

Bushfire Assessment Report

Proposed: Battery Energy Storage System

At:
474 Calala Lane,
Calala (Lot 17 DP 629969)

Reference Number: 230179C

8th May 2024

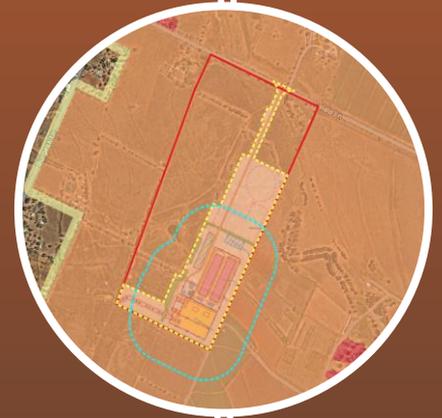


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The onus is on the applicant to cross reference this document with any conditions of consent issued or any requirements supplied by the NSW Rural Fire Service following development approval. BCBHS can review and cross reference these documents however the onus is on the applicant to provide them to us and request this review – Building Code and Bushfire Hazard Solutions Pty. Ltd. is not in a position to track every development approval and we rely upon the applicant to undertake this role as project co-ordinator.

Where any discrepancy between this document and the development approval or the NSW Rural Fire Service requirements is found, the conditions of consent always take precedence until such time as an application to review, amend or vary these conditions is approved.

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Version Control				
Version	Date	Author	Reviewed by	Details
1	16/06/2023	Andrew Muirhead	David McMonnies	Draft Report
2	20/07/2023	Andrew Muirhead		Final Report
3	5/04/2023	Duncan Armour	Andrew Muirhead	Plan Update
4	8/04/2024	Andrew Muirhead		Plan Update

List of Abbreviations:

APZ	Asset Protection Zone
AS3959	Australian Standard 3959 'Construction of buildings in bushfire-prone areas' – 2018
BAL	Bushfire Attack Level
BESS	Battery Energy Storage System
BPMs	Bushfire Protection Measures
BPLM	Bushfire Prone Land Map
Council	Tamworth Regional Council
ELVIS	Elevation and Depth Foundation Spatial Data
EP&A Act	<i>Environmental Planning and Assessment Act - 1979</i>
FRNSW	Fire and Rescue NSW
IPA	Inner Protection Area
MW	Megawatt
NASH	National Association of Steel-framed Housing
NCC	National Construction Code
NP	National Park
NSP	Neighbourhood Safer Place
OPA	Outer Protection Area
PBP	<i>Planning for Bush Fire Protection – 2019</i>
ROW	Right of Way
RF Act	<i>Rural Fires Act - 1997</i>
RFS	NSW Rural Fire Service
SEPP	State Environmental Planning Policy
SFPP	Special Fire Protection Purpose
SSD	State Significant Development
SWS	Static Water Supply

Executive Summary:

This Bush Fire Assessment Report has been prepared by Building Code and Bushfire Hazard Solution P/L commissioned by Mecone on behalf of the Proponent, Equis Energy (Australia) Projects (Ngumi 4) Pty Ltd as Trustee for Equis Energy Australia Ngumi 4 Holding Trust (**the Applicant**). It accompanies an Environmental Impact Statement (**EIS**) in support of a State Significant Development Application which has been amended in response to submissions for stand-alone 300 megawatt (MW)-600MWh battery energy storage system (BESS) at 474 Calala Lane, Calala (**the site**).

Through the State Significant Development Application (**SSDA**) process, the applicant is seeking consent for:

- the construction and operation of a battery energy storage system with an estimated capacity of 300 MW / 600 MWh; and
- associated infrastructure, including connection to existing transmission infrastructure.

The Minister for Planning, or their delegate, is the consent authority for the SSDA and this application has been lodged with the NSW Department of Planning and Environment (**NSW DPE**) for assessment.

In this instance the site is depicted on Tamworth Regional Council's Bushfire Prone Land Map (**BPLM**) as containing designated Category 3 Vegetation. The site is therefore considered 'bushfire prone'.

In relation to this application one of the key issues identified in the Secretary's Environmental Assessment Requirements (**SEARs**) is an assessment of potential hazards and risks, which lists bushfire as a consideration. Therefore, this assessment details proposed bush fire protection measures and demonstrates compliance with *Planning for Bush Fire Protection 2019* (**PBP**).

The vegetation identified as posing a hazard was found to be located in the northern and western portion of the subject site and to the south and east within neighbouring allotments.

As these neighbouring properties present a potential threat at times, it is appropriate to assess them as containing Grassland hazards.

The location of the proposed infrastructure is such that the available Asset Protection Zones (APZs) exceed the minimum required for new development of this nature under PBP.

It is our opinion the proposal can satisfy all relevant specifications and requirements of *Planning for Bush Fire Protection 2019*.

It has been assumed that the proposal will be constructed to meet the current requirements of the relevant Australian Standards for such a project including battery storage systems and all electrical distribution systems.

