring period leading to abundant growth of grasses in summer as well as the stock loading, which will vary across years and seasons. It is intended that the vegetation fuel within the overhead transmission line easements, under the solar panels and within access tracks, will continue be maintained in a low fuel state by livestock grazing. It is the intent of the Applicant that the majority of the Project Area will remain available for grazing during operation.

The Fire Behaviour Index (FBI) assists operational decision making and provides a scale of potential fire danger (should a fire start) based on the predicted rate of fire spread. The following sections provide the FBI and associated Fire Danger Ratings (FDRs) for the dominant communities within the site (grasslands and grassy woodlands).

#### 3.5.1 GRASSLANDS

The assessment of dominant fuel hazard has been determined for grassland.

Grassfires should not be underestimated and can start and spread quickly. It should be assumed that, under the most extreme weather, a fire would spread even in heavily grazed and exotic pastures and embers may breach any APZ.

As described by Sullivan et al. (2012), grass is a fine, high surface area to volume ratio fuel with high thermal conductivity, low density and vertical orientation, which rapidly ignites (and rapidly burns out). Grassfires are also generally more open to wind than forest fuels (Cheney, 2008) making them unpredictable. As described by AFAC (2022a) grass fuel load has a strong influence on flame size, flaming duration, radiation output and suppression difficulty. Grass fuel types are divided into three main fuel conditions in the Australian Fire Danger Rating System (AFDRS) system:

1. Undisturbed or natural (i.e., uncut and/or ungrazed);
2. Grazed or cut; and
3. Eaten-out or very heavily grazed grasslands.

The FBI assists operational decision making and provides a scale of potential fire danger (should a fire start) based on the predicted rate of fire spread. Based on a dominance of grazed grassland as outlined in **Table 3-1** and **Table 3-2**, the Project Area has a **moderate** bushfire danger rating. It is the intent of the Applicant that the majority of the Project area will remain available for grazing during operation and it has been assumed that the areas of grassland will remain in a low fuel (grazed) condition.

**TABLE 3-1 FIRE BEHAVIOUR INDEX, GRAZED PASTURE**

Vegetation Classification	Overall Fuel Load <sup>1</sup>	Fire Behaviour Index <sup>2</sup>	Fire Danger Rating <sup>2</sup>
Cleared exotic pasture (grazed)	6 t/ha	14	Moderate

1. Fuel loads are expressed in tonnes per hectare as per NSW RFS – Comprehensive Vegetation Fuel Loads (NSW RFS, 2019b)
2. CSIRO Grassland Fire Spread Model available online <https://aurora.landgate.wa.gov.au/fbc/#!/csiro-grass>. Input values: grass continuity: continuous; temperature 30 °c; relative humidity 40%; windspeed at 10m height 20 km/h; curing 60%; slope 5 degrees.

**TABLE 3-2 FIRE BEHAVIOUR, GRASSLAND**

Fire Behaviour Index	Fire Danger Rating <sup>3</sup>	Fire Suppression and Containment	Potential for Impact
12-23	Moderate	Typically wind driven and rapidly spreading fires with the potential to gain size quickly. Fires typically controlled within established road networks and fuel breaks together with using direct, indirect or parallel attack suppression strategies.	Possible agricultural/pasture/crop/stock losses together with loss of rural assets such as fencing, machinery and buildings. Unattended infrastructure may be at risk.

Source: Grassland Quick Guide (AFAC, 2022a)

### 3.5.2 GRASSY WOODLANDS

Although not the dominant fuel within the Project Area, fragmented patches of grassy woodland also occur along the central riparian corridor and to north of the proposed BESS location and have been considered.

The presence of trees in a low density overstorey, such as in open grassy woodlands, affects fire behaviour by reducing the wind speed and driving the grass fire propagation. Depending on the tree density, the trees can contribute fuel in the form of leaf litter. The presence of trees will also increase the occurrence of short-range spotting from ignited bark fuel (AFAC, 2022b).

The grassy woodlands have a moderate FDR as shown in **Table 3-3** and **Table 3-4**.

**TABLE 3-3 FIRE BEHAVIOUR INDEX, GRASSY WOODLAND**

Vegetation Classification	Overall Fuel Load <sup>1</sup>	Fire Behaviour Index <sup>2</sup>	Fire Danger Rating <sup>2</sup>
Grassy Woodlands (Western Slopes)	18.3 t/ha	18	Moderate

1. Fuel loads are expressed in tonnes per hectare as per NSW RFS – Comprehensive Vegetation Fuel Loads (NSW RFS, 2019b)
2. CSIRO Northern Australia Fire Spread Model available online <https://aurora.landgate.wa.gov.au/fbc/#!/csiro-northernAustralia>. Input values: temperature 30 °c; relative humidity 40%; windspeed at 10m height 20 km/h; curing 60%; slope 0 degrees.

TABLE 3-4 FIRE BEHAVIOUR, GRASSY WOODLANDS

FBI	FDR	Indicative Fire Behaviour and Fire Weather	Potential for Impact
12-23	Moderate	Wind driven, rapidly spreading fires with potential for development into large fire area/size and with the potential for short distance spotting and long flame lengths. Fires typically consuming all available fuel. Increasing scorch height of tree canopy (up to 20-25 m) and char height (up to 3-4 m).	High likelihood of pasture/crop/stock loss together with loss of rural assets such as fencing, machinery and buildings. Often producing large amounts of smoke and associated carbon emissions. Visibility is likely to be limited due to smoke and dust, potentially impacting traffic management. Fires are often associated with reduced biodiversity and habitat damage including loss of food supply for native fauna and traditional owners. Stem survival < 80%.

Source: *Savanna Quick Guide* (AFAC, 2022b)

## 4. BUSHFIRE RISK FACTORS

### 4.1 BUSHFIRE PRONE LAND

Bushfire prone land mapping is intended to designate areas of the State that are considered to be higher bush fire risk for development control purposes. A review of the NSW RFS bushfire prone land mapping dataset (Version 5b, November 2015) (State Government of NSW and NSW Rural Fire Service, 2025) has identified the Project Area as predominately consisting of Vegetation Category 3 with a small parcel of land on the west boundary being zoned as Vegetation Category 1 (Refer to **Figure 4-1**). Categories are defined in the Guide for Bush Fire Prone Land Mapping (NSW Rural Fire Service, 2015):

**Vegetation Category 1** is considered to be the highest risk for bush fire. It is represented as red on the bush fire prone land map and has the highest combustibility and likelihood of forming fully developed fires including heavy ember production. Vegetation Category 1 consists of forest, woodlands, heaths (tall and short), forested wetlands and timber plantations.

**Vegetation Category 2** has a lower bushfire risk than Category 1 and Category 3 but higher than the excluded areas. Vegetation category consists of rainforests and lower risk vegetation parcels

**Vegetation Category 3** is considered to be medium bush fire risk vegetation. It is higher in bush fire risk than category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a Bush Fire Prone Land map. This category consists of grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands.

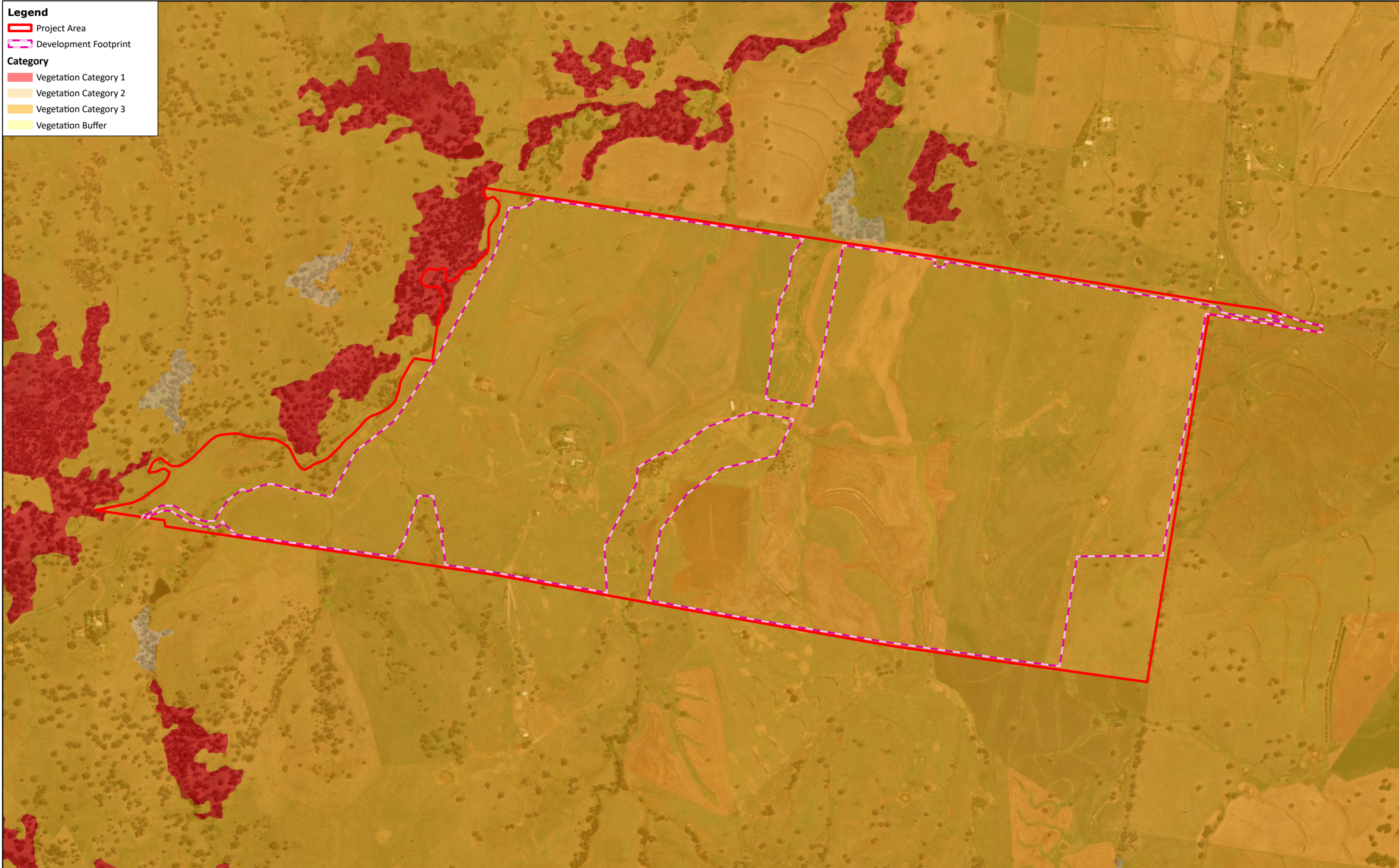
This bushfire prone land mapping triggers the requirement to apply the aims and objectives of the PBP 2019.

**Legend**

- Project Area
- Development Footprint

**Category**

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Vegetation Buffer



Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Coordinate System:  
 GDA2020 MGA Zone 56

Date: 04/11/2025

Created By: NB

Drawing Size: A3

0  400m

1:12,000

**F4-1 Bushfire Prone Land**

**Garoo Solar Farm and BESS  
 Bushfire Assessment**

Greenpulse Solar Farm and BESS Pty Ltd



## 4.2 CLIMATE CHANGE AND BUSHFIRES

Eastern Australia is described as one of the most bushfire-prone areas in the world. The BoM (BoM, 2025a), states that human induced climate change is influencing the frequency and severity of dangerous bushfire conditions in Australia and other regions of the world, influencing temperature, environmental moisture, weather patterns and fuel conditions. While climate change might not ignite the fire, it is giving fires the chance to turn into catastrophic fires by creating warmer temperatures, increasing the amount of fuel (dried vegetation) available, and reducing water availability due to higher evaporation. In relation to fire ignition, there is some indication that human induced climate change could also influence the risk of ignitions from dry-lightning (i.e., lightning that occurs without significant rainfall).

