

Bushfire Assessment Report

YANCO Battery Energy Storage System (BESS)

State Significant Development SSD-67478479

Yanco, NSW

Applicant: ACEnergy

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Prepared for:

The applicant ACEnergy

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EXECUTIVE SUMMARY

ACEnergy proposes to develop the Yanco battery energy storage system (BESS) and associated infrastructure (the Project) at the landholding Lots 516 and 521 DP751745, 120 Houghton Road, Yanco (the site), in the Leeton Shire Council local government area (LGA), Murrumbidgee Irrigation Area (MIA), New South Wales (NSW).

The Project is approximately 1.5km southwest of the township of Yanco. The Development site was selected due to its position adjacent to existing transmission infrastructure, the proximity to the existing TransGrid Yanco Substation, and its suitable physical conditions for a BESS Project. The Project would also include upgrade connection works to Yanco Substation in the TransGrid owned landholding (Lot 10, DP844961).

The Project is a State Significant Development (SSD-67478479) pursuant to Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP).

This assessment has been prepared to satisfy the Secretary's Environmental Assessment Requirements (SEARs) for the Project, which requires an assessment of potential hazards and risks, including an assessment of bushfire risk against the NSW Rural Fire Service (RFS) Planning for Bushfire Protection 2019.

This Bushfire Assessment Report has been prepared by a suitably qualified bushfire consultant (Cool Burn Pty Ltd) to accompany an Environmental Impact Statement (EIS) for the Project.

EXISTING CONDITIONS

The Project is being planned on existing rural residential property (agricultural managed lands) - used for irrigation agriculture. The landholding is not mapped as bushfire prone land, however, the potential for bushfire risk (curing crops and grassfire) is present.

The Development site is approximately 10.3 hectares (ha) and comprises one property (Lots 516 and 521 DP 751745), proposed 132kV connection and upgrade works to Yanco Substation in the TransGrid owned landholding.

The site is bounded by the Houghton Road to the north, and Hume Road to the east.

A Preliminary Hazard Analysis (PHA) has been prepared for the Project. A preliminary risk screening will determine whether the proposed development is considered as 'potentially

hazardous’ in the context of State Environmental Planning Policy (Resilience and Hazards) 2021 and whether the project is considered as ‘potentially hazardous’ within the meaning of Resilience and Hazards SEPP.

ASSESSMENT OF BUSHFIRE RISK

The site is identified at bushfire risk predominantly from potential grassland fire impacts. The topography surrounding the Development site is flat.

The Project design incorporates the following features to mitigate bushfire risk:

- Surrounding landscape has existing managed grasslands/agricultural lands.
- Construction buffers surrounding proposed infrastructure provide for suitable asset protection zones (APZ).
- Construction standards will be commensurate with the bushfire risk.
- Existing and proposed access provisions.
- Proposed on-site water supplies.
- Emergency management and evacuation planning.

EVALUATION OF THE PROJECT

The proposed combination of bushfire protection measures (APZ, access provisions, water supplies, construction standards and emergency management planning - summarised in Table 1 Chapter 5.7 of this report) would mitigate the impact to life and property from a grassland fire risk and serves to mitigate the risk of the BESS causing a bushfire.

The development demonstrates acceptable performance commensurate with NSW RFS Planning for Bushfire Protection 2019.

Definitions and Abbreviations

Item	Definition
APZ	Asset Protection Zone
Associated dwelling	A residence whose owners have all or part of their property included in the Project.
BAL	Bushfire Attack Level
BEMOP	<i>Bushfire and Emergency Management Operation Plan</i>
BESS	Battery energy storage system
BFDB	Bushfire Design Brief
BFPL	Bushfire Prone Land
CWO	Central-West Orana
DC	Direct current
EIS	Environmental Impact Statement
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EPA	NSW Environment Protection Authority
FDR	Fire Danger Rating
FPAA	Fire Protection Association Australia
FSS	Fire Safety Study
ha	Hectares
HIPAPs	Hazardous Industry Planning and Assessment Papers
IPA	Inner Protection Area
km	Kilometres
kV	Kilovolt
LEP	Local Environmental Plan
LGA	Local government area
MIA	Murrumbidgee Irrigation Area
MW	Megawatts
NCC	National Construction Code
NEM	National Energy Market
NSW	New South Wales
NSW RFS	NSW Rural Fire Service
PBP 2019	Planning for Bushfire Protection 2019
Planning Systems SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
PV	Photovoltaic
RF Act	<i>Rural Fires Act 1997</i>
REZ	Renewable Energy Zone
SEARs	Secretary's Environmental Assessment Requirements
SSD	State significant development
Study area	The area of assessment for baseline surveys and studies conducted for the EIS.
The Project	An all-inclusive term covering the entirety of the Yanco Battery Energy Storage System. This refers to all of the elements that comprise the Project for which approval is sought

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1. INTRODUCTION

ACEnergy, a Victorian based renewable energy developer, are seeking a bushfire assessment to assist with the development application for a large-scale battery project (the Project) at Yanco New South Wales (NSW), which is a Stage Significant Development (SSD). The Project proposes to develop a battery energy storage system (BESS) and associated infrastructure and network connection in the Leeton Shire Council Local Government Area (LGA) of NSW.

The Project would connect to the National Energy Market (NEM) via a 132 kilovolt (kV) underground cable or overhead transmission line to the existing Transgrid Yanco Substation (Yanco Substation) located adjacent to the Development site in the northeast.

The Project would be located at 120 Houghton Road, Yanco (Lots 516 and 521 DP751745) approximately 1.5 kilometres (km) southwest of the Yanco township (**Figure 1**). The Project would also include upgrade works to Yanco Substation in the Transgrid landholding (Lot 10, DP844961).

The Project is a State Significant Development (SSD-67478479) pursuant to Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP), and a development application for the Project is required to be submitted under Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

1.1 SEARS

This bushfire assessment has been prepared to satisfy the Secretary's Environmental Assessment Requirements (SEARs) for the Project, revised 28 February 2024 (Application Number SSD - 67478479) and the NSW RFS SEARs advice.