1.0 Introduction

This Bush Fire Assessment Report has been prepared by Building Code and Bushfire Hazard Solution P/L commissioned by Mecone on behalf of the Proponent, Equis Energy (Australia) Projects (Ngumi 4) Pty Ltd as Trustee for Equis Energy Australia Ngumi 4 Holding Trust (**the Applicant**). It accompanies an Environmental Impact Statement (**EIS**) in support of a State Significant Development Application which has been amended in response to submissions for stand-alone 300 megawatt (MW)-600MWh battery energy storage system (BESS) at 474 Calala Lane, Calala (**the site**).

Through the State Significant Development Application (**SSDA**) process, the applicant is seeking consent for:

- the construction and operation of a battery energy storage system with an estimated capacity of 300 MW / 600 MWh; and
- associated infrastructure, including connection to existing transmission infrastructure.

There is a more detailed project description within the Amendment Report.

In this instance the site is depicted on Tamworth Regional Council's Bushfire Prone Land Map (BPLM) as containing designated Category 3 Vegetation. The site is therefore considered 'bushfire prone'.

In relation to this application on of the key issues identified in the Secretary's Environmental Assessment Requirements (**SEARs**) is an assessment of potential hazards and risks, which lists bushfire as a consideration. Therefore, this assessment details proposed bush fire protection measures and demonstrates compliance with *Planning for Bush Fire Protection 2019* (**PBP**).

As the development is on bushfire prone land this report has been prepared to address the relevant specifications and requirements as detailed in PBP.

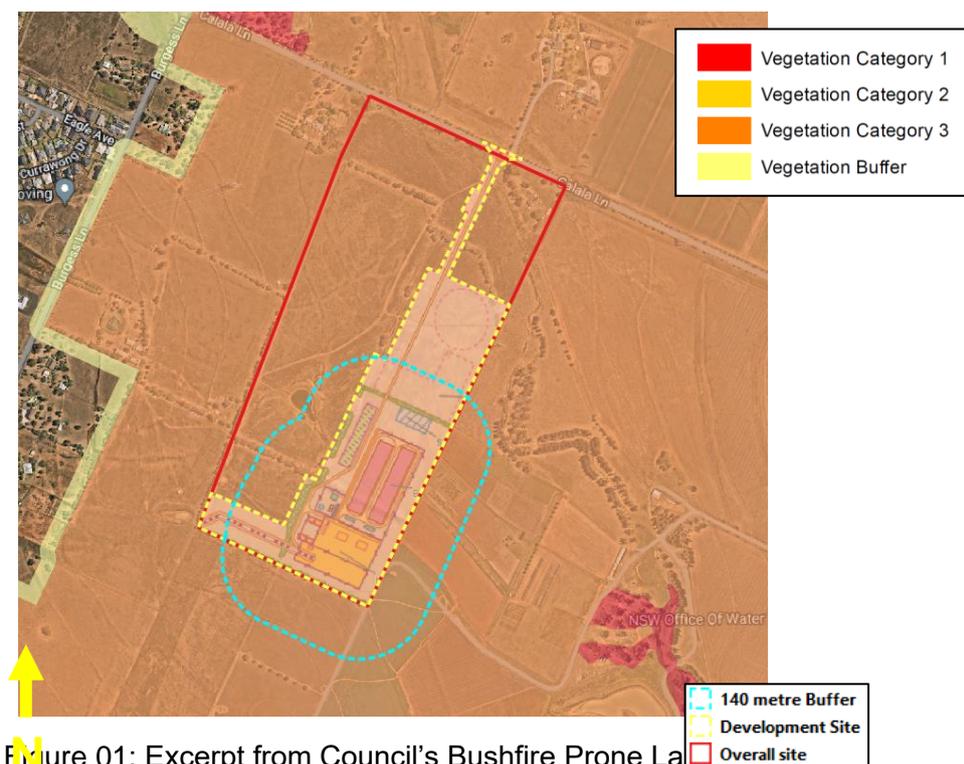


Figure 01: Excerpt from Council's Bushfire Prone Land

2.0 Purpose of Report

The purpose of this Bushfire Assessment Report is to provide an independent bushfire assessment of the subject site and surrounding area and to determine if the State Significant Development will comply with the relevant specifications and requirements of Planning for Bush Fire Protection 2019.

This report specifically addresses the bushfire requirements of the Concept Proposal of the issued Secretary’s Environmental Assessment Requirements (SEARs).

3.0 Scope of this Report

The scope of this report is limited to providing a bushfire assessment and recommendations for the subject property. Where reference has been made to the surrounding lands, this report does not purport to directly assess those lands; rather it may discuss bushfire impact and/or progression through those lands and possible bushfire impact to the subject property.