While climate change might not ignite the fire, it is giving fires the chance to turn into catastrophic fires. Bushfire weather conditions in future years are projected to increase in severity for many regions. This will result in:

- An earlier start to the bushfire season;
- Reduced opportunities for fuel reduction burning;
- Management of fire risk to property, people and biodiversity will become increasingly challenging; and
- An increase in the number of extreme fire danger days.

## 4.3 FIRE HISTORY

The Tamworth BFRMP (Tamworth BFMC, 2020) has reported that the area has on average 270 bushfires per year, of which 18 on average can be considered to be major fires. The main sources of ignition in the Tamworth BFMC area are:

- Lightning strikes;
- Agricultural burns and practices;
- Malicious fires;
- Escaped pile burns;
- Machinery and vehicle fires; and
- Welding, grinding and associated construction activities.

Recent Fire Extent and Severity Mapping (FESM) and NSW National Parks and Wildlife Service Fire History Mapping (accessed via NSW Government SEED<sup>1</sup>) prepared by NSW RFS and the then DPE (Department of Planning and Environment) revealed there were no fire events within proximity to the Project Area. The closest fire was over 5 km north west of the Subject Land and burnt over 460.65 ha in the 2019-2020 fire season. It is important to note that this fire was restricted to a local mountain area, having both steep slopes and dense vegetation. There is a highway, several kilometres of pastureland and a small creek in between the area where the fire occurred and the Subject Land.

---

<sup>1</sup> The Central Resource for Sharing and Enabling Environmental Data in NSW. Available at <https://www.seed.nsw.gov.au/>

Earth-moving equipment, power tools (e.g., welders, grinders), mowers and slashers are well known for starting bushfires under conditions of high temperature, low humidity and high wind. Therefore, construction and ongoing maintenance of the solar farm and BESS will be a potential source of ignitions.

#### 4.4 SUMMARY OF BUSHFIRE RISK FACTORS

The Project Area does not have a history of bushfire and has a moderate bushfire danger rating. There is a combination of grassland and grassy woodland within the site and immediate surrounds that has been identified as bushfire prone land and connects to other bushfire prone areas in the wider landscape. Potential fire runs of more than 20 km extend in all directions, predominantly relating to the connectivity of grassland and grassy woodland communities within the region.

The risk that the Project will cause a fire is considered low provided that appropriate protection measures are applied (refer **Section 5**).

If a fire does breach any containment lines and threatens the Project assets, it is possible that the infrastructure will sustain direct flame contact and that firefighting will require external support. It is important that key assets have adequate defendable space on all sides.

## 5. MITIGATION STRATEGIES

Consideration is given to whether the proposed development will result in people congregating in large numbers. The operation of the Project is considered a low intensity use in terms of the number of people on site at any one time, with only 5 to 10 permanent staff during the operational phase. However, there could be 180-250 full time equivalent staff on site at during construction, which is anticipated to last up to 18 months. Although the construction phase does not pertain to the expected end use of the Project Area, the number of people who could be within the Project Area at one time warrants consideration in terms of providing adequate defensible space and access / egress as the first stage of construction.

As identified within Section 8.3.5 of PBP 2019 (NSW RFS, 2019), solar farms require special consideration and should be provided with adequate clearances to combustible vegetation as well as firefighting access and water. Mitigation will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the solar farm and the community.

In terms of design principles to minimise risk, the solar farm layout will be designed to:

- Provide a defensible space around infrastructure; and
- Ensure that appropriate access, egress and maneuverability within the solar farm is provided for first responders.

### 5.1 ASSET PROTECTION ZONE

Understanding the value and limitations of an APZ is important, as is the understanding that bushfires attack built assets by either flame contact, radiant heat or burning debris. An APZ can be used to lower or eliminate the bushfire attack from flame contact and radiant heat around the perimeter of the solar farm and all built assets, but under strong winds or during a major fire event burning debris can result in a fire breaching an APZ.

**A minimum 10 m APZ is required to comply with Section 8.3.5 of PBP 2019 and must be established around the perimeter of the solar arrays, and on all sides of the Disturbance Footprint which will encompass the substations and BESS.**

A minimum 10 m fire break around the perimeter of the facility and around infrastructure is also supported by CFA (CFA, 2023). The specifications recommended for the APZ are as follows:

- All APZs are to be managed as an IPA for the life of the development as outlined within Appendix 4 of PBP 2019 (NSW RFS, 2019), and NSW RFS 'Standards for Asset Protection Zones' (NSW RFS, n.d);
- APZ will not extend beyond the property boundary or rely on actions being undertaken by adjacent landowners; and
- No trees and shrubs are to be planted within the APZ.

Essential equipment should be designed and housed in such a way as to minimise the impact of bushfires on the capabilities of the infrastructure during bushfire emergencies. It should also be designed and maintained so that it will not serve as a bushfire risk to surrounding bush (NSW RFS, 2019). Based on the current project layout, the substations and BESS are located on an average slope of 0-5 degrees with grassy woodland mapped to the north of the project boundary. To achieve reduced exposure to radiant heat, consideration should be given to an increased APZ of 19m to achieve a BAL 19 or 28m to achieve a BAL 12.5 (in accordance with Table A1.12.6 of PBP 2019). These distances will be refined based on the final project design and the siting of the buildings within the landscape.

Additional mitigation measures specific to the Temporary Workers Accommodation Camp are also provided in Appendix B and provide increased separation distances until such time that the accommodation camp is decommissioned. As identified in Appendix B, the accommodation compounds will be designed to meet BAL-12.5 construction standards. Radiant heat flux exposure and the corresponding BAL are described in PBP (2019) and are reproduced in **Table 5-1** below.

**TABLE 5-1 RADIANT HEAT FLUX EXPOSURE AND THE CORRESPONDING BUSHFIRE ATTACK LEVEL**

Heat flux exposure	Description	AS 3959 construction level
N/A	Minimal attack from radiant heat and flame due to the distance of the building from the vegetation, although some attack by burning debris is possible. There is insufficient threat to warrant specific construction requirements.	BAL-LOW
≤12.5	Attack by burning debris is significant with radiant heat (not greater than 12.5kW/m <sup>2</sup> ). Radiant heat is unlikely to threaten building elements (such as unscreened glass). Specific construction requirements for ember protection and accumulation of debris are warranted.	BAL-12.5
>12.5 ≤19	Attack by burning debris is significant with radiant heat flux (not greater than 19kW/m <sup>2</sup> ) threatening some building elements (such as screened glass). Specific construction requirements for embers and radiant heat are warranted.	BAL-19
>19 ≤29	Attack by burning debris is significant and radiant heat flux (not greater than 29kW/m <sup>2</sup> ) threatens building integrity. Specific construction requirements for ember and higher levels of radiant heat are warranted. Some flame contact is possible.	BAL-29
>29 ≤40	Radiant heat flux and potential flame contact could threaten building integrity.	BAL-40
>40	Significant radiant heat and significantly higher likelihood of flame contact from the fire front will threaten building integrity and result in significant risk to residents.	BAL-FZ

Source: Table A1.7 of PBP 2019

Infrastructure for the purposes of requiring APZ excludes road access to the site; and power or other services to the site and associated fencing.

## 5.2 ACCESS ROADS AND ROAD NETWORK

Access to the Project Area during construction and operation is expected via the regional council road network, with an access point from Garoo Road on the north east of the site and an emergency access point at the south west to Bulls Road (refer **Figure 1-2**). Internal access roads will be created and maintained during the life of The Project.

This single access point from Garoo Road will be constructed in the first stage of development and will be the preferred access road. The final design of the access road will enable access and egress for personnel attempting to leave the area at the same time that emergency service personnel are arriving to undertake firefighting operations. The internal roads will provide adequate access to the site, including the BESS units, for emergency vehicle access.

Bulls Road is a municipal road that connects to New England Highway approximately 600 m south of the Project Area boundary. It principally functions to provide private access to the lot immediately south of the project area and will not be utilised for access to the Project although it is recommended that an emergency gate is installed from Bulls Road to provide emergency access to the south western portion of the site.

Site access points and internal roads will be maintained for the life of the Project and include appropriate signs throughout the solar farm. All access roads will be upgraded to provide sufficient width and other dimensions to ensure safe, unobstructed access and allow firefighting crews to operate equipment around the vehicle. As a minimum, all roads will be maintained to the minimum standards, as outlined within the NSW RFS Fire Trail Standards (NSW RFS, 2023).

This will enable access for RFS, and includes:

- The trafficable surface has a minimum width of 4 m except for short constrictions to 3.5 m for no more than 30 m in length where an obstruction cannot be reasonably avoided or removed;
- Trail surfaces and crossing structures are capable of carrying vehicles with a gross vehicle mass of 15 tonnes and an axle load of nine (9) tonnes;
- A minimum vertical clearance of four (4) metres is provided above the surface of the trafficable surface clear of obstructions;
- Drainage structures, feature crossings, or other significant changes in the grade of the trail are in accordance with the NSW RFS Fire Trail Design, Construction and Maintenance Manual;
- Passing Bays must be constructed no more than 250 m between the end of one bay and the start of another along the trail, and with one in five bays permitted to be up to 300 m apart (no two consecutive bays can be greater than 250 m apart); and
- A turning area is provided at the termination of a trail and every 500 m.

Where practicable, site vehicles during the construction phase will have diesel engines and/or will use the site access roads (if available) to minimise the likelihood of igniting dry grass.

### 5.3 WATER STORAGE

Water is essential for firefighting. The amount and reliability of water is critical when considering development during both the construction and operation of the facility. Appropriate fire-fighting equipment will be held on site to respond to any fires that may occur. This equipment will include:

- All buildings and site vehicles will be fitted with portable fire extinguishers; and
- All areas where Hot Works are being conducted will have the number and type of fire extinguishers, water sources and/or fire blankets in accordance with the Hot Work Permit issued for the work.

A dedicated water supply with appropriate access is required at the site to assist in the event of a fire. At least one tank will be located near each of the substations and the BESS. In accordance with the requirement of PBP (NSW RFS, 2019) the designated water supply points allow for the following measures:

- 65 millimetres (mm) Storz outlet with a ball valve is fitted to the outlet;
- A hardened ground surface for truck access is supplied within 4 m;
- Unobstructed access can be provided at all times;
- A vehicle turning circle with a radius of 12.5 m;
- Water access points are to be marked by appropriate signage; and
- Any static water storage tank(s) must be capable of being completely refilled automatically or manually within 24 hours.

It is the intent of the Applicant to maintain emergency vehicle access to the three existing dams located within the Project Area for these to be utilised as a firefighting water source.

Note: The final list of fire suppression equipment and water storage requirements will be confirmed in consultation with NSW RFS and FRNSW following project approval and detailed design. The most appropriate locations and number of tanks required will need to be identified in response to the final design.

### 5.4 SOLAR FARM AND BESS CONSTRUCTION

Human induced climate change is influencing the frequency and severity of dangerous bushfire conditions in Australia. This includes an earlier start to the bushfire season, with dangerous weather conditions occurring significantly earlier in spring than they used to. With this in mind, the following measures are recommended to be implement during the entire period of construction:

- The APZ and access roads will be constructed prior to the installation of any solar panels or related infrastructure;
- Fire detection and suppression systems should be installed at the earliest stage of construction for BESS infrastructure
- Ensure appropriate bunding in areas where there is potential for flammable fuels and oils to leak and create bushfires or other environmental risks;
- Install appropriate signs to assist emergency response crews determine the location of infrastructure;
- Ensure that appropriate permits have been issued for work during the Fire Danger Period, and that any conditions on permits are adhered to;

- Adhere to restrictions on Total Fire Ban or days of high fire danger;
- Suitable firefighting equipment (specific requirements to be confirmed in consultation with NSW RFS) is present onsite;
- Carry fire extinguishers or firefighting equipment in vehicles;
- Carry emergency communications equipment;
- Where practicable, site vehicles during the construction phase will have diesel engines and/or will use the site access roads (if available) to minimise the likelihood of igniting dry grass;
- Restrict smoking to prescribed areas, and provide suitable ash and butt disposal facilities;
- All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g., vegetation);
- On days when High fire danger or worse is forecast, the 'fires near me' app is to be checked regularly for the occurrence of any fires likely to threaten the Project Area; and
- On days of Extreme or Catastrophic fire danger, access to the site should be limited to essential works only.