The SEARs identify matters which must be addressed in the EIS and essentially form the terms of reference. This report addresses the following requirement in the SEARs:

Hazards – identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a BESS would cause bush fire and demonstrate compliance with the RFS Planning for Bush Fire Protection 2019.

The NSW RFS have issued advice (ref: DA20240209000558-SEARS-1, issued 15 February 2024), that the *Environmental Impact Statement for the Yanco Battery Energy Storage System (BESS)* should incorporate a bush fire hazard assessment undertaken by a suitably qualified consultant to address the aims and objectives of *Planning for Bush Fire Protection 2019*. The specific matters within section 8.3.5 - *Wind and Solar Farms* should be used as a guide for the bush fire hazard assessment.

A number of technical terms have been utilised throughout this report for the discussion of bushfire assessment. These are explained in the Definitions and Abbreviations above.

1.2 ASSESSMENT APPROACH AND REQUIREMENTS

This bushfire assessment report has been prepared to:

- Address the SEARs and NSW RFS advice for the Project;
- Inform the relevant stakeholders of the potential bushfire risk to public safety;
- Recommend actions to mitigate the risk to an acceptable level commensurate with the bushfire risk; and
- Demonstrate how the Project meets the aims and objectives of NSW RFS Planning for Bushfire Protection 2019 (PBP 2019).

Cool Burn Pty Ltd is recognised by the NSW Rural Fire Service (NSW RFS) and Fire Protection Association Australia (FPAA) as a suitably qualified consultant in bushfire risk assessment. This bushfire assessment has been prepared in accordance with PBP 2019.

2. PROJECT OVERVIEW

2.1 PROJECT COMPONENTS

The Project would involve the development, construction, operation and decommissioning of a BESS adjacent to the existing Yanco Substation. The proposed site access and the indicative layout of the Project is provided in **Figure 2**.

The Yanco BESS includes the following key infrastructure:

- Installation of containerised lithium-ion batteries with a capacity of up to approximately 250 MWAC and 1,100 MW-hours, with associated power conversion systems, switchgear and a control building;
- An underground or overhead transmission line to connect the BESS to the Yanco substation with two options up to approximately 450 metres long for the longest option;
- Cabling and collector units, site office, storage area, internal access tracks, on-site parking, security fencing, and temporary construction laydown area;
- Development of a new site access from Hume Road; and
- Intersection upgrades at Houghton/Hume Road and Houghton Road/Irrigation Way.

The Project will also include a proposed noise wall for noise management to protect sensitive receivers (residential dwellings) in close proximity to the south and west.

3. BUSHFIRE PLANNING OVERVIEW

The bushfire assessment aims to address the requirements of the SEARs. Bushfire risk would be considered in the context of the *Rural Fires Act 1997* at all levels of the development process, from project design, construction, and operation through to decommissioning.

Although the Development site is not mapped as within designated bushfire prone land, the site and surrounding grasslands and agricultural areas have capacity for vegetation growth and development such that they could sustain a bushfire (grassfire), and subsequently constitute bushfire threat. There is a requirement to understand:

- Bushfire history and bushfire risk to the community/landscape.
- Does the proposed development affect the bushfire risk of the Development site?
- What is the potential bushfire risk toward the Project and assets (life and safety, the infrastructure and the environment)?
- What are the applicable bushfire protection measures (Plate 1) that can be implemented to reduce the bushfire risk of the project to a level that is deemed acceptable?

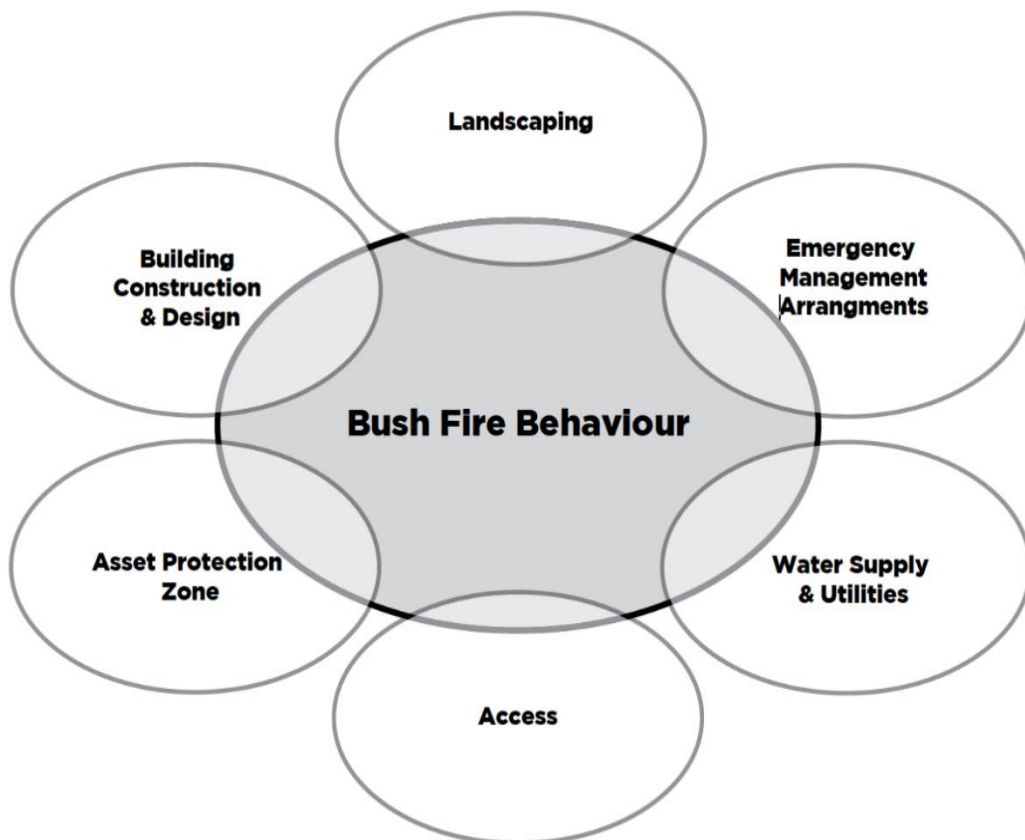


Plate 1: Bushfire Protection Measures (PBP 2019)

3.1 LEGISLATION AND GUIDELINES

This bushfire risk assessment acknowledges the *Rural Fires Act 1997* (RF Act) as a legal requirement, and PBP 2019 as a guideline to assess the suitability/performance of the Project.