4.0 Aerial view & Masterplan

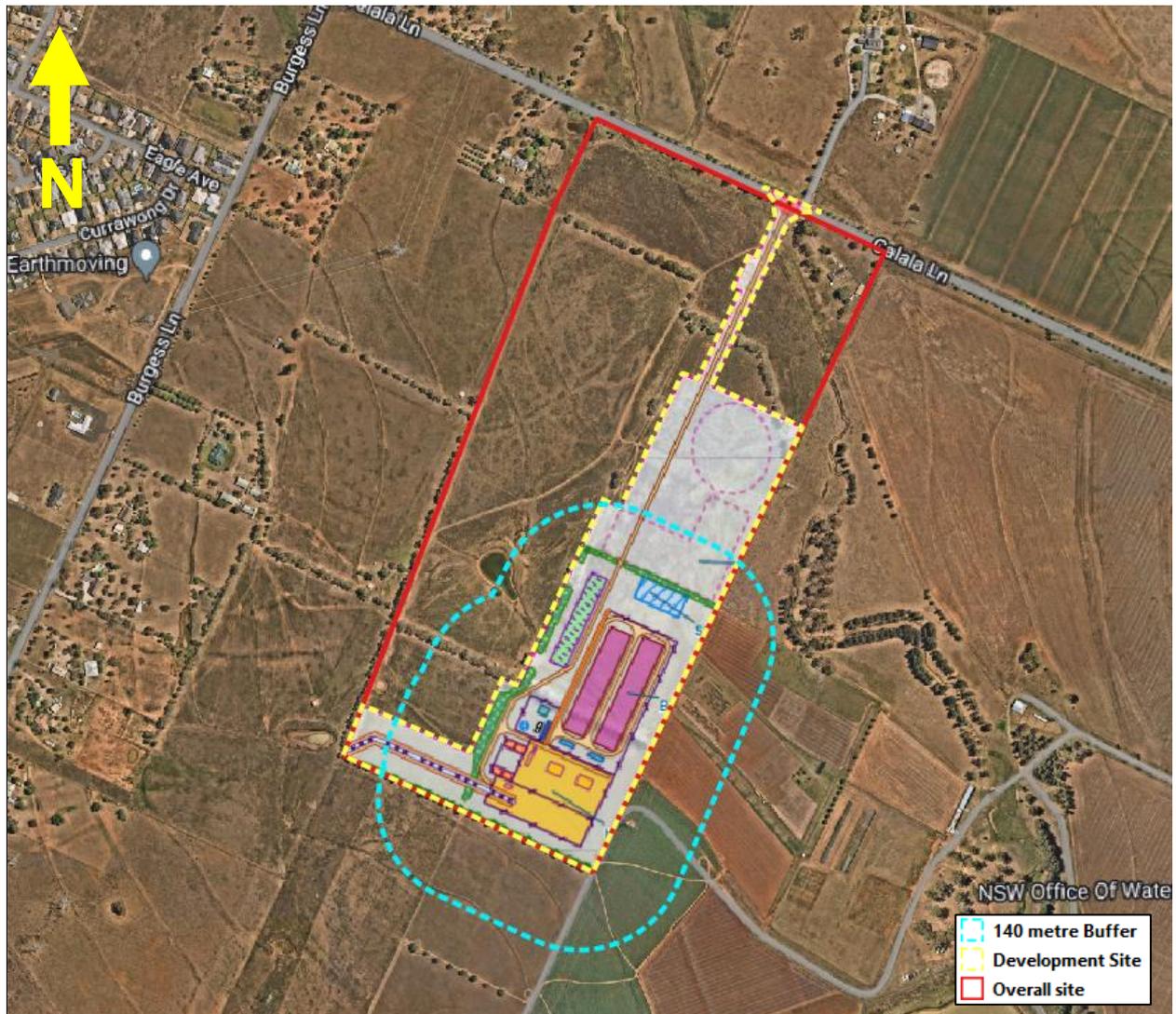


Figure 02: Aerial view of the subject site - Courtesy Nearmap – January 2024



Calala BESS
300MW - 600MWh

Site layout
Part of Lot: 17/DP628969

- Legend**
- Development extent
 - Subject site
 - Property parcel
 - Existing transmission line
 - Voltage (kV)
 - Proposed design
 - Fence
 - Noise wall
 - Transmission line - underground (330 kV)
 - Access track
 - Battery enclosure
 - Fire water tank
 - Grassed landscape mound
 - Harmonic filter
 - High voltage connection asset
 - Medium voltage switchgear
 - Medium voltage transformer
 - O&M and facility control room
 - Stormwater basin
 - Switch room & control room
 - Transmission line easement
 - Vehicle parking
 - Warehouse
 - Retained tree line
 - Landscape planting

Document / Access references
 This plan: CA/ADP/300-600MWh/0007
 Site plan: CA/ADP/300-600MWh/0007-A_12
 Scale: 1:1,000
 Spatial Reference: GDA2020 MGA Zone 56

Note: This site is subject to development approval only and subject to final design changes. It contains highly confidential and proprietary information but are of independent value to you in relation to your business and are not intended to be disseminated, amended, disclosed or distributed in any form without the prior written consent of EQS.