## 5.5 SOLAR FARM AND BESS OPERATION

### Fuel Reduction

It is recommended that vegetation fuels throughout the solar farm, including under the panels, are maintained in a minimal condition by grazing, or with additional slashing or mowing if required. This will minimise the radiant heat exposure to solar farm components and reduce the risk of a fire spreading beyond the solar farm. If grazing or slashing is not possible, other lower risk ground cover should be considered e.g., gravel or a non-curing ground cover and/or a very low above ground biomass.

It is the intention of the Applicant to have grazing continue during the Project's operation. Grazing will, at a minimum, manage vegetation growth as a means of fuel reduction. However, supplementary management may be necessary if grazing is insufficient at reducing fuel load.

### Days of High or Worse Fire Danger

Fire Danger Ratings give you an indication of the consequences of a fire if one was to start. The higher the fire danger, the more dangerous the conditions. These forecasts are updated daily during the fire danger season and are available on the NSW RFS website (<http://www.rfs.nsw.gov.au/fire-information/fdr-and-tobans>) and the BOM website (<http://www.bom.gov.au/nsw/forecasts/fire-danger-ratings.shtml>).

To reduce the risk of fires damaging or destroying life, property and the environment, the NSW RFS Commissioner may also declare a TOBAN. In a TOBAN no fire may be lit in the open and all fire permits are suspended. No general-purpose welding, grinding, soldering or gas cutting can be done in the open. Fire permits are also suspended on days of total fire ban. Permits may resume after the TOBAN is lifted, as long as the permit has not expired. The NSW RFS Commissioner is responsible for exemptions to TOBANs. These exemptions are detailed in the NSW Government Gazette each time a TOBAN is declared under the RF Act section 99.

## Emergency Management and Operations Plan

An Emergency Management and Operations Plan should be prepared for the solar farm that provides the following:

- A site plan showing infrastructure, site access from Garoo Road, the recommended emergency access gates from Bulls Road and the internal road layout;
- Control and coordination arrangements for emergency response (e.g., triggers, evacuation procedures, emergency assembly areas and procedures for response to hazards);
- Construction of APZs and their continued maintenance;
- Location of all fire control advantages within the Project Area (e.g., access road, gates, water points);
- Agreed roles and responsibilities of onsite personnel (e.g., equipment isolation, liaison, evacuation management);
- Up-to-date contact details including alternative telephone of site personnel and any relevant offsite personnel who could provide technical support during an emergency, including a 24/7 contact;
- A manifest (and safety data sheets) for any battery, diesel or other dangerous goods storage/handling, including the class identification, quantity, type (bulk or packaged) and location. Appropriate material (including absorbent, neutralisers, equipment and personal protective equipment) for the clean-up of spills is to be provided and available onsite;
- Fire reporting and response to formal emergency alerts;
- Activation of water spray/foam systems and any other response/protection measures; and
- Any other risk control measures required to be followed by firefighters.

The Emergency Management and Operations Plan will be prepared with consideration of Australian Standard/ISO 31000 Risk management principles and guidelines and Australian Standard 3745: Planning for emergencies in facilities.

## 5.6 CUMULATIVE IMPACTS

The proximity of multiple construction and / or operational projects provides an opportunity for potential cumulative impacts. The cumulative impacts related to bushfire mitigation are as follows:

- Volunteer fire-fighter workload – Response call outs should not significantly increase because the ignition risk will be very low. There will, however, be an ongoing requirement for briefing on the Emergency Management and Operations Plan.
- Construction stage transport and road use – The bushfire mitigation will add a small percentage to the total construction traffic and road use.
- Ongoing operations – there would not be any cumulative operational impacts although it is noted that the proximity of multiple construction and/or operational projects may exceed the current capacity of local firefighting resources. This will need to be addressed in consultation with NSW RFS.

The proximity of multiple projects actively managing fire risk could assist in management responses and may create a positive cumulative impact, in comparison with existing conditions. In consultation with key stakeholders, the preparation of the Emergency Management and Operations Plan will consider the most current information available regarding fire risk from and to surrounding land uses.

## 6. CONCLUSION

The proposed solar farm is located within a bushfire prone landscape and despite the application of mitigation measures, bushfire risk will remain, and it is therefore important that a Bushfire Emergency Management and Operations Plan is prepared in conjunction with relevant stakeholders, including NSW RFS, FRNSW, landowners and adjoining property owners.

Should a fire breach containment lines and threaten the solar farm assets, the infrastructure may sustain direct flame contact. While this event is unlikely to be the result of the solar farm itself, it is recognised that the project would result in additional assets that would need to be protected. Detailed mitigation measures have been developed to meet the relevant provisions outlined in Section 8.3.5 of Planning for Bush Fire Protection 2019 and to ensure that the Project does not present any increased risk of widespread fire across the landscape.

These mitigation measures will be applied for the life of the Project and have been summarised in **Table 6-1**. Additional mitigation measures specific to the Temporary Workers Accommodation Camp are also provided in Appendix B and provide increased separation distances until such time that the accommodation camp is decommissioned.

**TABLE 6-1 SUMMARY OF RECOMMENDED MITIGATION STRATEGIES AND ACTIONS**

Mitigation Strategy	Action	Timing
Asset Protection Zone (APZ)	<p>A minimum 10 m APZ is to be established around the perimeter of the solar arrays, and on all sides of the Disturbance Footprint which will encompass the substations and BESS.</p> <p>Consideration should be given to reducing the risk of radiant heat exposure to essential equipment (i.e. the BESS and substations) and increasing the APZ to 19 – 28 m APZ around these assets.</p> <p>All APZ are to be managed as an inner protection zone (IPA) as outlined within Appendix 4 of PBP 2019 (NSW RFS, 2019), and NSW RFS 'Standards for Asset Protection Zones' (NSW RFS, n.d).</p> <p>APZ will not extend beyond the property boundary or rely on actions being undertaken by adjacent landowners.</p>	The APZ will be constructed as the first stage of development and maintained for the life of the Project.
Access Roads	<p>Access to the Project Area during construction and operations is expected via the regional council road network, with an access point off Garoo Road to the east.</p> <p>An additional emergency access gate is recommended to be installed from Bulls Road to provide emergency access to the south western portion of the site.</p> <p>All roads will be maintained to the minimum standards as outlined within the NSW RFS Fire Trail Standards (RFS, 2023). All access roads must be maintained and kept free of parked vehicles or other obstructions.</p>	Constructed as the first stage of development and maintained for the life of the Project.

Mitigation Strategy	Action	Timing
Water storage	A dedicated water supply with appropriate access is required at the site to assist in the event of a fire. The final list of fire suppression equipment and water storage requirements will be confirmed in consultation with NSW RFS and FRNSW following project approval and detailed design. The most appropriate locations and number of tanks required will need to be identified in response to the final design.	During Construction and maintained for life of the Project
Transmission lines	For the safe operation of the transmission line, certain activities will be restricted within the easement such as planting and growing trees, construction of buildings, or erection of antennae or masts. While it has not be confirmed how the easement will be formally registered, for the purposes of this bushfire risk assessment, key responsibilities and management measures will be applied and are the responsibility of the asset owner (TransGrid).	Maintained for life of the Project.
Construction Phase	<ul style="list-style-type: none"> <li>The APZ and access roads will be constructed prior to the installation of any solar panels or related infrastructure;</li> <li>Fire detection and suppression systems should be installed at the earliest stage of construction for BESS infrastructure.</li> <li>Ensure appropriate bunding in areas where there is potential for flammable fuels and oils to leak and create bushfires or other environmental risks;</li> <li>Install appropriate signs to assist emergency response crews determine the location of infrastructure;</li> <li>Ensure that appropriate permits have been issued for work during the Fire Danger Period, and that any conditions on permits are adhered to;</li> <li>Adhere to restrictions on Total Fire Ban or days of high fire danger;</li> <li>Carry emergency communications equipment;</li> <li>Restrict smoking to prescribed areas, and provide suitable ash and butt disposal facilities;</li> <li>All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g., vegetation); and</li> <li>On days of Extreme or Catastrophic fire danger, access to the site should be limited to essential works only.</li> </ul>	During Construction and maintained for life of the Project
Operation Phase	<ul style="list-style-type: none"> <li>Vegetation fuels throughout the solar farm are to be maintained in a minimal condition by grazing, or with additional slashing or mowing if required; and</li> <li>A Bushfire Emergency Management and Operations Plan will be prepared with consideration of Australian Standard/ISO 31000 Risk management principles and guidelines and Australian Standard 3745: Planning for emergencies in facilities.</li> </ul>	For the life of the Project

### IMPORTANT DISCLAIMER:

*Any representation, statement of opinion, or advice expressed or implied in the bushfire assessment will be made in good faith on the basis that ERM employees and / or agents are not liable (whether by reason of negligence, lack of care or any other reason ) to any person, company or their agents for any damage or loss whatsoever which has occurred or may occur in relation to that person taking (or not taking) action in respect of any representation, statement or advice provided within the bushfire assessment.*

## 7. REFERENCES

- AFAC. (2022a, June). *Grassland Quick Guide*. Retrieved May 2025, from Fire Behaviour Index Quick Guides: <https://srss-satdel-utility-prod.s3.ap-southeast-2.amazonaws.com/data/aurora/fbc/afdrs-quick-guide---grassland.pdf>
- AFAC. (2022b, June). *Savanna Quick Guide*. Retrieved from Fire Behaviour Index Quick Guides: <https://www.afac.com.au/public-resources/f0ebcefb-d6f9-4b57-9f63-523d85077817>
- AFAC. (2022b, June). *Savanna Quick Guide*. Retrieved from Fire Behaviour Index Quick Guides: <https://www.afac.com.au/public-resources/f0ebcefb-d6f9-4b57-9f63-523d85077817>
- BoM. (2025a). *Bushfire Weather*. Retrieved May 2025, from Bureau of Meteorology: <http://www.bom.gov.au/weather-services/fire-weather-centre/bushfire-weather/index.shtml>
- CFA. (2023). *Design Guidelines and Model Requirements Renewable Energy Facilities v4*.
- Cheney, S. (2008). *Grassfires: Fuel, Weather and Fire Behaviour*. CSIRO Publishing.
- ERM. (2025). *Garoo SF and BESS - Biodiversity Development Assessment Report*. Sydney.
- ERM. (2025). *Garoo Solar Farm and BESS Biodiversity Development Assessment Report*.
- ERM. (2025). *Garoo Solar Farm and BESS Land Category Assessment Report* . Sydney.
- ERM. (2025). *Garoo Solar Farm Temporary Workers Accommodation Camp Bushfire Risk Addendum*. Sydney: ERM.
- ERM. (2025). *Garoo Soldar Farm and Battery Energy Storage System Environmental Impact Statement*. Sydney: ERM.
- Keith, D. A. (2004). *Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT*. NSW Department of Environment and Conservation.
- NSW DCCEEW. (2024). *State Vegetation Type Mapping Version C2.0.M2.1 (November 2024) SEED Layer*. Retrieved May 2025, from <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>
- NSW RFS. (2019). *Planning for Bushfire Protection 2019*. Granville: State of New South Wales through the NSW RURAL FIRE SERVICE 2019.
- NSW RFS. (2019b). *Comprehensive Vegetation Fuel Loads*. Retrieved May 2025, from [https://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0005/97781/Comprehensive-vegetation-fuel-loads-Fact-Sheet-V8.pdf](https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0005/97781/Comprehensive-vegetation-fuel-loads-Fact-Sheet-V8.pdf)
- NSW RFS. (2023). *NSW Fire Trail Standards*. Retrieved from [https://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0009/69552/RFS-Fire-Trail-Standards-Nov2023.pdf](https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0009/69552/RFS-Fire-Trail-Standards-Nov2023.pdf)
- NSW RFS. (n.d). *Standards For Asset Protection Zones*.
- NSW Rural Fire Service. (2015). *GUIDE FOR BUSH FIRE PRONE LAND MAPPING Version 5b*. Granville. Retrieved from

[https://www.rfs.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0011/4412/Guideline-for-Councils-to-Bushfire-Prone-Area-Land-Mapping.pdf](https://www.rfs.nsw.gov.au/__data/assets/pdf_file/0011/4412/Guideline-for-Councils-to-Bushfire-Prone-Area-Land-Mapping.pdf)

RFS, N. (2023). *NSW Fire Trail Standards November Version 2.0*.

