

BUSH FIRE ASSESSMENT REPORT

GARA BATTERY ENERGY STORAGE SYSTEM

86 Woodlands Road
Armidale



PREPARED BY:



JUNE 2025



PEAK LAND MANAGEMENT

Land management consulting services:

-Bush Fire-

-Ecological-

-Environmental-

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Cover Photo: View of Development Footprint.



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Document History

Document Id.	Prep. Date	Version	Submitted to
Draft Bush Fire Report	9.9.24	1	ACEnergy
Bush Fire Report	17.9.24	2	ACEnergy
Bush Fire Report	28.10.24	3	ACEnergy
Bush Fire Report	19.11.24	4	ACEnergy
Bush Fire Report	6.3.25	5	ACEnergy
Bush Fire Report	8.5.25	6	ACEnergy
Bush Fire Report	5.6.25	7	ACEnergy

AUTHOR DETAILS

Ted Smith is the director of PEAK LAND MANAGEMENT. He is a qualified Land Management Consultant with a Bachelor of Science Honours Degree in Physical Geography. He has over 25 years experience commercially consulting with PEAK LAND MANAGEMENT PTY LTD and working within state government.

Ted has completed a Graduate Diploma in Design for Bush Fire Prone Areas from the University of Western Sydney and is a member of the Fire Protection Association of Australia (FPA of Australia), being a BPAD Accredited Bush Fire Practitioner Level 3.

CERTIFICATION

Ted Smith of PEAK LAND MANAGEMENT has prepared this detailed Bush Fire Assessment Report which includes the requirements set out in *Appendix 2 & 4 of Planning for Bush Fire Protection 2019* together with recommendations as to how the relevant specifications and requirements are to be achieved.

I hereby certify, in accordance with Section 4.14 of the *Environmental Planning and Assessment Act 1979 No 203*:

1. That I am a person recognised by the *NSW Rural Fire Service* as a qualified consultant in Bush Fire Risk Assessment; and
2. That subject to the recommendations contained in the attached Bush Fire Assessment Report the proposed development conforms to the **relevant specifications and requirements** being the document entitled *Planning for Bush Fire Protection* prepared by the NSW Rural Fire Service in co-operation with the Department of Planning and any other document as prescribed by Section 4.14 of the *Environmental Planning and Assessment Act 1979 No 203*.



Signature

5th May, 2025

Date



TERMS AND ABBREVIATIONS

Abbreviation	Meaning
AHIMS	Aboriginal Heritage Information Management System
APZ	Asset Protection Zone
AS2419 -2005	Australian Standard – Fire Hydrant Installations
AS3959-2018	Australian Standard – Construction of Buildings in Bush Fire Prone Areas
BESS	Battery Energy Storage System
BCA	Building Code of Australia
BPL	Bush Fire Prone Land
BPMs	Bush Fire Protection Measures
BRMP	Bushfire Risk Management Plan
BTA	Bushfire Threat Assessment
EPA Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EMP	Emergency Management Plan
FDI	Fire Danger Index
FMP	Fuel Management Plan
Ha	Hectare
IPA	Inner Protection Area
LEP	Local Environment Plan
LGA	Local Government Area
OPA	Outer Protection Area
PBP 2019	Planning for Bushfire Protection 2019
RF Act	<i>Rural Fires Act 1997</i>
RF Regulation	Rural Fires Regulation
SEARs	Depart of Planning & Environment - Secretary's Environmental Assessment Requirements

1.1 INTRODUCTION

ACEnergy Pty Ltd (the Applicant) is proposing to develop an approximately 400 MegawattAC (MWAC), 1,760 MW hour (MWh) Battery Energy Storage System (BESS). The proposed Gara BESS development is to be located at 86 Woodlands Road, Armidale NSW 2350 (the Host Lot). 86 Woodlands Road is formed of several larger land parcels including Lot 1 DP246878; Lot 1 DP573787 and Lot 145 DP755826, on which the development will impact on. The remainder of the larger landholding is formed by other non-associated lots with a total area of approximately 423 ha.