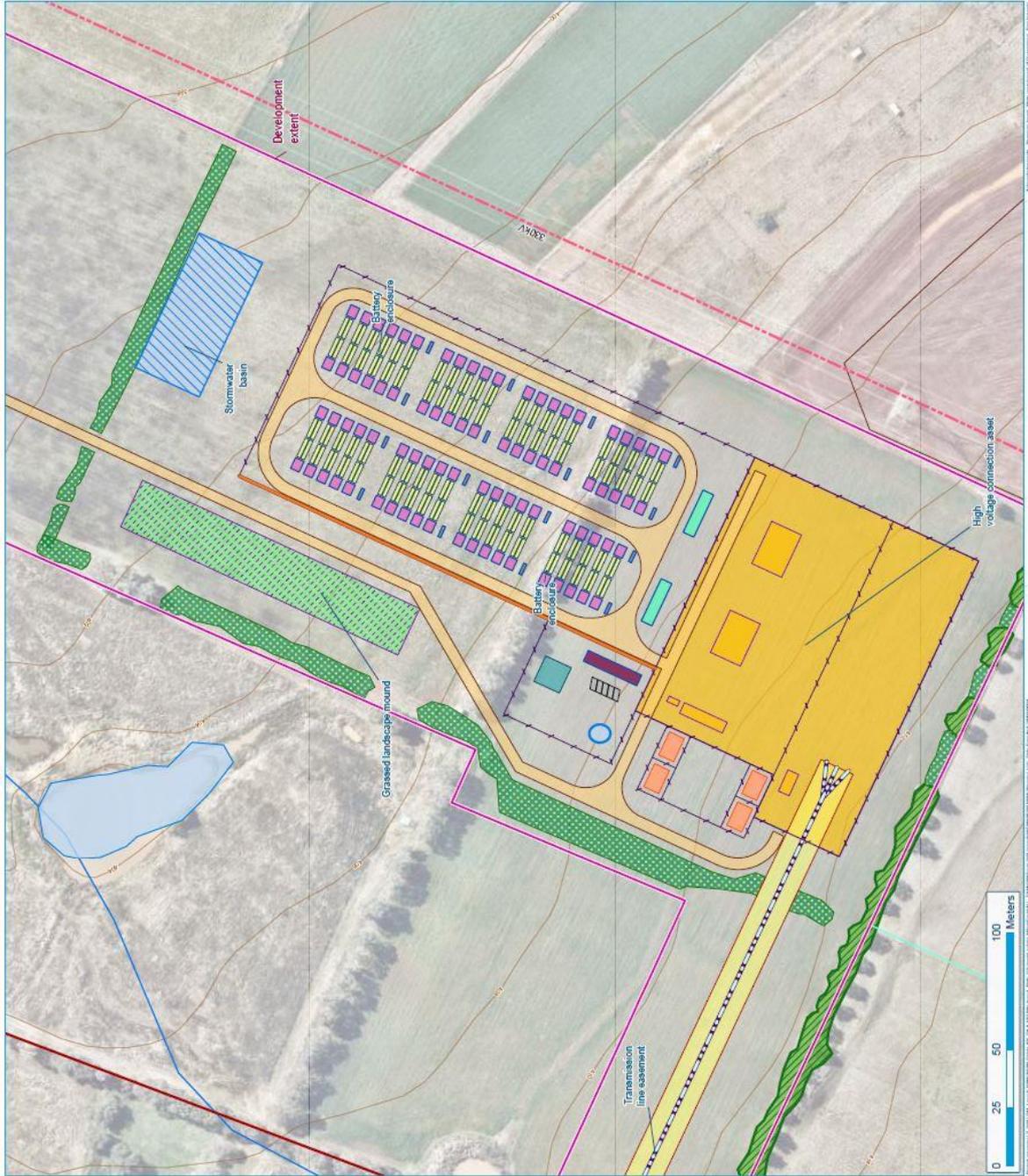


Figure 03: Proposed Site Layout

5.0 Site Assessment

A detailed site inspection has been undertaken of the subject site by a representative of Building Code & Bushfire Hazard Solutions P/L. In addition to the collected site data this assessment has relied on:

- Aerial imagery of the subject area (NSW Spatial Services & Nearmap);
- 1 metre contour mapping of the subject area (Elevation and Depth Foundation Spatial Data – Geoscience Australia)
- NSW Planning Portal Spatial Viewer
- Vegetation Mapping (Vegetation NSW)
- Site Layout prepared by EQUIS, NSW BESS Calala A3L DA A-102, dated 25th March 2024

5.01 Location

The subject site comprises of one (1) existing allotment legally identified as Lot 17 DP 629969.

The site is located at 474 Calala Lane, Calala (refer to Figure 02).

The overall subject site is approximately 36 hectares in size.

The property is located within Tamworth Regional Council's local government area and zoned RU4: Primary Production Small Lots.

The site is within the Northern Slopes Fire Weather District and is captured by the Tamworth Bush Fire Risk Management Plan 2020.