State Government of NSW and NSW Rural Fire Service. (2025). *NSW Bush Fire Prone Land*. Retrieved from <https://datasets.seed.nsw.gov.au/dataset/d6f2d89f-3cdc-4da0-add2-f2da74bc0bfc>], date accessed 2025-06-05

Sullivan, A. L., McCaw, W. L., Cruz, M. G., Matthews, S., & Ellis, P. F. (2012). Fuel, fire weather and fire behaviour in Australian ecosystems. In R. A. Bradstock, A. M. Gill, & R. J. Williams, *Flammable Australia: Fire Regimes, Biodiversity and Ecosystems in a Changing World* (pp. 51 - 78). CSIRO Publishing.

Tamworth BFMC. (2020). *Bushfire Risk Management Plan*. Retrieved from <https://www.rfs.nsw.gov.au/plan-and-prepare/managing-bush-fire-risk/bush-fire-management-committees/tamworth>



APPENDIX A

COMPLIANCE WITH THE OBJECTIVES OF  
PLANNING FOR BUSHFIRE PROTECTION  
GUIDELINES

## COMPLIANCE WITH THE OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION 2019

Objective	Comment	Can comply
<b>Objectives of Chapter 1 (Part 1.1)</b>		
Afford buildings and their occupants protection from exposure to a bush fire;	A <i>minimum</i> separation distance of 10m is recommended in accordance with Section 8.3.5 of PBP 2019 noting that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide for a defensible space to be located around buildings;	A <i>minimum</i> separation distance of 10m is recommended in accordance with Section 8.3.5 of PBP 2019. To achieve reduced exposure to radiant heat, consideration should be given to an increased APZ of 19m to achieve a BAL 19 or 28m to achieve a BAL 12.5 (in accordance with Table A1.12.6 of PBP 2019). These distances will be refined based on the final project design and the siting of the buildings within the landscape.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;	A <i>minimum</i> separation distance of 10m is recommended in accordance with Section 8.3.5 of PBP 2019.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;	A single access point will be constructed as the first stage of development and will be maintained for the life of the Project. An additional emergency access gate is recommended to be installed from Bulls Road to provide emergency access to the south western portion of the site. All roads will be maintained to the minimum standards as outlined within PBP 2019.	<input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Provide for ongoing management and maintenance of BPMs; and	Normal property maintenance and ongoing grazing will ensure that bush fire protection measures are maintained. A Bush Fire Emergency Management and Operations Plan will be developed prior construction.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Ensure that utility services are adequate to meet the needs of firefighters	Normal property maintenance will ensure that bush fire protection measures including the provision of adequate water supply are maintained. The final water storage requirements will be confirmed in consultation with NSW RFS and FRNSW following project approval and detailed design.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Objective	Comment	Can comply
<b>Objectives of Chapter 8 (Part 8.3.5)</b>		
Wind and solar farms require special consideration and should be provided with adequate clearances to combustible vegetation as well as firefighting access and water. The following should be provided for wind and solar farms:		
A minimum 10m APZ for the structures and associated buildings/infrastructure; and	A minimum separation distance of 10m is recommended in accordance with Section 8.3.5 of PBP 2019 noting that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The APZ must be maintained to the standard of an IPA for the life of the development.	All APZs are to be managed as an inner protection zone (IPA) for the life of the development as outlined within Appendix 4 of PBP 2019 (NSW RFS, 2019), and NSW RFS 'Standards for Asset Protection Zones' (NSW RFS, n.d)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Essential equipment should be designed and housed in such a way as to minimise the impact of bush fires on the capabilities of the infrastructure during bush fire emergencies.	Detailed design will minimise the impact of bush fires on the capabilities of the infrastructure during bush fire emergencies. To achieve reduced exposure to radiant heat, consideration should be given to an increased APZ of 19m to achieve a BAL 19 or 28m to achieve a BAL 12.5 (in accordance with Table A1.12.6 of PBP 2019). These distances will be refined based on the final project design and the siting of the buildings within the landscape.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
A Bush Fire Emergency Management and Operations Plan should identify all relevant risks and mitigation measures associated with the construction and operation of the wind or solar farm.	Bushfire emergency management and response planning, including the preparation of a Bush Fire Emergency Management and Operations Plan, will be undertaken in consultation with NSW RFS and FRNSW following project approval and based on the final development design.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



APPENDIX B

TEMPORARY WORKFORCE  
ACCOMMODATION CAMP ADDENDUM



# Garoo Solar Farm and BESS

Temporary Workforce Accommodation  
Camp  
Bushfire Risk Addendum

**PREPARED FOR**

The trustee for Greenpulse Solar  
Farm and BESS Unit Trust

**DATE**

5 November 2025

**REFERENCE**

0751705



**DOCUMENT DETAILS**

DOCUMENT TITLE	Garoo Solar Farm and BESS
DOCUMENT SUBTITLE	Temporary Workforce Accommodation Camp Bushfire Risk Addendum
PROJECT NUMBER	0751705
DATE	5 November 2025
VERSION	01
AUTHOR	Georgina Thompson, Gabriella Drakopoulos
CLIENT NAME	The trustee for Greenpulse Solar Farm and BESS Unit Trust

**DOCUMENT HISTORY**

VERSION	REVISION	AUTHOR	REVIEWED BY	ERM APPROVAL TO ISSUE		
				NAME	DATE	COMMENTS
Final	01	Georgina Thompson, Gabriella Drakopoulos	Joanne Woodhouse	Lucy Baker	5 November	Final

SIGNATURE PAGE

# Garoo Solar Farm and BESS

## Temporary Workforce Accommodation Camp

### Bushfire Risk Addendum

0751705



---

**Georgina Thompson**  
Consultant



---

**Joanne Woodhouse**  
Consulting Director



---

**Sophie Butcher**  
Project Manager



---

**Lucy Baker**  
Partner

Environmental Resources Management  
Australia Pty Ltd  
Level 14, 207 Kent St  
Sydney NSW 2000  
T +61 2 8584 8888

© Copyright 2025 by The ERM International Group Limited and/or its affiliates ('ERM'). All Rights Reserved.  
No part of this work may be reproduced or transmitted in any form or by any means, without prior written permission of ERM.

## CONTENTS

<b>2. INTRODUCTION</b>	<b>1</b>
2.1 DESCRIPTION OF THE TEMPORARY ACCOMODATION CAMP	1
2.2 AIMS AND OBJECTIVES	2
<b>3. PLANNING FRAMEWORK</b>	<b>5</b>
3.1 RELEVANT LEGISLATION AND GUIDELINES	5
<b>5. EXISTING SITE CONDITIONS</b>	<b>7</b>
5.1 LAND USE CONTEXT	7
5.2 CLIMATE AND FIRE WEATHER	7
5.3 TOPOGRAPHY	7
5.4 VEGETATION	8
<b>6. MITIGATION STRATEGIES</b>	<b>11</b>
<b>7. CONCLUSION</b>	<b>19</b>
<b>8. REFERENCES</b>	<b>20</b>

### APPENDIX A COMPLIANCE WITH THE OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION GUIDELINES

#### LIST OF TABLES

TABLE 2-1	RELEVANT LEGISLATION AND GUIDELINES	5
TABLE 3-1	FIRE BEHAVIOUR INDEX, GRAZED PASTURE	8
TABLE 3-2	FIRE BEHAVIOUR, GRASSLAND	8
TABLE 4-1	PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS	12
TABLE 6-1	SUMMARY OF RECOMMENDED MITIGATION STRATEGIES AND ACTIONS	19

#### LIST OF FIGURES

FIGURE 1-1	PROJECT LAYOUT	3
FIGURE 1-2	WORKFORCE ACCOMMODATION CAMP LAYOUT	4
FIGURE 3-1	VEGETATION CLASSIFICATION	9
FIGURE 3-2	SLOPE CLASSES	10
FIGURE 4-1	ASSET PROTECTION ZONING	18

## ACRONYMS AND ABBREVIATIONS

Acronym	Description
AFDRS	Australian Fire Danger Rating System
AFAC	Australasian Fire and Emergency Service Authorities Council
APZ	Asset Protection Zones
BESS	battery energy storage system
BFMC	<i>Bushfire Management Committee</i>
BFRMP	<i>Bushfire Risk Management Plan</i>
DP	Deposited Plan
EIS	Environmental Impact Statement
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
ERM	Environmental Resources Management Australia Pty Ltd
FRNSW	Fire and Rescue New South Wales
IPA	Inner Protection Area
km	kilometres
kV	kilovolt
LGA	Local Government Area
m	metres
NSW	New South Wales
NSW RFS	New South Wales Rural Fire Service
PBP 2019	Planning for Bushfire Protection 2019
RF Act	<i>NSW Rural Fires Act 1997</i>
SEARs	Secretary's Environmental Assessment Requirements

**Important Note:**

*Despite the mitigation measures and treatments that are put in place, it is noted that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact. The absence of any identified hazard or asset in the Project Area should not be interpreted as a guarantee that such hazards or impacts do not exist. It is also important that a Bushfire Emergency Management Plan is prepared prior to the commencement of any construction works in conjunction with relevant stakeholders, including local fire services, NSW RFS, NSW Fire and Rescue, landowners and adjoining property owners.*

## 1. INTRODUCTION

This Bushfire Risk Addendum has been prepared on behalf of the Trustee for Greenpulse Solar Farm and BESS Unit Trust (the Applicant) to consider bushfire risk for the Temporary Workforce Accommodation Camp (the accommodation camp) to be located within the Project Area of the Solar Farm and Battery Energy Storage System (BESS) (the Project). The accommodation camp is to be decommissioned at the final stages of construction (Q1 2028), allowing the final solar arrays to be installed.

A separate Bushfire Risk Assessment has been prepared for the main Solar Farm and BESS infrastructure, as identified within the Secretary's Environmental Assessment Requirements (SEARs), issued by the Department of Planning, Housing and Infrastructure (DPHI). DPHI has requested this additional addendum for the accommodation camp as part of their Request For Information (RFI).

This report identifies potential hazards and risks associated with the accommodation camp and has been prepared to support the preparation of the Project's Environmental Impact Statement (EIS). It contains management and mitigation measures designed to address these obligations, consistent with the NSW Rural Fire Service (NSW RFS) guidelines including 'Planning for Bush Fire Protection 2019' (PBP 2019 inclusive of the PBP Addendum (2022 and 2025)).

It does not assess the individual design or engineering components of the accommodation camp (or additional infrastructure as described in **Section 1.1**, but does consider locations of the infrastructure relative to the identified hazards and the requirements for separation distances to be maintained until such time that the accommodation camp is decommissioned and the final solar arrays are installed.

### 1.1 DESCRIPTION OF THE TEMPORARY ACCOMMODATION CAMP

**Figure 1-1** shows the Project Area and the accommodation camp layout is provided in **Figure 1-2**.

A full description of the Solar Farm development is provided in the Garoo Solar Farm EIS (ERM, 2025) and the accompanying technical assessments.