The Gara BESS will also impact on neighbouring properties being Lots 144 and 153 DP755826, and Travelling Stock Routes (TSR's) Lot 7003 DP1060212; Lot 7009 DP1060213.

The site will occupy an area of approximately 34.4ha across part of Lot 1 DP246878 and Lot 1 DP753787 and extend into the Waterfall Way (also referred to as Grafton Road) road reserve and Crown Land managed as Travelling Stock Reserves defined as Lot 7003 DP1060212 and Lot 7009 DP1060213 for site access. The transmission easement would impact Lot 1 DP246878 and Lots 144, 145 and 153 DP755826, together with an unconstructed Crown road reserve located unilaterally between Lots 144 and 145.

The site is in the Armidale Local Government Area (LGA) and is within the New England Renewable Energy Zone (REZ).

PEAK LAND MANAGEMENT has been engaged by ACEnergy Pty Ltd (ACEnergy) to prepare this Bush Fire Assessment Report for inclusion within the Environmental Impact Statement (EIS) for the Project.

The Project is deemed to be State Significant Development (SSD) being a development for the purposes of a large-scale BESS development. The Project therefore requires assessment and approval in accordance with Part 4, Division 4.7 of the Environmental Planning and Assessment Act 1979 (EP&A Act).

Figures 1-5 show the site location, topography, vegetation, site plan and Appendix 1 shows photos of the site and surrounds.

This Report has been prepared to address the bushfire element of the NSW Planning Secretary's Environmental Assessment Requirements (SEARs) for the Project (SSD-71680710), specifically to:

- *Bushfire - identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a BESS would cause a bush fire and demonstrate compliance with the RFS Planning for Bush Fire Protection 2019; and*
- *a Preliminary Hazard Analysis (PHA) prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011).*

Section 8.3.5 of Planning for Bushfire Protection (PBP) 2019 (Wind and Solar Farms) is the relevant section of PBP, 2019 that addresses this proposal. It states in part that:-

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*
- *the APZ must be maintained to the standard of an IPA for the life of the development.*

Infrastructure for the purposes of requiring APZ excludes:

- *road access to the site; and*
- *power or other services to the site and associated fencing.*

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. It should also be designed and maintained so that it will not serve as a bush fire risk to surrounding bush.

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.

Under the EP&A Act (and its regulations), and the *Rural Fires Act 1997* (and its regulations), councils/NSW Government are required to assess and control new developments in bush fire prone areas. This land has been assessed as being part of a Bush Fire Prone Land Area (Figure 6).

It should be noted that development which is classified as State significant development (SSD) is not required to be assessed under section 4.14 of the EP&A Act and is exempt from requiring a BFSa (as per section 4.14(1B) of the EP&A Act). State significant infrastructure (SSI) is also not subject to BFSa requirements (as per section 5.23(1)(f) of the EP&A Act). Given the scale of SSI and SSD projects, it is suggested that the requirements of PBP 2019 should still be applied, and seeking advice from the NSW RFS is encouraged. This has occurred here, and this report also addresses the SEARs requirements from NSW RFS. Note consultation with NSW RFS has confirmed that Aboriginal and Ecological issues do not have to be addressed/summarised within this report, and will be assessed as part of the EIS.

This report has been prepared in accordance with PBP guidelines. Clause 46 of the *Rural Fires Regulation 2002* sets out these requirements, which are addressed in this report. A Bush Fire Assessment Report is required showing the current situation and recommending how the risk may be ameliorated.

Figure 1: Project location (from Premise, May 2025). North to top of all figures unless otherwise shown.