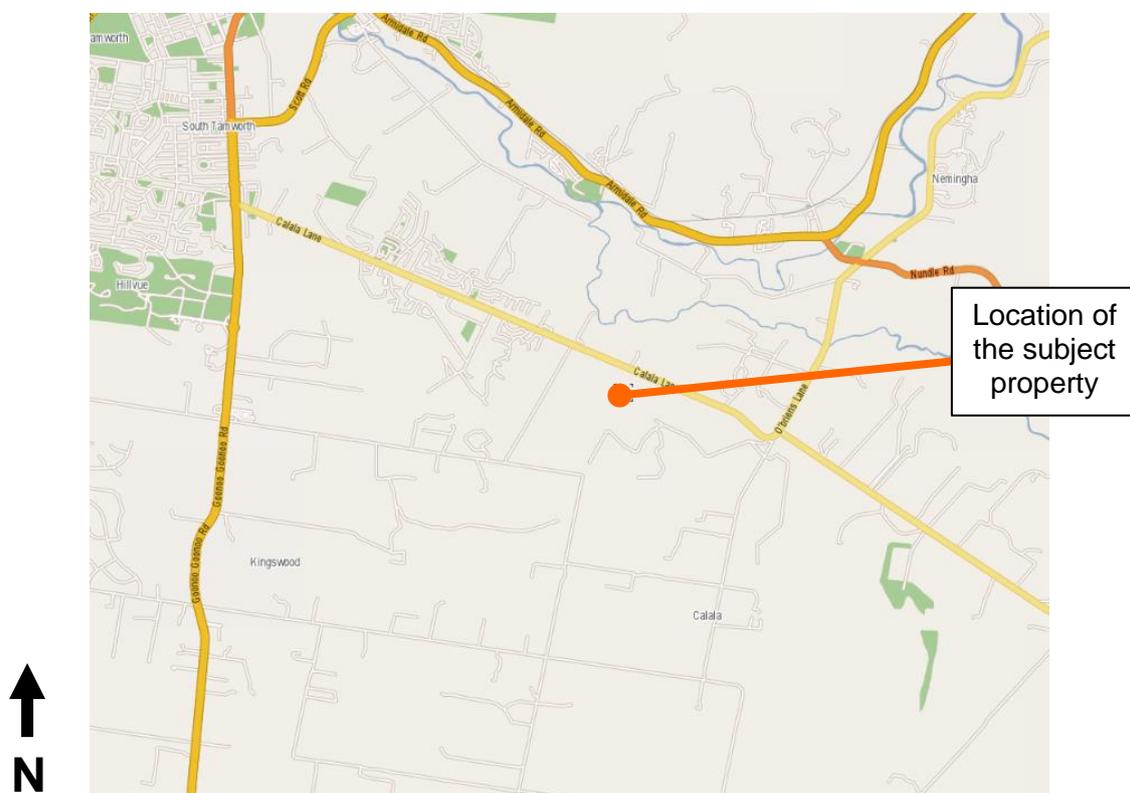


Figure 04: Extract from street-directory.com.au

5.02 Vegetation

The vegetation structure, connectivity and attributes are fundamental contributors to bushfire behaviour and its movement through the landscape.

As part of this assessment we have considered the potential bushfire runs that currently exist into the site, as well as the potential fire behaviour and impacts from the retained vegetation within the site.

The vegetation within the subject site and neighbouring allotments was found to comprise of periodic management, crops and grazing.

The vegetation in the broader landscape was found to be similar to that of the subject property and neighbouring allotments.

In accordance with Appendix 1 'Site Assessment Methodology' of PBP we have undertaken an assessment of all vegetation formations within 140 metres of the development site for each aspect as per Keith (2004).

Due to the periodic management and as a conservative assessment for the purpose of Planning for Bush Fire Protection 2019 we have addressed all lands outside the proposed development footprint to be Grassland hazards as shown in Figure 05.

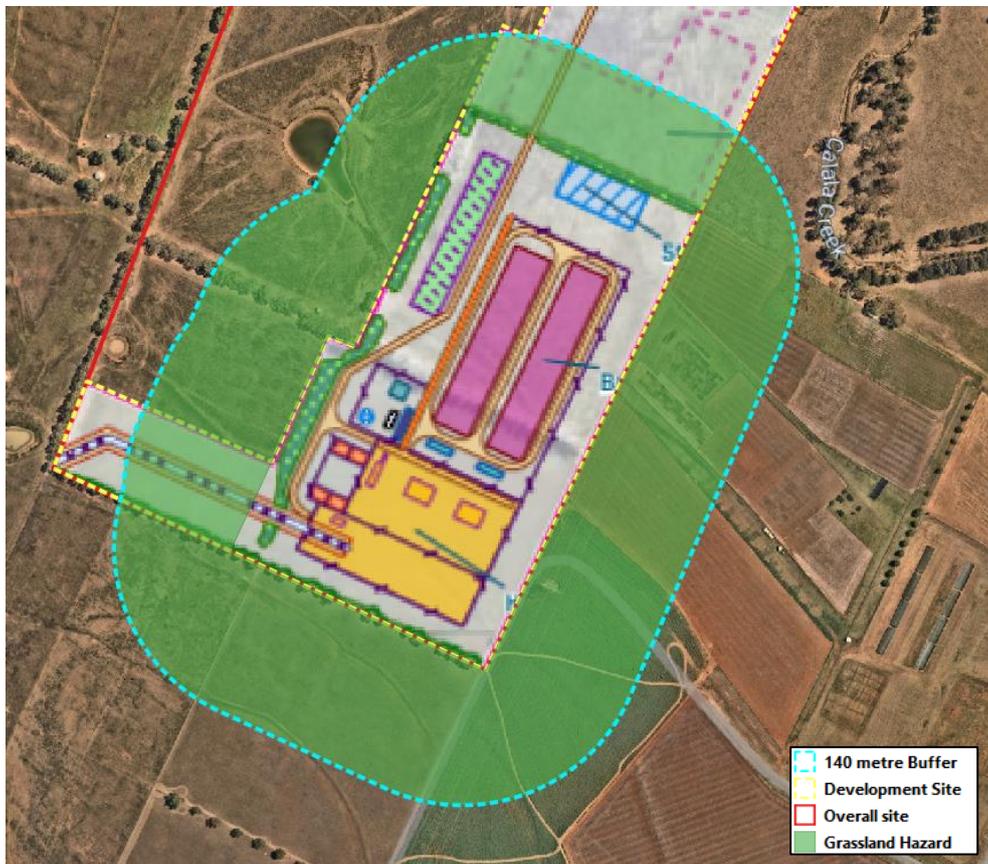


Figure 05: Aerial view of the locality overlaid with vegetation assessment within the 140m assessment area

5.03 Slope and Topography

The slope of the land under the classified vegetation has a direct influence on the forward rate of spread, fire intensity and radiant heat exposure. The effective slope is considered to be the slope under the classified vegetation which will most significantly influence bushfire behaviour toward the development site.