The temporary accommodation camp would be established within the northeast section of the Project Area, covering an area of approximately 5 hectares (ha). The accommodation camp would have the capacity to house 250 workers, accommodating the peak construction workforce. The occupation rate of the accommodation camp is likely to vary throughout the different stages of construction, depending on the type of activities being undertaken and associated workforce requirements.

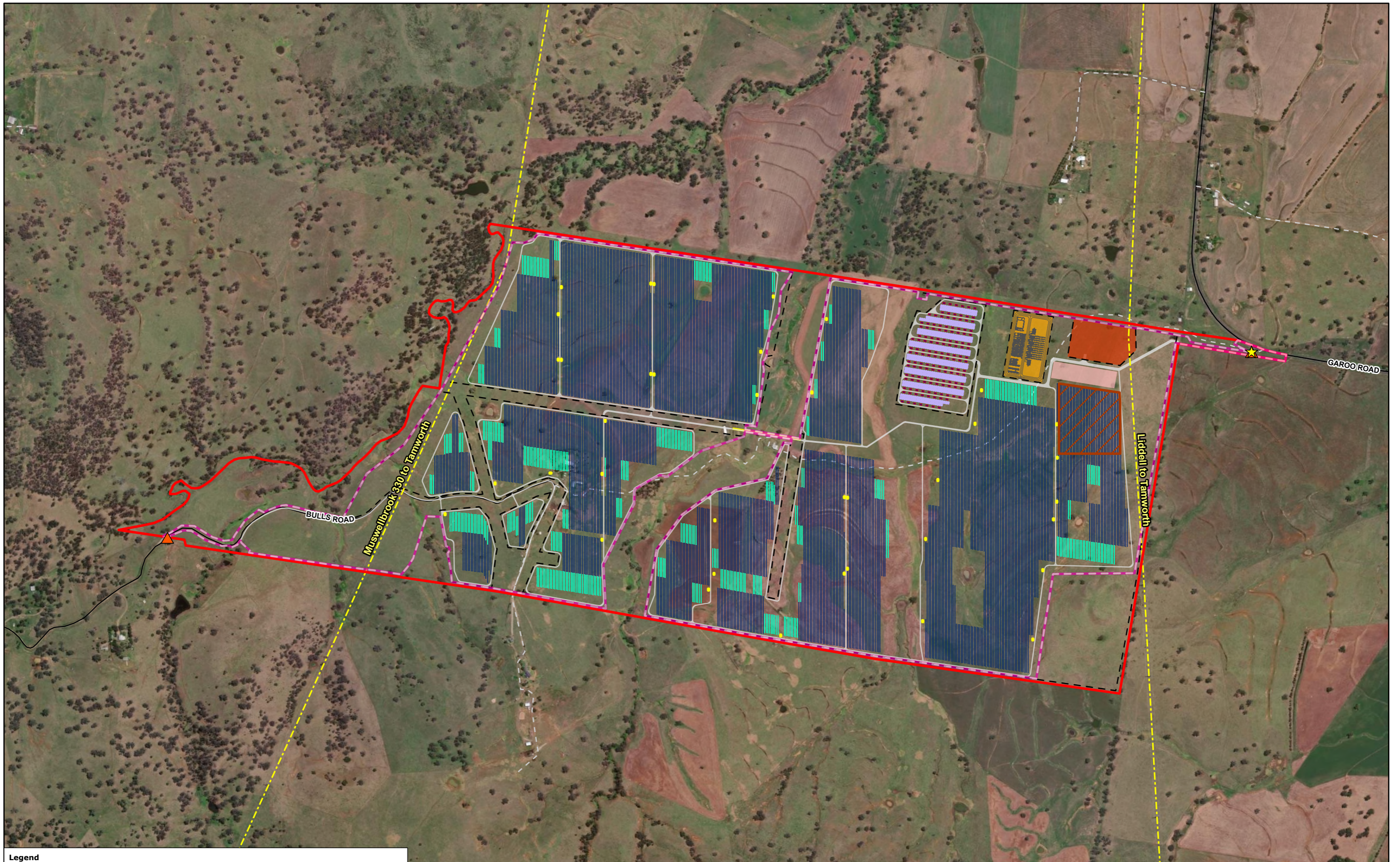
The accommodation camp and associated infrastructure will be constructed with an estimated duration of 15 months from initial build to decommissioning. Access to the accommodation camp will be via Garoo Road, located at the northeast corner of the Project Area. An emergency access road will be available via Bulls Road at the southwest corner of the Project Area. A network of internal tracks will connect Garoo Road to the designated car parking area and provide access to the emergency exit point.

## 1.2 AIMS AND OBJECTIVES

Bushfire presents a threat to both human life and assets and can adversely impact ecological values. Bushfire risk can be considered in terms of environmental factors that increase the risk of fire (e.g., fuel quantity and type, topography, and weather patterns), as well as specific activities (such as hot works and construction activities) or infrastructure components that exacerbate combustion or ignition risks (such as transmission lines and other electrical components).

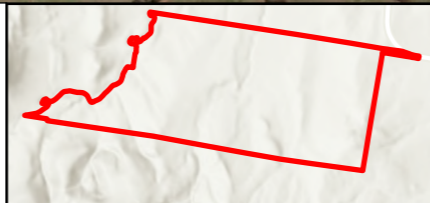
This Bushfire Risk Addendum aims to identify potential hazards and risks associated with bushfires / use of bushfire prone land and demonstrate that the temporary accommodation camp can be designed, constructed and operated to minimise ignition risks and provide for asset protection consistent with relevant NSW RFS design guidelines, PBP 2019 and Standards for Asset Protection (available on the NSW RFS website [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au)).

The objectives of this assessment are to identify, and where possible reduce, the likelihood of a bushfire impacting the accommodation camp or spreading from the accommodation camp to surrounding properties. Despite the mitigation measures and treatments put in place, it is noted that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.



Legend			
	Project Area		PV (Mounting Structure - Half Table)
	Development Footprint		PV (Mounting Structure - Full Table)
	Transmission Lines (existing)		Internal Road
	Preferred access point		Parking and Laydown Area
	Emergency Access point		Inverters
			PCS Station
			OHL Interconnection
			Customer Substation Area
			Transgrid Substation Area
			Fence
			Local Road
			Local Track-Vehicular
			Temporary Workers Accommodation Camp
			BESS Container

Source:  
Boundary: Client Provided (20250415)  
Base Data: NSW DCDB/DTDB  
Imagery: ESRI World Imagery



Coordinate System:  
GDA2020 MGA Zone 56  
Date: 05/11/2025  
Created By: NB  
Drawing Size: A3  
0 480m 1:12,500

**Workforce Accommodation Camp Location**

**Garoo SF and BESS Workforce Accommodation Camp**  
**Bushfire Risk Assessment**  
 GreenPulse Solar Farm and BESS Unit Trust

- Legend**
- Project Area
  - Development Footprint
  - Fence
  - Waste Area
  - Admin & First Aid
  - Verandah
  - Fire Hydrant
  - Loading Area
  - Fire Suppression
  - Gas hazard area
  - Generators and fuel store
  - Maintenance containers
  - Accommodation Area
  - Amenities & Services
  - Smoking Area
  - Potable Water
  - WWTP
  - Car Parking
  - Internal Road



Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 03/11/2025  
 Created By: NB  
 Drawing Size: A3

0  50m

1:1,500

**F1-2 Workforce Accommodation Camp**

**Garoo SF and BESS Workforce Accommodation Camp  
 Bushfire Risk Assessment**

Greenpulse Solar Farm and BESS Pty Ltd

## 2. PLANNING FRAMEWORK

### 2.1 RELEVANT LEGISLATION AND GUIDELINES

**Table 2-1** outlines the relevant legislation and guidelines and how they have been considered in this Bushfire Risk Addendum.

**TABLE 2-1 RELEVANT LEGISLATION AND GUIDELINES**

Relevant Legislation/Guideline	Description
<p><i>Environment Planning and Assessment Act 1979</i></p>	<p>The Project was declared a State Significant Development (SSD) and will be assessed under Part 4 of the <i>Environmental Planning and Assessment Act 1979</i> (EP&amp;A Act). The SEARs issued for this Project require an assessment of bush fire risk in accordance with PBP 2019.</p> <p>Section 4.41 of the EP&amp;A Act excludes projects approved under Part 4 of the EP&amp;A Act from requiring "a bush fire safety authority under section 100B of the <i>Rural Fires Act 1997</i>".</p>
<p><i>NSW Rural Fires Act 1997</i></p>	<p>Under Section 63 of the <i>Rural Fires Act 1997</i> (RF Act), owners and occupiers of land have a duty to take practicable steps to prevent the occurrence of bushfires and to minimise the danger of the spread of bushfires on or from, that land. This assessment considers the risk of spreading bushfires from the Project to its surrounds and provides measures to minimise the risk of bushfires.</p> <p>In accordance with Section 64 of the RF Act, if a fire is burning on any land at any time during a bushfire danger period, the solar farm operators must:</p> <ul style="list-style-type: none"> <li>• Immediately, on becoming aware of the fire and whether the occupier has lit or caused the fire to be lit or not, take all possible steps to extinguish the fire; and</li> <li>• If the occupier is unable without assistance to extinguish the fire and any practicable means of communication are available, ensure that the fire is reported immediately to the 000 emergency telephone number.</li> </ul> <p>The operators of the Project must also be aware of operations that can be carried out on days of Total Fire Ban and any prohibited activities or exemptions that are notified by the Commissioner of the NSW RFS under Section 99 of the RF Act.</p> <p><u>Bushfire Management Committee</u></p> <p>Set up under the RF Act, Bushfire Management Committees (BFMCs) coordinate fire management planning, prevention and suppression in local areas. The relevant committee for the Project is Tamworth BFMC. Each BFMC is required to prepare and submit to the Bush Fire Risk Management Plan (BFRMP). The relevant plan to the Project is the Tamworth BFRMP (Tamworth BFMC, 2020).</p>
<p><i>Planning for Bushfire Protection 2019</i></p>	<p>PBP 2019 (NSW RFS, 2019) is a planning document to link responsible planning and development controls with the protection of life, property and the environment.</p> <p>Section 6.3.1 of PBP defines long-term accommodation as exceeding six weeks in duration and considers that long-term occupants will be familiar with their surrounds, safe refuge areas and evacuation routes. As such, long-term accommodation may be treated as standard residential development and therefore needs to meet a radiant heat threshold of 29 kW/m<sup>2</sup> Bushfire Attack Level (BAL) 29, along with suitable provision for construction, access, water and landscaping.</p>

Relevant Legislation/Guideline	Description
	<p>A building that provides temporary or shorter term (less than six weeks) accommodation is considered similar to tourist accommodation and classified as a Special Fire Protection Purpose (SFPP) development. In this instance, the specific objectives of SFPP development have been applied:</p> <ul style="list-style-type: none"> <li>• Minimise levels of radiant heat, localised smoke and ember attack through increased Asset Protection Zone (APZ), building design and siting;</li> <li>• Provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;</li> <li>• Ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and</li> <li>• Ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.</li> </ul>

## 3. EXISTING SITE CONDITIONS

### 3.1 LAND USE CONTEXT

The Project Area, including the location of the proposed accommodation camp, falls within the Garoo locality within the Tamworth Regional Local Government Area (LGA) and has been subject to a long history of vegetation clearing and sheep grazing. Spatial imagery shows that significant groundcover disturbance has occurred through cropping activities and pasture modification, including clearing of woody vegetation up until the present day (ERM, 2025).

Several existing farm dams occur across the Project Area, with Tamarang Creek bisecting the central portion of the site in a north south direction. Two 330 kiloVolt (kV) overhead transmission lines traverse the Project Area in a general north-south alignment.