3.1.1 Rural Fires Act 1997 – Duty 1 Section 63

Statutory obligations under the RF Act detail the duty to prevent bushfire, to manage and mitigate the risks associated with bushfire. Land managers are required to take practical steps to prevent the occurrence of and to minimise the spread of bushfires on, or from, land under their control.

RF Act Part 4 Bushfire prevention: Sect. 63: Duties of public authorities and owners and occupiers of land to prevent bushfires:

- (1) It is the duty of a public authority to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of a bushfire on or from:
 - a. any land vested in or under its control or management, or
 - b. any highway, road, street, land or thoroughfare, the maintenance of which is charged on the authority.
- (2) It is the duty of the owner or occupier of land to take the notified steps (if any) and any other practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires on or from, that land.
- (3) A public authority or owner or occupier is liable for the costs incurred by it in performing the duty imposed by this section.
- (4) The Bushfire Co-ordinating Committee may advise a person on whom a duty is imposed by this section of any steps (whether or not included in a bushfire risk management plan) that are necessary for the proper performance of the duty.
- (5) In this section: "notified steps" means:
 - a. any steps that the Bushfire Co-ordinating Committee advises a person to take under subsection (4), or
 - b. any steps that are included in a bushfire risk management plan applying to the land.

3.1.2 NSW RFS Planning for Bushfire Protection 2019

PBP 2019 is applicable to all development on bushfire prone land in NSW. While the development is not located on bushfire prone land, to comply with PBP 2019 the Project would require the following conditions to be met:

- Satisfy the aim and objectives of PBP 2019
- Consider issues listed within PBP 2019 for the specific purpose for the Project (8.3.5 - Wind and Solar Farms should be used as a guide for the bush fire hazard assessment)
- Propose an appropriate combination of bushfire protection measures.

The overall aim of PBP 2019 is to provide for the protection of human life and minimise impacts on property from the threat of bushfire, while having due regard to Project objectives, site characteristics and protection of the environment.

The objectives of PBP 2019 are to:

- Afford buildings and their occupants protection from exposure to a bushfire
- Provide for a defensible space to be located around buildings and infrastructure
- Provide appropriate separation between a hazard and buildings which, in combination with other measures, prevent the likely fire spread to buildings
- Ensure that appropriate operational access and egress for emergency service personnel and occupants is available
- Provide for ongoing management and maintenance of bushfire protection measures (BPMs); and
- Ensure that utility services are adequate to meet the needs of firefighters.

3.1.2.1 PBP 2019 and Other Development

The Project will be assessed as Other Development (Chapter 8) under PBP 2019. In order to comply with PBP 2019, the following conditions must be met:

- Satisfy the aim and objectives of PBP 2019 outlined in Chapter 1;
- Consider any issues listed for the specific purpose for the development set out in this chapter; and
- Propose an appropriate combination of BPMs.

It is important to ensure that a defensible space is provided for the size and scale of the development. Proposed measures must operate in combination to minimise the impact of bushfire and ensure that access and services for the Project are adequate.

BESS developments are not specifically considered in PBP 2019, however, the energy storage would be considered as a 'hazardous industry'. PBP 2019 Chapter 8.3.9 states that:

'some developments are considered by their very nature to be hazardous, as much for their ability to start bushfires as their susceptibility to bushfire impacts. New developments of this nature should be avoided on Bushfire Prone Land (BFPL). However, where hazardous industries are proposed, prior consultation with the NSW RFS and preparation of a performance based solution, potentially including a Bushfire Design Brief (BFDB), will be required. In preparation of a performance based solution or BFDB, the Fire Safety Study prepared under the DPIE Hazardous Industry Planning and Assessment Papers (HIPAPs) should be considered. This study provides details of all credible fire hazards and the associated fire prevention and mitigation measures for the development. The BFDB must address the appropriate protection measures to be provided commensurate with the bushfire hazards and associated risks. Care should also be taken to ensure that such facilities do not impact on existing developments.'

A Preliminary Hazard Analysis (PHA) has been completed for the Project. A preliminary risk screening will determine whether the proposed development is considered as 'potentially hazardous' in the context of State Environmental Planning Policy (Resilience and Hazards) 2021.

4. SITE DETAILS (BUSHFIRE)

4.1 LAND DESCRIPTION

Yanco and surrounding districts are within the Murrumbidgee Irrigation Area (MIA), the land is typically flat and land use associated with rural enterprise (RU1 – Primary Production), cropping, orchards and irrigation (channel systems).

The Development site and surrounding has been almost entirely cleared of woody vegetation. To the south there are remnant parcels of native vegetation, wetlands, the Murrumbidgee River, and watercourses. The native vegetation near the Development site is characterised by River Red Gum floodplains.

The existing land use is agricultural and associated dwellings and infrastructure, located within 1km southeast, south and west.

Houghton Road provides primary through-road access to the Project site from Irrigation Way (east). Hume Road intersects off Houghton Road and is a through road to River Road (south).

Yanco Substation is located to the east, separated from the Project construction area by Hume Road.

The Development site is located on land zoned RU1 Primary Production under the Leeton Shire Council Local Environmental Plan 2014.

4.2 BUSHFIRE PRONE VEGETATION

The identification of bushfire prone land (BFPL) in NSW is required under the EP&A Act s.10.3. BFPL Maps provide the trigger for the various development assessment provisions. It is not intended as a detailed measure of risk and does not form part of the site assessment process, and an assessment would be carried out in accordance with methodology detailed in Appendix 1 of PBP 2019.