In accordance with A1.4 'Determine slope' of PBP the slope assessment is to be derived from the most detailed contour data available.

The slope that would **most significantly** influence bushfire behaviour was determined from topographic imagery (1 metre contours sourced from ELVIS - Geoscience Australia) in conjunction with site observations and are shown in the Compliance Tables in section 4.0 of this report.

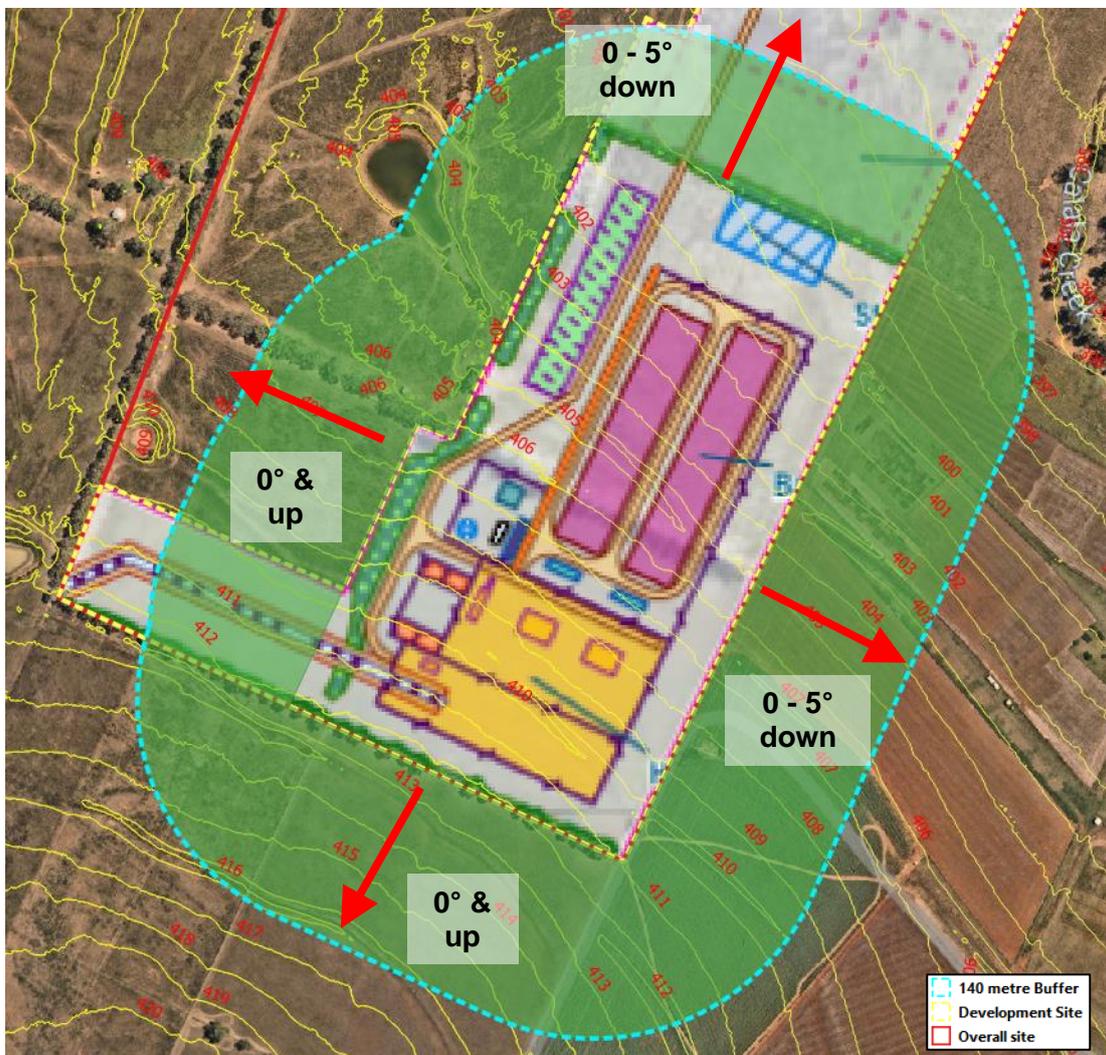


Figure 06: 1 metre LiDar contours of the subject area

5.04 Fire Weather

All development which attracts an Asset Protection Zone under PBP requires the identification of the relevant Fire Danger Index (FDI). The FDI required to be used for development assessment purposes is based on the local government boundaries, being Tamworth Regional Council in this instance.

In accordance with the NSW Rural Fire Service publication 'NSW Local Government Areas FDI' (2017) Tamworth Regional Council form part of the Greater Sydney Region Fire Weather District and attracts an FFDI of 80.