### 3.2 CLIMATE AND FIRE WEATHER

Weather conditions influence the size, intensity, speed, and predictability of bushfires and how dangerous they can be to the community. While bushfires can happen at any time of the year in Australia, the time of peak bushfire activity varies across the country, with the changes in the seasonal weather patterns. As described within the Garoo Solar Farm and BESS Bushfire Risk Assessment (ERM, 2025), the prevailing weather conditions associated with the bushfire season in the Tamworth BFMC are usually north-westerly winds accompanied by high daytime temperatures and low relative humidity. There are also frequent dry lightning storms occurring throughout the area during the bushfire season (Tamworth BFMC, 2020).

No additional information on climate or fire weather has been presented in this addendum.

### 3.3 TOPOGRAPHY

As described within the Garoo Solar Farm and BESS Bushfire Risk Assessment (ERM, 2025), the slope of the land under the classified vegetation has a direct influence on the rate of fire spread, the intensity of the fire and the level of radiant heat flux. A fire will burn faster uphill as the radiant heat pre-heats the fuel in front of the fire, making the fuel even more flammable. As described by (CFA, 2023), for every 10° slope, the fire will double its speed. The opposite applies to a fire travelling downhill. The flames reach less fuel, and less radiant heat pre-heats the fuel in front of the fire. For every 10° of downhill slope, the fire will halve its speed.

In accordance with the requirements of PBP 2019, the effective slope of the land is categorised into one of the following classes, relative to the location of the hazard:

- All upslope vegetation (considered 0 degrees);
- >0 to 5 degrees downslope vegetation;
- >5 degrees to 10 degrees downslope vegetation;
- >10 degrees to 15 degrees downslope vegetation; and
- >15 degrees to 20 degrees downslope vegetation.

The effective slope over 100 m from the proposed accommodation camp is relatively flat and has been calculated as:

- 0-5 degrees downslope to the north, east and west; and
- 0-5 degrees upslope to the south.

### 3.4 VEGETATION

Descriptions of the vegetation types including species composition and structural diversity are provided in the Garoo Solar Farm and BESS BDAR (ERM, 2025).

A 140 m buffer has been applied to the accommodation camp and vegetation classifications have been determined using ground-verified PCT mapping carried out by ERM ecologists during field surveys and the NSW Department of Climate Change, Energy, the Environment and Water's (DCCEEW) State Vegetation Type Mapping (SVTM) (2024) (NSW DCCEEW, 2024). For the purposes of this bushfire risk addendum, the vegetation has been simplified in line with the vegetation formations as per Vegetation Formation (Keith 2004).

The vegetation classifications are shown in **Figure 3-1**. The dominant vegetation types having the potential to affect the proposed accommodation camp in all directions is exotic grassland.

Grassfires should not be underestimated and can start and spread quickly. It should be assumed that, under the most extreme weather, a fire would spread even in heavily grazed and exotic pastures and embers may breach any Asset Protection Zone (APZ).

Based on a dominance of grazed grassland as outlined in **Table 3-1** and **Table 3-2**, the accommodation camp has a **moderate** bushfire danger rating.

**TABLE 3-1 FIRE BEHAVIOUR INDEX, GRAZED PASTURE**

Vegetation Classification	Overall Fuel Load <sup>1</sup>	Fire Behaviour Index <sup>2</sup>	Fire Danger Rating <sup>2</sup>
Cleared exotic pasture (grazed)	6 t/ha	14	Moderate

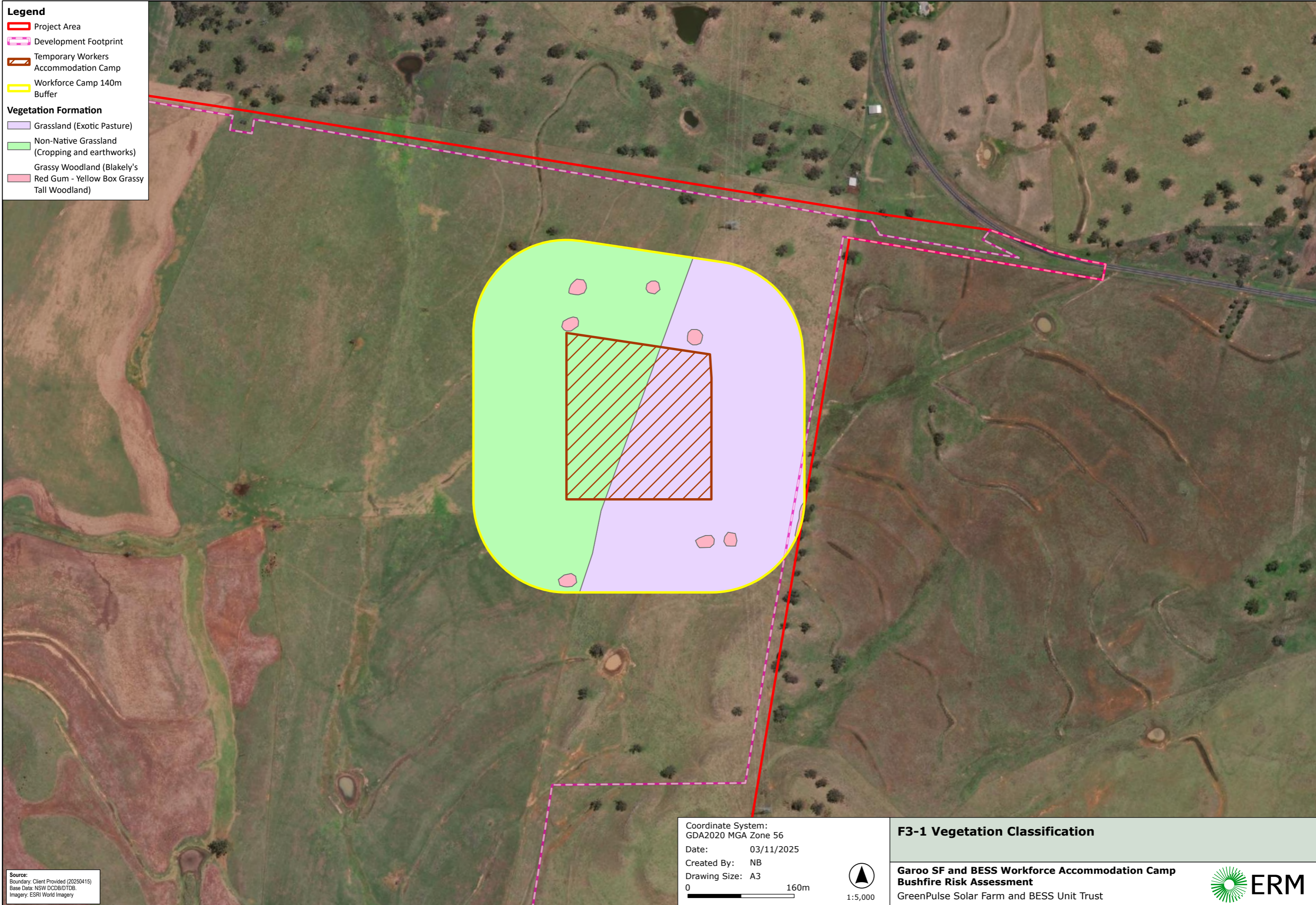
1. Fuel loads are expressed in tonnes per hectare as per NSW RFS – Comprehensive Vegetation Fuel Loads (NSW RFS, 2019b)

2. CSIRO Grassland Fire Spread Model available online <https://aurora.landgate.wa.gov.au/fbc/#!/csiro-grass>. Input values: grass continuity: continuous; temperature 30 °c; relative humidity 40%; windspeed at 10m height 20 km/h; curing 60%; slope 5 degrees.

**TABLE 3-2 FIRE BEHAVIOUR, GRASSLAND**

Fire Behaviour Index	Fire Danger Rating <sup>3</sup>	Fire Suppression and Containment	Potential for Impact
12-23	Moderate	Typically wind driven and rapidly spreading fires with the potential to gain size quickly. Fires typically controlled within established road networks and fuel breaks together with using direct, indirect or parallel attack suppression strategies.	Possible agricultural/pasture/crop/stock losses together with loss of rural assets such as fencing, machinery and buildings. Unattended infrastructure may be at risk.

Source: Grassland Quick Guide (AFAC, 2022a)



**Legend**

- Project Area
- Development Footprint
- Temporary Workers Accommodation Camp
- Workforce Camp 140m Buffer


**Vegetation Formation**

- Grassland (Exotic Pasture)
- Non-Native Grassland (Cropping and earthworks)
- Grassy Woodland (Blakely's Red Gum - Yellow Box Grassy Tall Woodland)

Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 03/11/2025  
 Created By: NB  
 Drawing Size: A3


0  160m

  
 1:5,000

**F3-1 Vegetation Classification**

**Garoo SF and BESS Workforce Accommodation Camp  
 Bushfire Risk Assessment**

GreenPulse Solar Farm and BESS Unit Trust

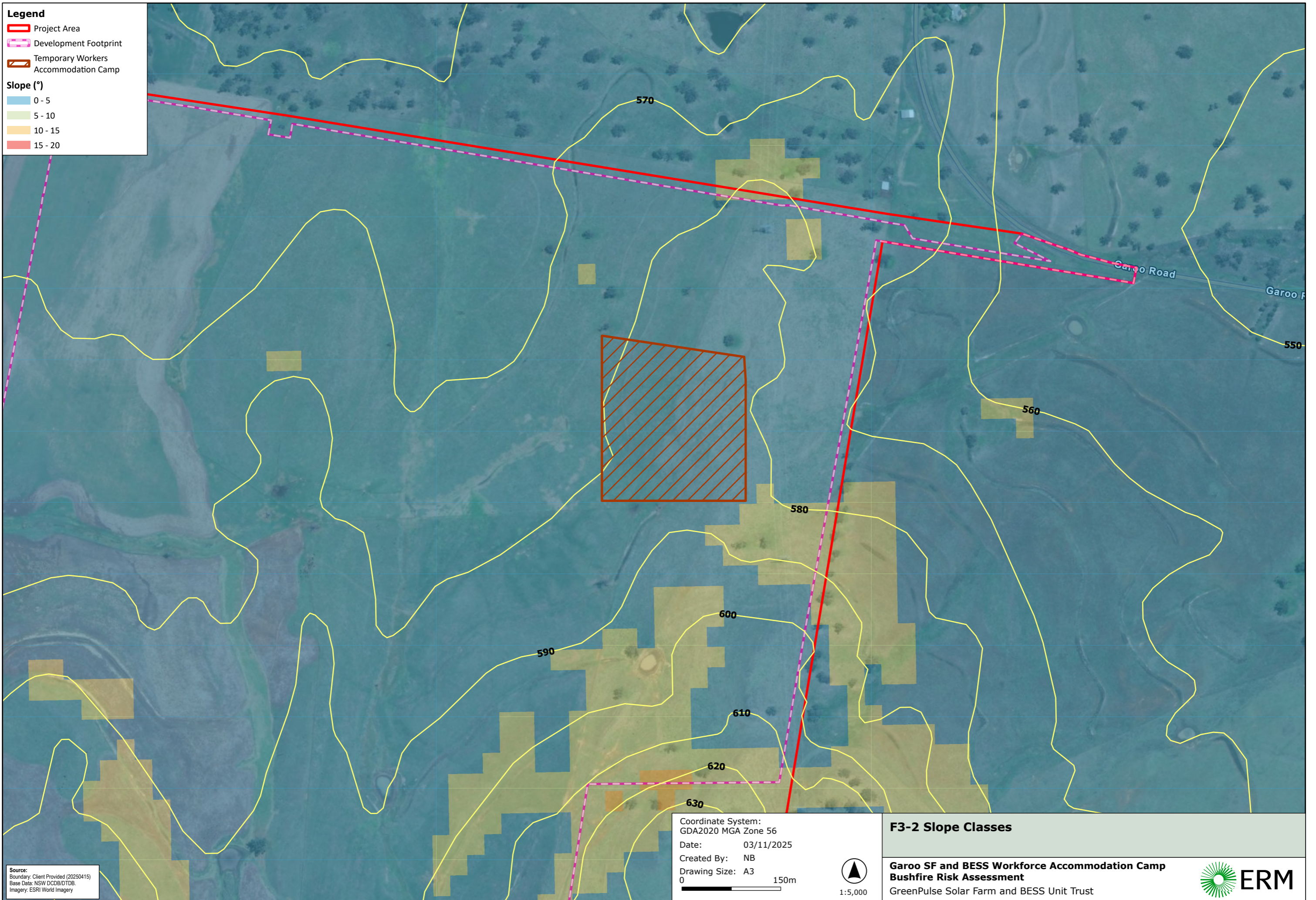


**Legend**

- Project Area
- Development Footprint
- Temporary Workers Accommodation Camp


**Slope (°)**

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20



Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery


Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 03/11/2025  
 Created By: NB  
 Drawing Size: A3  
 0 150m

  
 1:5,000

**F3-2 Slope Classes**

**Garoo SF and BESS Workforce Accommodation Camp  
 Bushfire Risk Assessment**

GreenPulse Solar Farm and BESS Unit Trust



## 4. MITIGATION STRATEGIES

Consideration is given to whether the proposed development of the temporary accommodation camp will result in people congregating in large numbers. The accommodation camp is expected to accommodate between 180 and 250 Full-Time Equivalent (FTE) staff on site. The accommodation camp is anticipated to be constructed and decommissioned within 15 months. Although the construction phase does not pertain to the expected end use of the Project Area, the number of people who could be within the camp at one time warrants consideration in terms of providing adequate defensible space and access / egress as the first stage of construction.