The Development site is not mapped as within designated bushfire prone land (**Figure 3**), however, the SEARs requires an assessment to identify potential hazards and risks associated with bushfires including the risks that a BESS would cause bushfire.

4.3 BUSHFIRE HISTORY & IGNITION SOURCES

There is very little bushfire history mapped in the Yanco locality. The predominate sources of bushfire ignition in the region as detailed in the Murrumbidgee Irrigation Area Bushfire Risk Management Plan 2008 are:

- Lightning
- Accidental ignitions by farm machinery, equipment and rural operations.

The development site is within managed agricultural lands and has no recorded fire history mapped within the NPWS SEED fire history dataset ([Geocortex Viewer for HTML5 \(nsw.gov.au\)](https://www.npws.nsw.gov.au/geocortex-viewer)). The most recent and nearest bushfire was the River Road fires (2014/2015) in the wetlands more than 1km to the south, which was assumed to be ignited by lightning.

Consultation with landholders and NSW RFS has included any detailed site-specific bushfire history, for which no additional information was confirmed.

4.4 FIRE DANGER INDEX AND CLIMATE CHANGE

The Fire Danger Index (FDI) measures the degree of danger of fire in Australian vegetation, based on a measure of vegetation dryness, air temperature, wind speed and humidity. For the purposes of bushfire risk analysis, the maximum FDI required to be used for development assessment purposes is based on local government boundaries. Leeton Shire Council LGA is in the Northern Riverina fire district and has a FDI classification of:

- Forest FDI 80
- Grassland FDI 110

Over the next 23 years (expected lifespan of the Project), the climate is projected to change, potentially resulting in more days of higher fire danger than previously experienced, and projected FDR exceeding current levels (Douglas, G. 2017). Planning for long term infrastructure should include consideration of the potential for increased fire danger and potentially higher fire frequencies.

4.5 VEGETATION AND TOPOGRAPHY

The vegetation ecosystems/types on/surrounding the site are obtained from vegetation mapping dataset ([Geocortex Viewer for HTML5 \(nsw.gov.au\)](https://www.nsw.gov.au/geocortex-viewer/html5)).

The land directly to the north south and west of the Project site are for irrigated cropping, yet have potential for curing. Curing crops are considered as a potential grassland bushfire hazard.

Specific consideration is applied to the Hume Road and Houghton Road roadside vegetation. This vegetation is likely to be Grassy Woodland remnants. The trees within the proposed connection easement would be cleared ahead of construction if the connection is determined to be overhead. The tree density is deemed insignificant with respect to broader scale fire behaviour, and grasslands (Riverine Plain Grasslands) is the classified vegetation hazard for these areas.

Vegetation mapping on and surrounding the Project is shown in **Figure 4** and broadly consists of:

- Managed grasslands for agricultural and rural enterprise (non-native vegetation/cropping)
- Derived native grasslands with small numbers of isolated River Red Gum trees.

The Development site and surrounding lands are typically considered as Flat (no effective slope, **Figure 5**).

In summary, the bushfire hazard vegetation would be grassland (curing crop), and effective slope upslope/flat.

4.6 SITE PHOTOGRAPHS



Photo 1: Photo looking southwest, showing Development site in the foreground (irrigation channel, grassland, flat topography) with transmission lines and rural infrastructure in the background (ACEnergy web image).

5. RECOMMENDED BUSHFIRE MITIGATION STRATEGIES

The following risk mitigation actions for the Project have been developed to achieve compliance with the specifications and requirements of Chapter 8 of PBP 2019 and will be implemented for the Project (see Table 1).

Standard bushfire protection measures include:

- Asset Protection Zone (APZ) and landscape management actions required to protect assets and prevent the spread of fire (including, but not limited to slashing and mowing, potential continued grazing or agricultural activities for fuel management, landscaping and maintenance, property fire breaks)
- Building and construction requirements, commensurate with the purpose/use and construction of the structures
- Access provisions (e.g. public access, property access, construction access and fire trails)
- Water supply and utilities (power/electricity)
- Emergency management arrangements (preparation of Emergency Management Plans).

5.1 ASSET PROTECTION ZONES

Incorporation of an APZ is a key action for mitigating bushfire risk. An APZ does not eliminate the fire risk but provides a buffer zone between a bushfire hazard (vegetation) and an asset, it allows a defensible space for fire suppression and aims to avoid possible flame contact and/or excessive radiant heat to impact an asset.

The location and width of an APZ may lessen the radiant heat and flame contact from a bushfire toward an asset to an extent where damage to the asset is reduced to an acceptable level and fire control is more feasible. An APZ also provides mitigation for any fire ignition occurring from within the infrastructure (e.g. electrical fire) to ignite and spread into the surrounding vegetation (and subsequently be the causal factor of a bushfire).

A minimum 10m APZ is proposed for all project-related infrastructure. This 10m APZ would be maintained as a cleared area suitable for vehicular access (e.g. emergency and maintenance vehicles). With the provisions of a minimum 10m APZ, and continued grassland management practices within the Development site, the infrastructure would avoid flame contact and excessive

radiant heat. It is noted that the noise wall fence would be constructed at the southern perimeter of the BESS area, within the APZ and adjacent to the proposed landscaping (vegetation screens).

Temporary construction and laydown areas, site access and associated fencing do not require a specific APZ.

The 10m APZ will be managed and maintained for the life of the development to the standard of an Inner Protection Area (IPA) as outlined below (Section 5.2) and described within Appendix 4 of PBP 2019.

The vegetation screens will be managed under a landscape or vegetation management plan, to be managed in perpetuity as a low threat and do not increase the threat toward the structures.

It is recommended that a Bushfire and Emergency Management Operation Plan (BEMOP) or similar is prepared to detail the actions, timing and responsibility for the APZ management of bushfire risks.

5.2 LANDSCAPE MAINTENANCE

Landscape maintenance refers to the management within the BESS compound and the screen planting, to reduce fire intensity and rate of spread as it may approach a structure or structures. The broader surrounding landscape maintenance (rural activities, cropping, irrigation) has the potential to offer an increased level of bushfire protection to the Project.