As the identified hazard is grassland, Table 5.1.4a of PBP was used to determine a Grassland Fire Danger Index (GFDI) of 110.

5.05 Fire History

There are areas within NSW which have significant fire history and are recognised as known fire paths. While the fire history is more commonly considered as part of strategic planning (to ensure future development is not exposed to an unacceptable risk), it is useful to consider at a Development Application phase to ensure the land is suitable for development in the context of bushfire risk.

In this instance the closest recorded wildfire was found to be located >8.5 kilometres to the northwest of the subject site (source NPWS Fire History dataset). This fire occurred in the 2006-07 fire season.

The Tamworth BFMC area has on average 270 bush fires 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*
- *Welding, grinding and associated construction activities*

(Tamworth BFRMP 2020).

The subject site is therefore not considered to be within a known fire path.

6.0 Bushfire Assessment

6.01 Planning for Bush Fire Protection - 2019

Properties considered to be affected by possible bushfire impact are determined from the local Bushfire Prone Land Map as prepared by Council and or the Rural Fire Service.

In this instance the subject site is depicted on Tamworth Regional Council's Bushfire Prone Land Map (BPLM) as containing designated Category 3 Vegetation. The subject site is therefore considered 'bushfire prone'.

In relation to this application of the issued Secretary's Environmental Assessment Requirements (SEARs) requires a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection 2019 (PBP).

The proposal has therefore been assessed against the aim and objectives detailed in Chapter 1 'Introduction' and the specific objectives and bushfire protection measures detailed in Chapter 8 'Other Development' of PBP.

6.02 Bushfire Protection Measures

While BESS are not specifically addressed in PBP we have addressed section 8.3.5 'Wind and solar farms' of PBP as it is the most appropriate section and outlines the specific Bushfire Protection Measures (BPMs) applicable to this kind of development, including APZs, Access, Services & Emergency Management Plan.

The following section addresses each BMP and the proposals compliance or otherwise.

Asset Protection Zones

In accordance with section 8.3.5 'Wind and solar farms' of PBP Asset Protection Zones for structures are required to be a minimum of 10 metres.

The proposed APZs to the infrastructure are 10 metres to the north, 25 metres to the east, 20 metres to the south and 10 metres to the west.

Therefore, the APZs exceed the minimum required APZs as stated in s8.3.5 of PBP.

It is acknowledged that there is a temporary office which will only be used during the construction phase of the BESS.

The available APZs consist of grounds entirely within the Calala BESS Extent as shown on layout plan.

All APZs within the subject site will be maintained in accordance with an Inner Protection Area as detailed in Appendix 4 of *Planning for Bush Fire Protection 2019* and the NSW Rural Fire Service publication 'Standards for Asset Protection Zones'.

We have reviewed the amended landscape design (revision 3 dated 4 April 2024) and it has the ability to satisfy the APZ recommendations within this report.

Construction

Section 8.3.5 of PBP does not have any bushfire construction requirements for BESS.

Access

Access to the subject property is available from Calala Lane to the north. The proposed layout provides an access track around the battery enclosures.

The proposed access track is able to satisfy the requirement of section 8.3.5 of PBP which requires road access to the site.

Attending fire appliances also have direct and comprehensive vehicle access to the identified hazards via the proposed access track.

The proposed access provisions are considered adequate to provide safe operational access for emergency service personnel in suppressing a grassfire, while persons are accessing or egressing the area.

Services – Water, electricity & gas

The proposal includes a steel water tank with a capacity of approximately 300,000 Litres.

This tank will be fitted with a 65 mm storz fitting.

The proposed water supply is considered adequate for the replenishment of attending fire services.

Recommendations will be included to ensure compliance with any new electricity and gas services.

Bushfire Emergency Management and Operations Plan

The intent of the Bushfire Emergency Management and Operations Plan measure is to provide suitable emergency and evacuation arrangements.

Section 8.3.5 of PBP states that it should include the following:

- detailed measures to prevent or mitigate fires igniting;
- work that should not be carried out during total fire bans;
- availability of fire-suppression equipment, access and water;
- storage and maintenance of fuels and other flammable materials;
- notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate;
- and appropriate bush fire emergency management planning.

This assessment includes a recommendation that the Bushfire Emergency Management and Evacuation Plan to be prepared. This recommendation satisfies the acceptable solutions of PBP.

6.04 Aim & Objectives

The following table details the aim and objectives of *Planning for Bush Fire Protection 2019* and the proposals ability to comply.