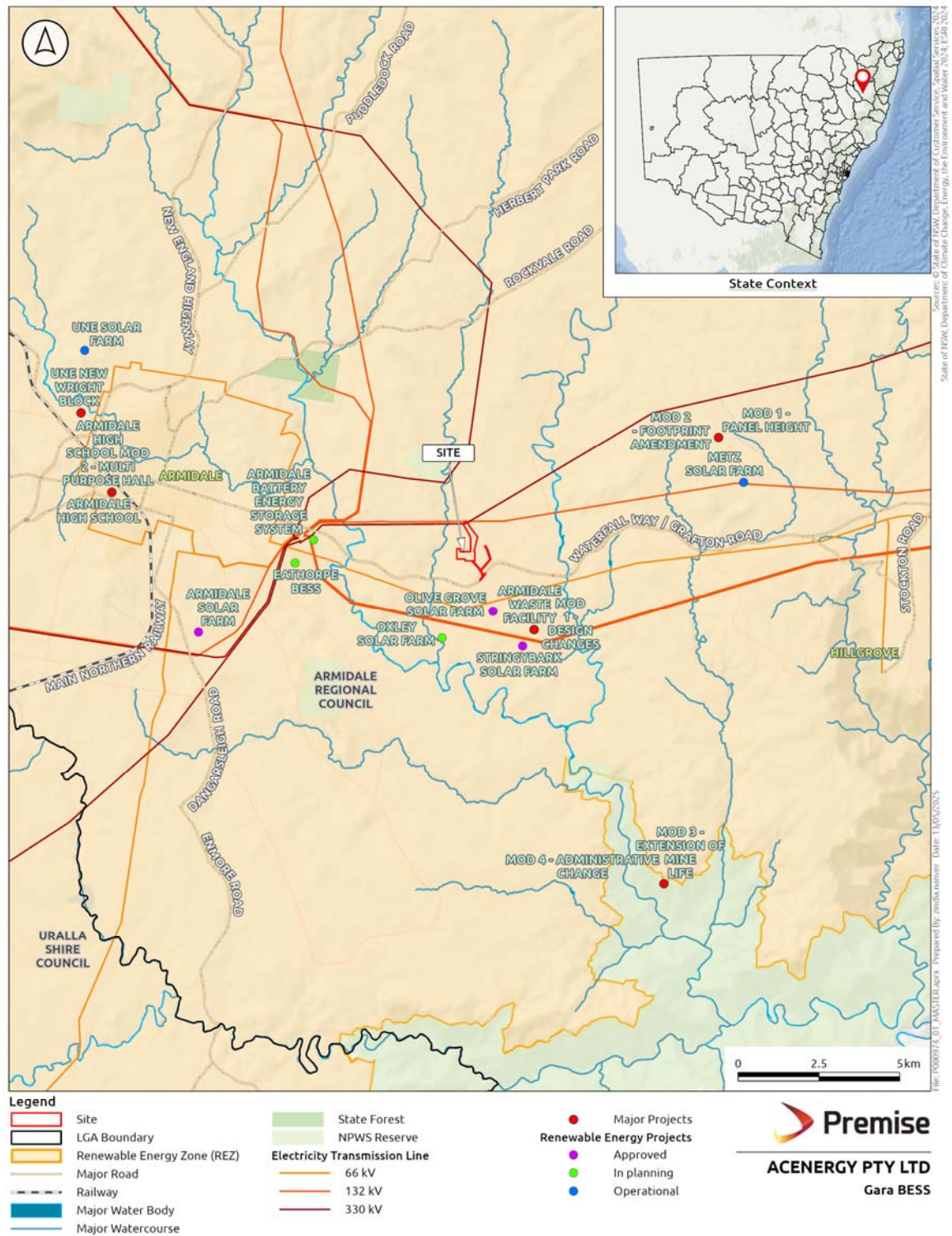


Figure 2: Topographic map of Site and Development Footprint (from SIX Maps, NSW Government)