When establishing and maintaining an IPA the following requirements apply:

- **Trees**
 - (there would be no trees within the APZ)
- **Shrubs**
 - (there would be no shrubs within the APZ)
- **Grass** (*if applicable, the whole area would be maintained as hardstand, no grass)
 - grass should be kept mown (as a guide grass should be kept to no more than 100mm in height); and
 - leaves and vegetation debris should be removed.

Proposed tree and shrub vegetation screens will be planted outside the minimum APZ where practical. The vegetation screen plantings would require ongoing monitoring, removing/replacing dead and dry vegetation and removing build-up of leaf litter and other materials that potentially increase fuel loads and fire risk. The vegetation screens will be managed under a landscape or vegetation management plan so that they are managed in perpetuity as a low bushfire threat and do not increase the threat toward the structures.

It is recommended that a BEMOP or similar is prepared to detail the landscaping actions, timing and responsibility, and will prompt fuel monitoring assessments to be carried out to identify the potential bushfire related risk and mitigation actions.

5.3 STRUCTURAL DESIGN

There are no specific bushfire protection requirements for project-related infrastructure. The general fire safety construction provisions are taken as acceptable solutions however construction requirements for bushfire protection will need to be considered on a case-by-case basis (PBP 2019).

The Project design includes a noise wall for noise management to nearby sensitive receivers. The noise wall will be installed at the perimeter of the BESS area site, adjacent to the vegetation screen planting, and will subsequently be within the APZ. The material design will be a non-combustible outer layer (e.g sheet metal or cementitious layer) front and back and a fire-retardant core. The noise wall panels would be at least 10m from the BESS infrastructure and would serve to further reduce any potential heat and flame grassland fire impacts and offer preliminary protection from an internal industrial fire igniting surrounding grassland.

5.3.1 Hazardous Materials

Any proposed hazardous materials will need to be identified and appropriately stored to mitigate impact and protect attending fire fighters. Storage of hazardous materials away from the hazard wherever possible will be detailed in the PHA.

It is recommended that a BEMOP (or similar) details the hazardous material storage.

5.4 WATER SUPPLY

The Project must provide adequate services of water to assist management of fire risk, during and after the passage of bushfire. The Project design will include a minimum 10,000L water supply dedicated for firefighting purposes. The total volume and design will be informed via the Fire Safety Study (FSS) prepared under the HIPAPs.

Specific for bushfire mitigation, the water supply should be provided at strategic location within the Development site, having consideration for essential equipment and accessibility (e.g. near a main entrance, close to infrastructure, supporting vehicle access and connections (see Photo 2).

It is recommended that a BEMOP (or similar) details the locations, volumes, accessibility and monitoring for water supplies.



Photo 2: Example only of water storage for Project firefighting response

5.5 ACCESS MANAGEMENT

The Project must demonstrate provision for safe access to/from the public road system for firefighters providing property protection during a bushfire and for occupant egress for evacuation.

The site access will be provided from Hume Road, with links to Houghton Road (north) and River Road (south), linking back to Yanco via Irrigation Way (east). All roads are used for agricultural purposes and are suitable for emergency service vehicles.

The site access track will require heavy vehicle access to support the Project construction and maintenance and will be maintained for the life of the development. As such the access will be capable of supporting Cat-1 fire vehicle access consistent with the following NSW RFS Fire Trail Standards (NSW RFS 2019):

- The width and capacity of the access provides for safe, reliable and unobstructed passage by a Cat 1 firefighting vehicle within acceptable operational limits:
 - The trafficable surface has a minimum width of 4 m within a minimum 10m wide unobstructed easement (APZ)
 - The access has a minimum 4m height clearance overhead, free from any obstructions
 - Curves have an inner radius of 6m
 - Crossfall is less than 6 degrees
 - Surfaces and crossing structures are capable of carrying vehicles with a gross vehicle mass of 15 tonnes and an axle load of 9 tonnes.
 - Turnaround provisions of 12m radius or T junction at the termination of each access track and in position of any dedicated water supply tanks.

Access provisions will also ensure emergency vehicle access to within 4m of the dedicated water supply for firefighting purposes (e.g. at the Hume Road entrance).

5.5.1 Alternate Access

An alternate access point for the site is provided in the event that the main entry point is obstructed during an emergency event. Alternate access used in an emergency is to be determined, can be provided along the southern boundary and the existing power line easement access to Hume Road (20m south from the main entry point). This alternate access arrangement should be confirmed if suitable in its current form, providing 4m wide and having heavy vehicle capacity.

It is recommended that a BEMOP (or similar) details all access roads, specify access roads that would be used in an emergency, including evacuation routes.

5.6 EMERGENCY MANAGEMENT PLANNING

Emergency management planning would provide suitable emergency and evacuation (and relocation) arrangements for occupants of the development, and will be prepared post development approval and prior to Project construction. The Emergency Management triggers and procedures will be detailed in the BEMOP (or similar).

The BEMOP will include the following factors as detailed in PBP 2019:

- Detailed measures to prevent or mitigate fires igniting e.g.:
 - hot works permits for works which may result in the ignition of fire.
 - hot works are not to be carried on Total Fire Ban days, or when local authorities or the Site Manager deems weather conditions too dangerous.
- 24-hour emergency contact details including alternative telephone contact
- Inductions for construction personnel on bushfire risk management and other fire related risks that could present at the Project site, the Project bushfire contingency plan and emergency response procedures
- Availability of fire-suppression equipment, access, and water including site infrastructure plans and site access and internal road plans
- Location of hazards (physical, chemical, electrical) that will impact on the firefighting operations and procedures to manage any identified hazards during firefighting
- 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 high fire danger period (as declared by the NSW RFS) to ensure weather conditions are appropriate
- Appropriate bushfire emergency and evacuation management planning.

5.7 SUMMARY OF RECOMMENDATIONS

Table 1 summarises the bushfire mitigation measures and recommendations made in this report.