Aim / Objective	Comment
<p><i>The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment.</i></p>	<p>With the inclusion of the recommendations made herein it is of our opinion that the aim of PBP has been satisfied.</p>
<p><i>(i) afford buildings and their occupants protection from exposure to a bush fire;</i></p>	<p>The proposed APZs meet and in most cases exceed the requirements within PBP.</p> <p>The proposal meets the requirements of s8.3.5 of PBP and therefore afford occupants protection from exposure to a bush fire.</p>
<p><i>(ii) provide for a defensible space to be located around buildings;</i></p>	<p>The proposed APZs meet and in most cases exceed the requirements within s8.3.5 of PBP providing an appropriate defensible space.</p>
<p><i>(iii) provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings;</i></p>	<p>The proposed APZs meet and in most cases exceed the requirements within s8.3.5 of PBP.</p> <p>In conjunction with the application of the construction measures outlined herein the likely fire spread is prevented.</p>
<p><i>(iv) ensure that appropriate operational access and egress for emergency service personnel and occupants is available;</i></p>	<p>Attending fire appliances have direct and comprehensive vehicle access to the identified hazards via proposed access track providing suitable operation access and egress in accordance with s8.3.5 of PBP.</p>

Aim / Objective	Comment
<p>(v) provide for ongoing management and maintenance of bush fire protection measures, (BPMs); and</p>	<p>The Asset Protection Zones within the subject site are to be maintained in accordance with the NSW Rural Fire Service’s document ‘Standards for Asset Protection Zones’ and Appendix 4 of <i>Planning for Bush Fire Protection 2019</i>.</p>
<p>(vi) ensure that utility services are adequate to meet the needs of firefighters.</p>	<p>proposed steel tank will be adequate for the replenishment of attending emergency services in accordance with PBP.</p>

It is of our opinion that the proposal can satisfactorily comply with the aim and objectives of Planning for Bush Fire Protection 2019.

7.0 Recommendations

The following recommendations are provided as the minimum necessary for compliance with Planning for Bush Fire Protection – 2019. Additional recommendations are provided to supplement these minimum requirements where considered necessary.

Asset Protection Zones

1. That at the commencement of construction and in perpetuity, all grounds Calala BESS Extent shall be maintained as an Inner Protection Area as detailed in the NSW Rural Fire Service's document 'Standards for Asset Protection Zones' and Appendix 4 of *Planning for Bush Fire Protection 2019*.

Emergency Management

2. That prior to occupation a bushfire emergency management and operations plan is prepared consistent with the NSW Rural Fire Service *Guide to developing a Bush Fire Emergency Management and Evacuation Plan*. This assessment shall also include the additional detail required within s8.3.5 of *Planning for Bush Fire Protection 2019*

Services (where applicable)

Water:

3. That the static water supplies shall comply with the following requirements of *Planning for Bush Fire Protection 2019* as applicable;
 - a connection for firefighting purposes is located within the IPA or non-hazard side and away from the structure; 65mm Storz outlet with a ball valve is fitted to the outlet;
 - ball valve and pipes are adequate for water flow and are metal;
 - supply pipes from tank to ball valve have the same bore size to ensure flow volume;
 - underground tanks have an access hole of 200mm to allow tankers to refill direct from the tank;
 - a hardened ground surface for truck access is supplied within 4m;
 - above-ground tanks are manufactured from metal;
 - raised tanks have their stands constructed from non-combustible material or bush fire-resisting timber (see Appendix F of AS 3959);
 - unobstructed access can be provided at all times;
 - underground tanks are clearly marked;
 - tanks on the hazard side of a building are provided with adequate shielding for the protection of firefighters;
 - all exposed water pipes external to the building are metal, including any fittings;

Electricity:

4. Any new electrical services must comply with *Planning for Bush Fire Protection 2019*, specifically:
 - where practicable, electrical transmission lines are underground.
 - where overhead electrical transmission lines are proposed:
 - lines are installed with short pole spacing (30 metres), 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 *ISSC3 Guideline for Management Vegetation Near Power Lines*.

8.0 Conclusion

Through the State Significant Development Application (SSDA) process, the applicant is seeking approval for stand-alone 300 megawatt (MW)-600MWh battery energy storage system (BESS) at 474 Calala Lane, Calala.

In this instance the site is depicted on Tamworth Regional Council's Bushfire Prone Land Map (BPLM) as containing designated Category 3 Vegetation and Vegetation Buffer. The site is therefore considered 'bushfire prone'.

In relation to this application of the issued Secretary's Environmental Assessment Requirements (SEARs) requires a bush fire assessment that details proposed bush fire protection measures and demonstrates compliance with Planning for Bush Fire Protection 2019 (PBP).

In accordance with the bushfire safety measures contained in this report, and consideration of the site specific bushfire risk assessment it is our opinion that when combined, they will provide a reasonable and satisfactory level of bushfire protection to the subject development.

It is of our opinion that the proposal satisfies all relevant specifications and requirements of PBP.

We are therefore in support of the development.

Should you have any enquiries regarding this project please contact our office.

Prepared by
Building Code & Bushfire Hazard Solutions



Andrew Muirhead

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Diploma of Engineering
FPA Australia BPAD Level 2 Accredited Practitioner
BPAD Accreditation No. BPAD46966



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BPAD Accreditation No. BPAD9400



9.0 Annexure 01

List of Referenced Documents

Australian Building Codes Board (2019). *National Construction Code Volume One - Building Code of Australia*. ABCB

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Rural Fire Service NSW (2005). *Standards for Asset Protection Zones*

Site Layout prepared by EQUIS, NSW BESS Calala A3L DA A-102, dated 25th March 2024

Standards Australia (2018). *AS3959:2018 Construction of buildings in bushfire-prone areas*.

Tamworth Bush Fire Management Committee (2020). *Bush Fire Risk Management Plan*

Acknowledgements to:

Geoscience Australia
Street-directory.com.au
Nearmap

Attachments

NIL