As identified within Section 6.3.1 of PBP 2019 (NSW RFS, 2019), the accommodation camp is considered a temporary accommodation similar to tourist accommodation, potentially occupied on a short-term basis by people who are unaware of their surroundings.

In this instance, the specific objectives of SFPP development have been applied:

- Minimise levels of radiant heat, localised smoke and ember attack through increased APZ, building design and siting;
- Provide an appropriate operational environment for emergency service personnel during firefighting and emergency management;
- Ensure the capacity of existing infrastructure (such as roads and utilities) can accommodate the increase in demand during emergencies as a result of the development; and
- Ensure emergency evacuation procedures and management which provides for the special characteristics and needs of occupants.

Mitigation will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the occupants of the accommodation camp in the case of a bushfire.

As identified within Section 6.3.1 of PBP 2019 (NSW RFS, 2019), short-term accommodation (six weeks or less) must meet the varied performance criteria in **Table 4-1**.

**TABLE 4-1 PERFORMANCE CRITERIA AND ACCEPTABLE SOLUTIONS**

Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
<i>APZs and construction for SFPP development – in accordance with Table 6.8a PBP 2019</i>			
<p>Radiant heat levels of greater than 10kW/m<sup>2</sup> (calculated at 1,200K) will not be experienced on any part of the building.</p>	<ul style="list-style-type: none"> <li>The building is provided with an APZ in accordance with Table A1.12.1 in Appendix 1.</li> </ul>	<p>In accordance with Table A1.12.1 of PBP 2019, a minimum 36 metres (m) APZ is to be established to the south and 40 m in all other directions <b>(Figure 4-1)</b>.</p> <p>Vegetation fuels throughout the solar farm, and all areas outside of the accommodation camp fence are to be maintained in a minimal condition by grazing (or slashing). Inside of the fenced accommodation camp, the grass will be maintained by slashing or mowing as required.</p> <p>The APZ will also include the car parking, internal perimeter roads and the surrounding solar arrays that will be progressively established within the remainder of the Project Area.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>APZ maintenance is practical, soil stability is not compromised and the potential for crown fires is minimised.</p>	<ul style="list-style-type: none"> <li>APZs are located on lands with a slope less than 18 degrees.</li> </ul>	<p>APZs are not located on lands with a slope greater than 18 degrees.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>APZs are managed and maintained to prevent the spread of fire to the building. The APZ is provided in perpetuity.</p>	<ul style="list-style-type: none"> <li>The APZ is managed in accordance with the requirements of Appendix 4 of the PBP 2019 document and is wholly within the boundaries of the development site.</li> </ul>	<p>All APZ are to be managed as an Inner Protection Zone (IPA) as outlined within Appendix 4 of PBP 2019 (NSW RFS, 2019), and NSW RFS 'Standards for Asset Protection Zones' (NSW RFS, n.d). APZ will not extend beyond the property boundary or rely on actions being undertaken by adjacent landowners.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
Landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions.	<ul style="list-style-type: none"> <li>Landscaping is in accordance with Appendix 4; and</li> <li>Fencing is constructed in accordance with section 7.6.</li> </ul>	<p>The accommodation camp is a temporary facility and is unlikely to include any landscaped areas.</p> <p>Security fencing around the perimeter of the accommodation compound will be non-combustible.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The proposed building can withstand bush fire attack in the form of wind, embers, radiant heat and flame contact.	<ul style="list-style-type: none"> <li>A construction level of BAL-12.5 under AS 3959 or NASH Standard and section 7.5 of PBP is applied.</li> </ul>	The accommodation buildings will be designed to meet BAL 12.5 under AS 3959.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>Access for SFPP development– in accordance with Table 6.8b PBP 2019</b>			
Firefighting vehicles are provided with safe, all-weather access to structures and hazard vegetation.	<ul style="list-style-type: none"> <li>Access roads are two-wheel drive, all-weather roads.</li> <li>Access is provided to all structures.</li> <li>Traffic management devices are constructed to not prohibit access by emergency services vehicles</li> <li>Access roads must provide suitable turning areas in accordance with Appendix 3</li> <li>One way only public access roads are no less than 3.5 metres wide and have designated parking bays with hydrants located outside of these areas to ensure accessibility to reticulated water for fire suppression.</li> </ul>	<p>As shown in <b>Figure 1-2</b>, the internal perimeter road provides access to all sides of the accommodation camp.</p> <p>Access roads will be designed to meet the requirements of PBP 2019.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
The capacity of access roads is adequate for firefighting vehicles.	<ul style="list-style-type: none"> <li>The capacity of road surfaces and any bridges/causeways is sufficient to carry fully loaded firefighting vehicles (up to 23 tonnes); bridges and causeways are to clearly indicate load rating.</li> </ul>	Roads will be designed to facilitate the safe access and egress of fully loaded firefighting vehicles as outlined in Appendix 3 PBP 2019. Load ratings will be signed at bridges and causeways as required.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No























Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
There is appropriate access to water supply.	<ul style="list-style-type: none"> <li>Hydrants are located outside of parking reserves and road carriageways to ensure accessibility to reticulated water for fire suppression;</li> <li>Hydrants are provided in accordance with the relevant clauses of AS 2419.1:2005; and</li> <li>There is suitable access for a Category 1 fire appliances to within 4 m of the static water supply where no reticulated supply is available.</li> </ul>	<p>All relevant standards will be considered during detailed design to ensure that the aims and objectives of PBP 2019 are met in full.</p> <p>Suitable access will be provided for firefighting vehicles within 4m of the static water supply.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Perimeter access roads are designed to allow safe access and egress for firefighting vehicles while occupants are evacuating as well as providing a safe operational environment for emergency service personnel during firefighting and emergency management on the interface.	<ul style="list-style-type: none"> <li>There are two-way sealed roads; minimum 8m carriageway width kerb to kerb;</li> <li>Parking is provided outside of the carriageway width; hydrants are to be located clear of parking areas;</li> <li>There are through roads, and these are linked to the internal road system at an interval of no greater than 500m;</li> <li>Curves of roads have a minimum inner radius of 6m;</li> <li>The maximum grade road is 15 degrees and average grade of not more than 10 degrees;</li> <li>The road crossfall does not exceed 3 degrees; and</li> <li>A minimum vertical clearance of 4m to any overhanging obstructions, including tree branches, is provided.</li> </ul>	<p>All relevant standards will be considered during detailed design to ensure that the aims and objectives of PBP 2019 are met in full.</p> <p>Perimeter access roads will be designed to allow safe access and egress as outlined within Table 6.8b PBP 2019.</p>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

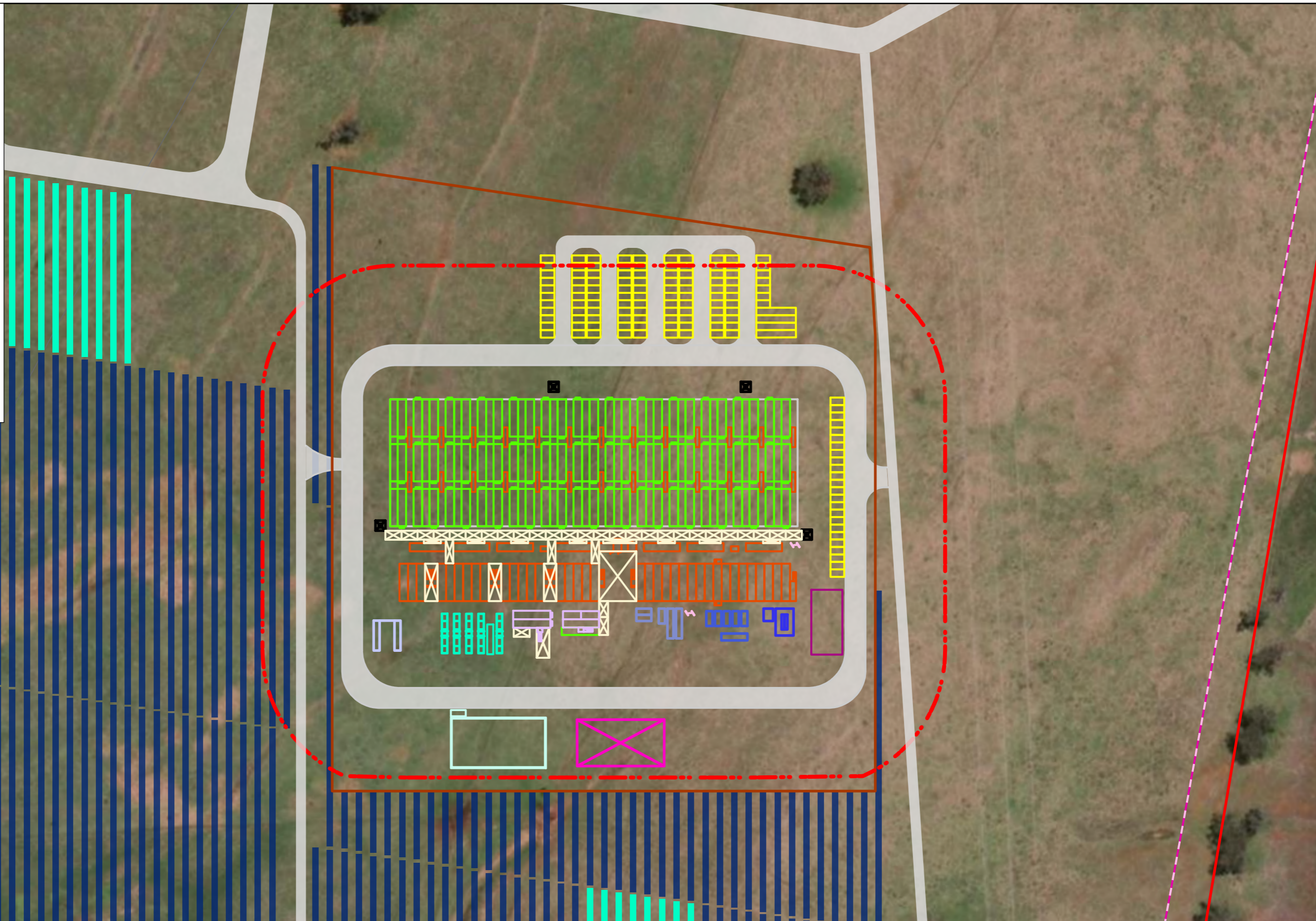
Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
<i>Water, electricity and gas services for SFPP development – in accordance with Table 6.8c PBP 2019</i>			
<p>An adequate water supply for firefighting purposes is installed and maintained.</p>	<ul style="list-style-type: none"> <li>• Reticulated water is to be provided to the development, where available; or</li> <li>• A 10,000 litres minimum static water supply for firefighting purposes is provided for each occupied building where no reticulated water is available.</li> </ul>	<p>A dedicated water supply with appropriate access is required at the site to assist in the event of a fire.</p> <p>The final list of fire suppression equipment and water storage requirements will be confirmed in consultation with NSW RFS and FRNSW following project approval and detailed design. The most appropriate locations and number of tanks required will need to be identified in response to the final design.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Water supplies are adequate in areas where reticulated water is not available.</p>	<ul style="list-style-type: none"> <li>• Connection for firefighting purposes is located within the IPA or non hazard side and away from the structure;</li> <li>• A 65mm Storz outlet with a ball valve is fitted to the outlet;</li> <li>• Ball valve and pipes are adequate for water flow and are metal;</li> <li>• Supply pipes from tank to ball valve have the same bore size to ensure flow volume;</li> <li>• Underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;</li> <li>• A hardened ground surface for truck access is supplied within 4m of the access hole;</li> <li>• Above-ground tanks are manufactured from concrete or metal; raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber;</li> <li>• Unobstructed access is provided at all times;</li> <li>• Tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters; and</li> <li>• Underground tanks are clearly marked.</li> <li>• All exposed water pipes external to the building are metal, including any fittings;</li> </ul>	<p>All of these standards will be considered during detailed design to ensure that the aims and objectives of PBP 2019 are met in full.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
	<ul style="list-style-type: none"> <li>Where pumps are provided, they are a minimum 5hp or 3kW petrol or diesel-powered pump, and are shielded against bush fire attack;</li> <li>Any hose and reel for firefighting connected to the pump shall be 19mm internal diameter; and</li> <li>Fire hose reels are constructed in accordance with AS/NZS 1221:1997 Fire hose reels, and installed in accordance with the relevant clauses of AS 2441:2005 Installation of fire hose reels.</li> </ul>		
<p>Location of electricity services limits the possibility of ignition of surrounding bush land or the fabric of buildings.</p>	<ul style="list-style-type: none"> <li>Where practicable, electrical transmission lines are underground; where overhead, electrical transmission lines are proposed as follow: lines are installed with short pole spacing (30m), unless crossing gullies, gorges or riparian areas; and no part of a tree is closer to a power line than the distance set out in accordance with the specifications in ISSC3 <i>Guideline for Managing Vegetation Near Power Lines</i>.</li> </ul>	<p>All relevant standards will be considered during detailed design to ensure that the aims and objectives of PBP 2019 are met in full.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p>Location and design of gas services will not lead to ignition of surrounding bushland or the fabric of buildings.</p>	<ul style="list-style-type: none"> <li>Maintained in accordance with AS/NZS 1596:2014 and the requirements of relevant authorities, and metal piping is used;</li> <li>All fixed gas cylinders are kept clear of all flammable materials to a distance of 10m and shielded on the hazard side;</li> <li>Connections to and from gas cylinders are metal; if gas cylinders need to be kept close to the building, safety valves are directed away from the building and at least 2m away from any combustible material, so they do not act as a catalyst to combustion;</li> <li>Polymer-sheathed flexible gas supply lines to gas meters adjacent to buildings are not to be used; and</li> <li>Above-ground gas service pipes external to the building are metal, including and up to any outlets.</li> </ul>	<p>All relevant standards will be considered during detailed design to ensure that the aims and objectives of PBP 2019 are met in full.</p>	<p><input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>