With the provisions of these recommendations, the Project would:

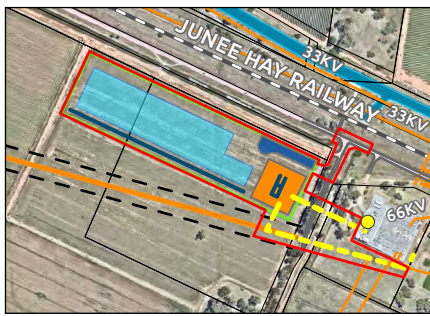
- Satisfy the aim and objectives of PBP 2019
- Consider issues listed within PBP 2019 for the specific purpose for the Project (Chapter 8.3.5, PBP 2019)
- Propose an appropriate combination of bushfire protection measures
- Demonstrate practicable steps to prevent the occurrence of bushfires on, and to minimise the danger of the spread of bushfires on or from, that land (RF Act 1997).

Table 1 Bushfire protection recommendations for Yanco BESS

Bushfire Protection Measure	Performance Measure
Asset Protection Zone (APZ)	APZ buffers will be a minimum 10m width (as detailed in as per Section 5.1 of this report) provided around project-related infrastructure and to the outer perimeter (vegetation screen and sound wall define limit). APZ to be managed as Inner Protection Area (IPA) for the life of development. The following vegetation management requirements apply in the APZ: • Trees (there would be no trees within the APZ). • Shrubs (there would be no shrubs within the APZ). • Grass (if applicable) should be kept mown (as a guide grass should be kept to no more than 100mm in height); and leaves and vegetation debris should be removed. • Roads and paved/cleared areas are suitable within the APZ. Temporary construction and laydown areas, site access and associated fencing do not require specific APZ.
Landscaping	Landscape maintenance includes APZ around infrastructure, the proposed vegetation screening and land management across the surrounding Development site to reduce fire intensity and rate of spread as it may approach a structure or structures. • APZ management to maintain fuel loads as required as per Section 5.2 of this report. • Vegetation screening greater than 10m from infrastructure (APZ), maintained to remove dead/dry vegetation and fuel build-up. • The vegetation screens will be managed under a landscape or vegetation management plan so that they are managed in perpetuity as a low threat and do not increase the threat toward the structures. • Landscape management requires ongoing monitoring and maintenance. • Bushfire fuel management surrounding development can be achieved in ongoing agricultural practices such as grazing, cropping, slashing etc. • A BEMOP to guide landscape and APZ management, monitor and manage potential fuel loads surrounding the Development site.
Building Design	There are no specific bushfire protection requirements for project-related infrastructure. The general fire safety construction provisions are taken as acceptable solutions. The noise wall design and material will be non-combustible outer layer (e.g. sheet metal or cementitious layer) front and back and a fire-retardant core, and not increase the risk of fire toward the BESS infrastructure.
Water Supplies	On-site water supply (minimum 10,000L) to be strategically positioned, as per Fire Safety Study specifications. • Water supply to be accessible and have appropriate firefighting appliance connections. • Water supplies to be detailed in BEMOP or similar planning strategy.

Access	Main access, internal roads and alternate egress provide for safe, reliable, and unobstructed passage by a Cat 1 firefighting vehicle as per Section 5.5 of this report and maintained for the life of the development. The width and capacity of the access provides for safe, reliable, and unobstructed passage by a Cat 1 firefighting vehicle within acceptable operational limits: • The trafficable surface has a minimum width of 4m. • The access has a minimum 4m height clearance overhead, free from any obstructions. • Curves inner radius 6m. • Crossfall less than 6 degrees. • Surfaces and crossing structures are capable of carrying vehicles with a gross vehicle mass of 15 tonnes and an axle load of 9 tonnes. • Turnaround provisions of 12m radius or T junction at the termination of each access track and in position of any dedicated water supply tanks. • All access will be detailed in the BEMOP
Emergency Management	A BEMOP should be prepared to support emergency management for the Project and ensure bushfire protection actions are maintained. The Plan should be developed in consultation with the local NSW RFS District Office and the Emergency Management Plan and be communicated to relevant stakeholders. A BEMOP will guide annual monitoring of the fire mitigation works for the Project operations and surrounding landholding: • APZ and landscape fuel load management. • Access provisions. • Water supplies. • Emergency Response in coordination with the Fire Safety Study and Emergency Management Plan.

ATTACHMENT A. PROJECT MAPPING



Project Layout



Legend

- Development Footprint
- Development Site 2km Buffer
- ★ Site Access
- Cadastre
- Road
- Railway
- Runway
- Water Body
- Watercourse
- Electricity Transmission Line

Receivers

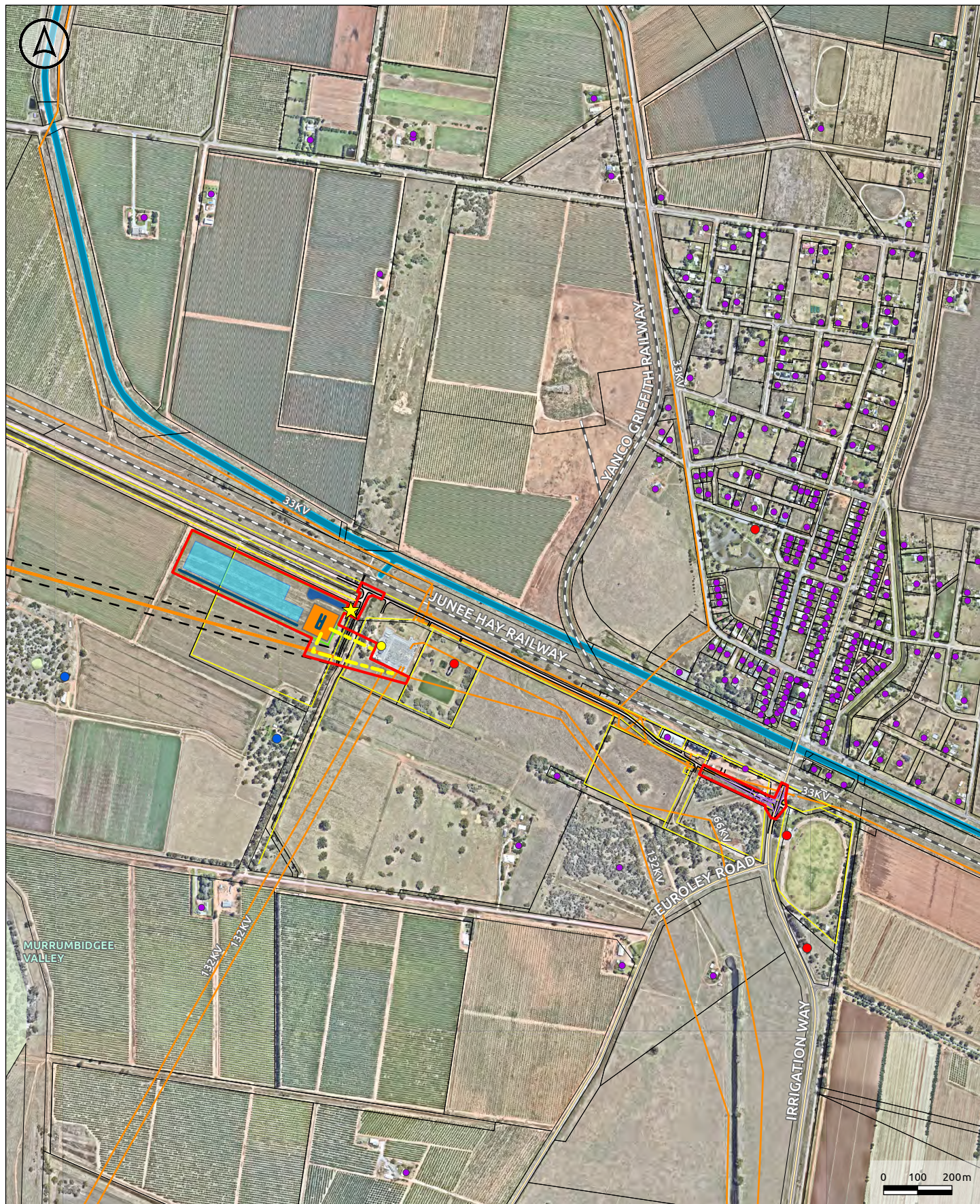
- Associated Non-Residential
- Associated Residential
- Non-Associated Non-Residential
- Non-Associated Residential
- Indicative BESS Area
- Indicative Connection Asset
- Indicative Hardstand Areas
- Indicative Landscaping

- Indicative ETL Connection
- Indicative Noise Wall
- Indicative Access Road
- Easement



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Yanco Battery Energy Storage System

Figure 1
Local Context



Legend

- Site Access
- Development Footprint
- Cadastre
- Surveyed Boundaries
- Railway
- Water Body
- NPWS Reserve
- Electricity Transmission Line

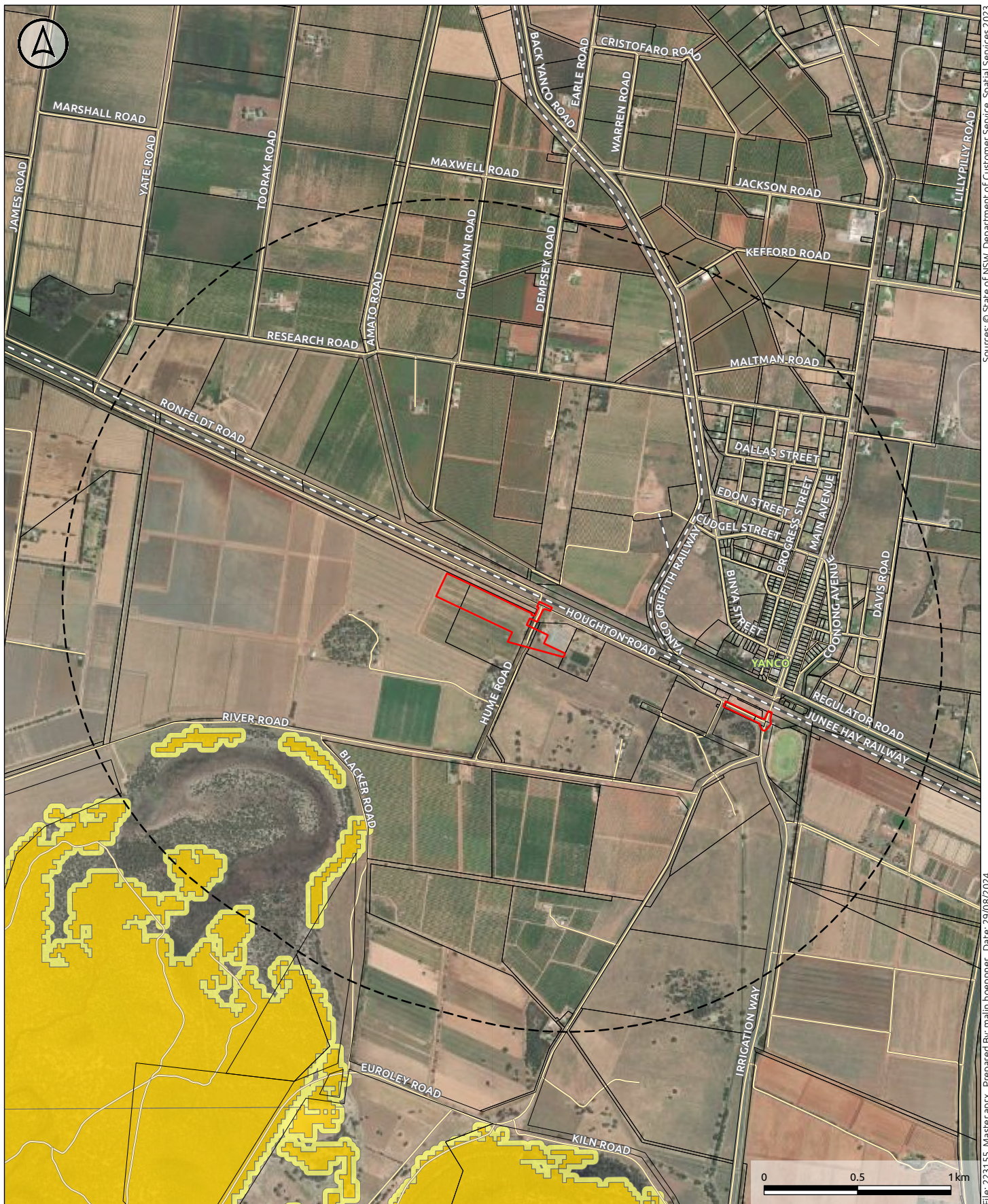
- Easement
- Indicative Landscaping
- Indicative Hardstand Areas
- Indicative Connection Asset
- Indicative BESS Area
- Indicative Access Road
- Indicative ETL Connection
- Indicative Noise Wall