Performance criteria	Acceptable Solution	Assessment of the proposed Accommodation Camp	Can comply?
<i>Emergency Management Plans for SFPP development – in accordance with Table 6.8d PBP 2019</i>			
A Bush Fire Emergency Management and Evacuation Plan is prepared.	Bush Fire Emergency Management and Evacuation Plan is prepared consistent with the: The NSW RFS document: <i>A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan</i> ; <i>NSW RFS Schools Program Guide</i> ; Australian Standard AS 3745:2010 <i>Planning for emergencies in facilities</i> ; and Australian Standard AS 4083:2010 <i>Planning for emergencies – Health care facilities</i> (where applicable). the Bush Fire Emergency Management and Evacuation Plan should include planning for the early relocation of occupants.	A Bushfire Emergency Management and Operations Plan will be prepared with consideration of Australian Standard/ISO 31000 Risk management principles and guidelines and Australian Standard 3745: Planning for emergencies in facilities.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Appropriate and adequate management arrangements are established for consultation and implementation of the Bush Fire Emergency Management and Evacuation Plan.	An Emergency Planning Committee is established to consult with residents (and their families in the case of aged care accommodation and schools) and staff in developing and implementing an Emergency Procedures Manual; and detailed plans of all emergency assembly areas including on site and off-site arrangements as stated in AS 3745:2010 are clearly displayed, and an annually emergency evacuation is conducted.	A Bushfire Emergency Management and Operations Plan will be prepared and will be made available to contractors as part of the standard induction procedures as outlined within the Garoo Solar Farm and BESS Bushfire Risk Assessment (ERM, 2025).	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

Source: Extract from Table 6.8a-6.8d, PBP 201

- Legend**
-  Project Area
  -  Development Footprint
  -  Asset Protection Zone
  -  Fence
  -  Waste Area
  -  Admin & First Aid
  -  Verandah
  -  Fire Hydrant
  -  Loading Area
  -  Fire Suppression
  -  Gas hazard area
  -  Generators and fuel store
  -  Maintenance containers
  -  Accommodation Area
  -  Amenities & Services
  -  Smoking Area
  -  Potable Water
  -  WWTP
  -  Car Parking
  -  Internal Road
  -  PV (Mounting Structure - Full Table)
  -  PV (Mounting Structure - Half Table)



Source:  
 Boundary: Client Provided (20250415)  
 Base Data: NSW DCDB/DTDB  
 Imagery: ESRI World Imagery

Coordinate System:  
 GDA2020 MGA Zone 56  
 Date: 05/11/2025  
 Created By: NB  
 Drawing Size: A3

0 50m

1:1,500

**F4-1 Asset Protection Zoning**

**Garoo SF and BESS Workforce Accommodation Camp  
 Bushfire Risk Assessment**

Greenpulse Solar Farm and BESS Pty Ltd



## 5. CONCLUSION

The proposed solar farm and temporary accommodation camp is located within a bushfire prone landscape and despite the application of mitigation measures, bushfire risk will remain, and it is therefore important that a Bushfire Emergency Management and Operations Plan is prepared in conjunction with relevant stakeholders, including NSW RFS, FRNSW, landowners and adjoining property owners.

Should a bushfire breach containment lines and threaten the solar farm assets, the infrastructure may sustain direct flame contact. Detailed mitigation measures have been developed to meet the relevant provisions outlined in Section 8.3.5 of PBP 2019 and to ensure that the Project does not present any increased risk of widespread fire across the landscape.

These mitigation measures will be applied for the life of the Project and have been outlined within the Garoo Solar Farm and BESS Bushfire Risk Assessment (ERM, 2025). Additional mitigation measures that relate to the accommodation camp are provided in **Table 5-1**

**TABLE 5-1 SUMMARY OF RECOMMENDED MITIGATION STRATEGIES AND ACTIONS**

Mitigation Strategy	Action	Timing
APZ	<p>In accordance with Table A1.12.1 of PBP 2019, a minimum 36 m APZ is to be established to the south and 40 m in all other directions.</p> <p>Vegetation fuels throughout the solar farm, and all areas outside of the accommodation camp fence are to be maintained in a minimal condition by grazing (or slashing). Inside of the fenced accommodation camp, the grass will be maintained by slashing or mowing as required.</p> <p>The APZ will also include the car parking, internal perimeter roads and the surrounding solar arrays that will be progressively established within the remainder of the Project Area.</p>	The APZ will be constructed as the first stage of development and maintained until the accommodation camp is decommissioned.
Construction Standards	<p>The accommodation buildings will be designed to meet BAL 12.5 under AS 3959.</p> <p>Security fencing around the perimeter of the accommodation compound will be non-combustible.</p>	During construction and maintained until the accommodation camp is decommissioned.
Access Roads	Access for the temporary accommodation camp will be designed in accordance with Table 6.8b PBP	During construction and maintained until the accommodation camp is decommissioned.
Utilities (Water, gas, electricity)	The provision of all utilities (water, gas and electricity) for the temporary accommodation camp will be designed in accordance with Table 6.8c PBP.	During construction and maintained until the accommodation camp is decommissioned.

### IMPORTANT DISCLAIMER:

*Any representation, statement of opinion, or advice expressed or implied in the bushfire assessment will be made in good faith on the basis that ERM employees and / or agents are not liable (whether by reason of negligence, lack of care or any other reason) to any person, company or their agents for any damage or loss whatsoever which has occurred or may occur in relation to that person taking (or not taking) action in respect of any representation, statement or advice provided within the bushfire assessment*

## 6. REFERENCES

Tamworth BFMC. (2020). *Bushfire Risk Management Plan*. Retrieved from <https://www.rfs.nsw.gov.au/plan-and-prepare/managing-bush-fire-risk/bush-fire-management-committees/tamworth>



APPENDIX A

COMPLIANCE WITH THE OBJECTIVES OF  
PLANNING FOR BUSHFIRE PROTECTION  
GUIDELINES

## COMPLIANCE WITH THE OBJECTIVES OF PLANNING FOR BUSHFIRE PROTECTION 2019

Objective	Comment	Can comply
<b>Objectives of Chapter 1 (Part 1.1)</b>		
Afford buildings and their occupants protection from exposure to a bush fire;	A <i>minimum</i> separation distance of 36m-40m is recommended in accordance with Table A1.12.1 of PBP 2019 noting that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide for a defensible space to be located around buildings;	A <i>minimum</i> separation distance of 36m-40m is recommended in accordance with Table A1.12.1 of PBP 2019 noting that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;	A <i>minimum</i> separation distance of 36m-40m is recommended in accordance with Table A1.12.1 of PBP 2019 noting that some bushfire risk will always remain and that some of the infrastructure may be subject to direct flame contact.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Ensure that appropriate operational access and egress for emergency service personnel and occupants is available;	A single access point will be constructed as the first stage of development and will be maintained for the life of the Project. An additional emergency access gate is recommended to be installed from Bulls Road to provide emergency access to the south western portion of the site. All roads will be maintained to the minimum standards as outlined within PBP 2019.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Provide for ongoing management and maintenance of BPMs; and	Normal property maintenance and ongoing grazing will ensure that bush fire protection measures are maintained. A Bush Fire Emergency Management and Operations Plan will be developed prior construction.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Ensure that utility services are adequate to meet the needs of firefighters	Normal property maintenance will ensure that bush fire protection measures including the provision of adequate water supply are maintained. The final water storage requirements will be confirmed in consultation with NSW RFS and FRNSW following project approval and detailed design.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No



ERM HAS OVER 160 OFFICES ACROSS THE FOLLOWING  
COUNTRIES AND TERRITORIES WORLDWIDE

Argentina	The Netherlands
Australia	New Zealand
Belgium	Peru
Brazil	Poland
Canada	Portugal
China	Romania
Colombia	Senegal
France	Singapore
Germany	South Africa
Ghana	South Korea
Guyana	Spain
Hong Kong	Switzerland
India	Taiwan
Indonesia	Tanzania
Ireland	Thailand
Italy	UAE
Japan	UK
Kazakhstan	US
Kenya	Vietnam
Malaysia	
Mexico	
Mozambique	

**ERM's Sydney Office**

Level 14, 207 Kent St  
Sydney NSW 2000

T: +61 2 8584 8888

**[www.erm.com](http://www.erm.com)**