- Road Upgrade
- Receivers
 - Associated Non-Residential
 - Associated Residential
 - Non-Associated Non-Residential
 - Non-Associated Residential

Premise

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Figure 3
Project Site



Legend

- Development Footprint
- Development Site 2km Buffer
- Cadastre
- Road
- Railway
- Water Body
- Watercourse

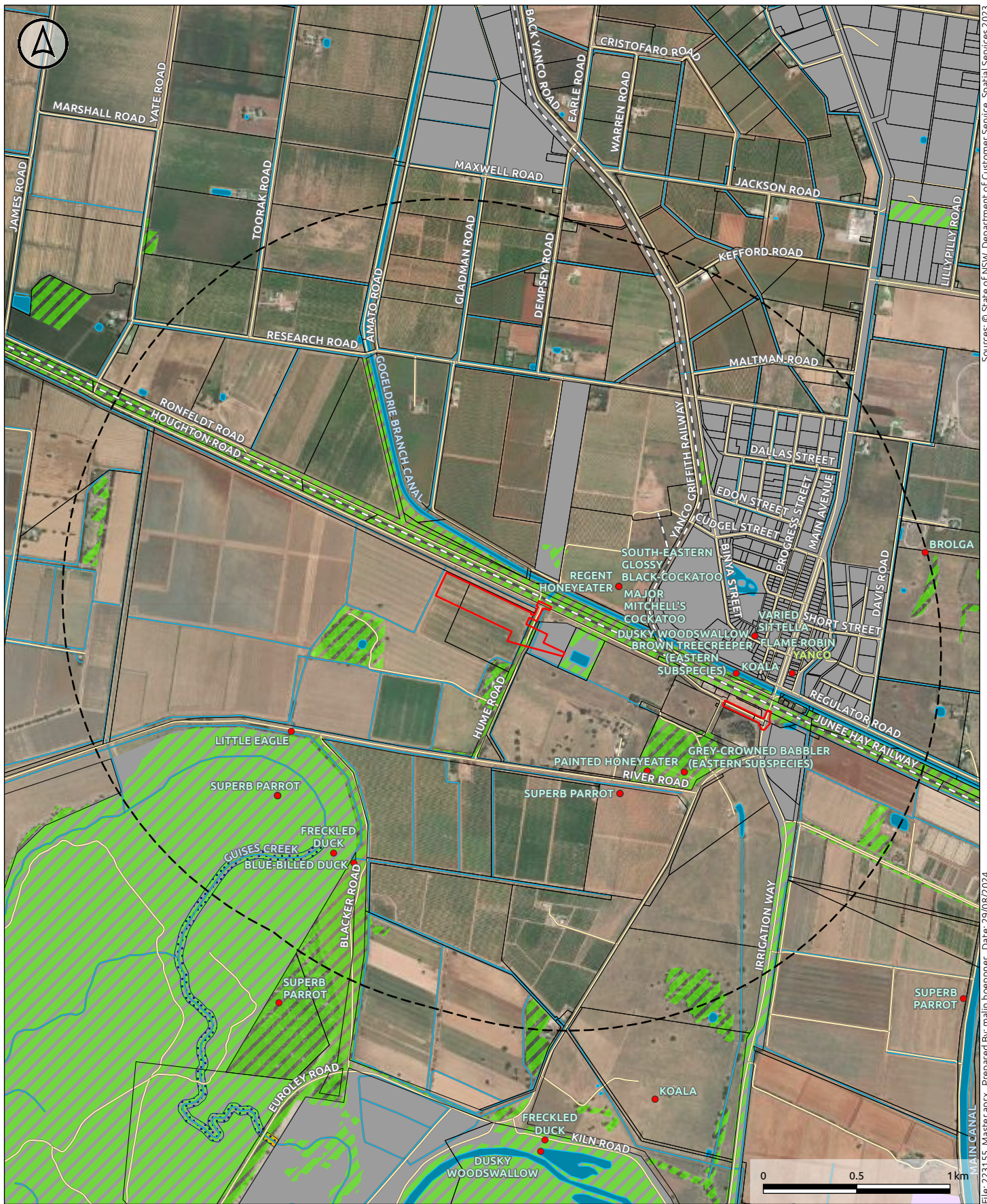
Bushfire Prone Land

- Vegetation Buffer
- Vegetation Category 2



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Figure 3
Bushfire Prone Land



Legend

- Development Footprint
- Development Site 2km Buffer
- Cadastre
- Road
- Railway
- Water Body
- Watercourse

- Terrestrial Biodiversity
- Vulnerable Regulated Land**
- Vulnerable Regulated Land
- Sensitive Regulated Land
- Excluded Land
- Biodiversity Values**
- Biodiverse riparian land
- Threatened Species**
- Fauna



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Figure 4
Biodiversity (LEP)



Legend

- Development Footprint
- Development Site 2km Buffer
- Cadastre
- Road
- Railway
- Runway
- Water Body
- Watercourse

Elevation (m)

- <140
- 140 - 150
- 150 - 160
- 160 - 170
- 170 - 180
- 180 - 190
- 190 - 205

- Natural Contours (5m Interval)
- Electricity Transmission Line



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Figure 5
Topography