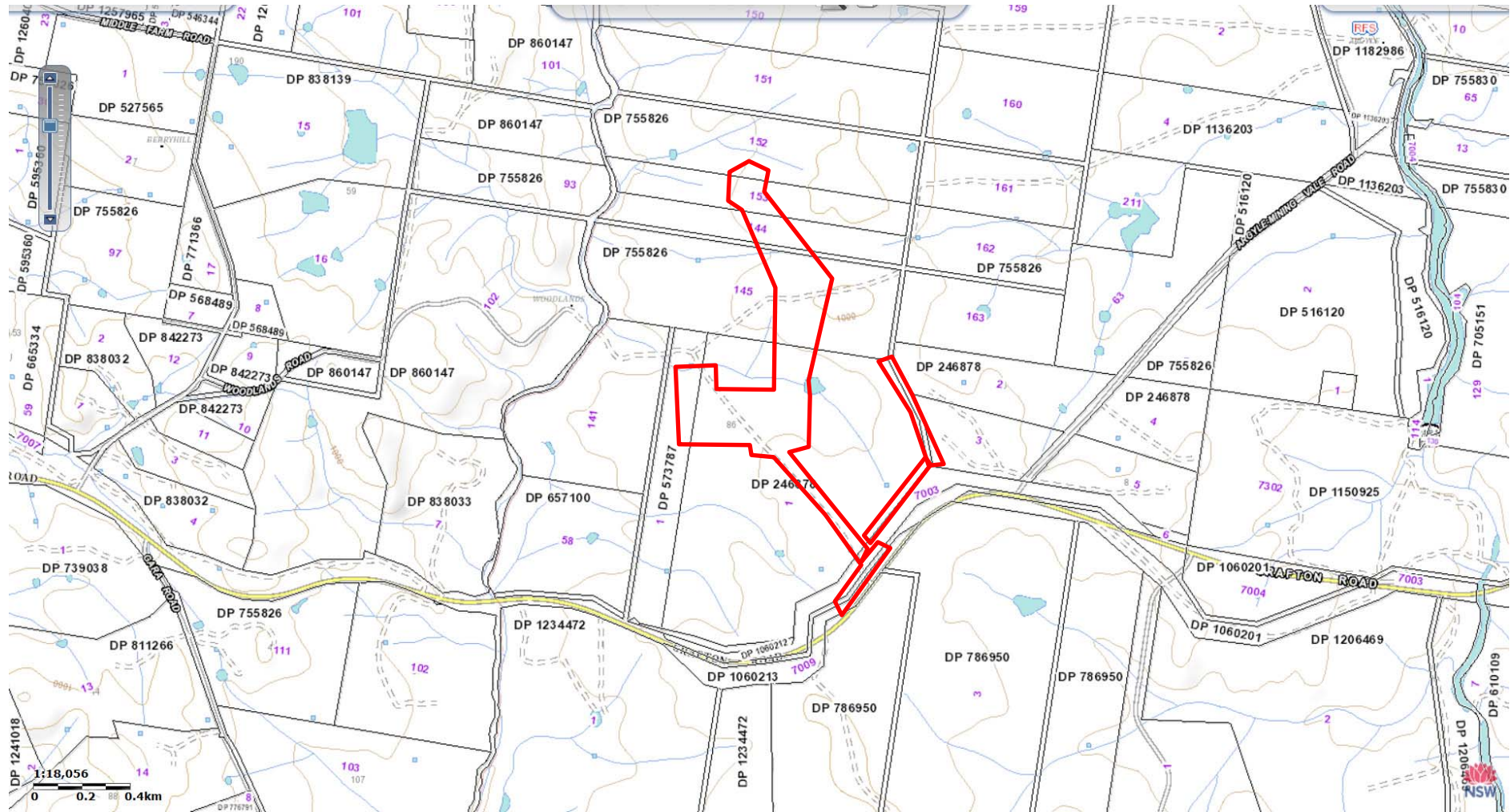


Figure 3: Project layout & location (from Premise, May 2025).

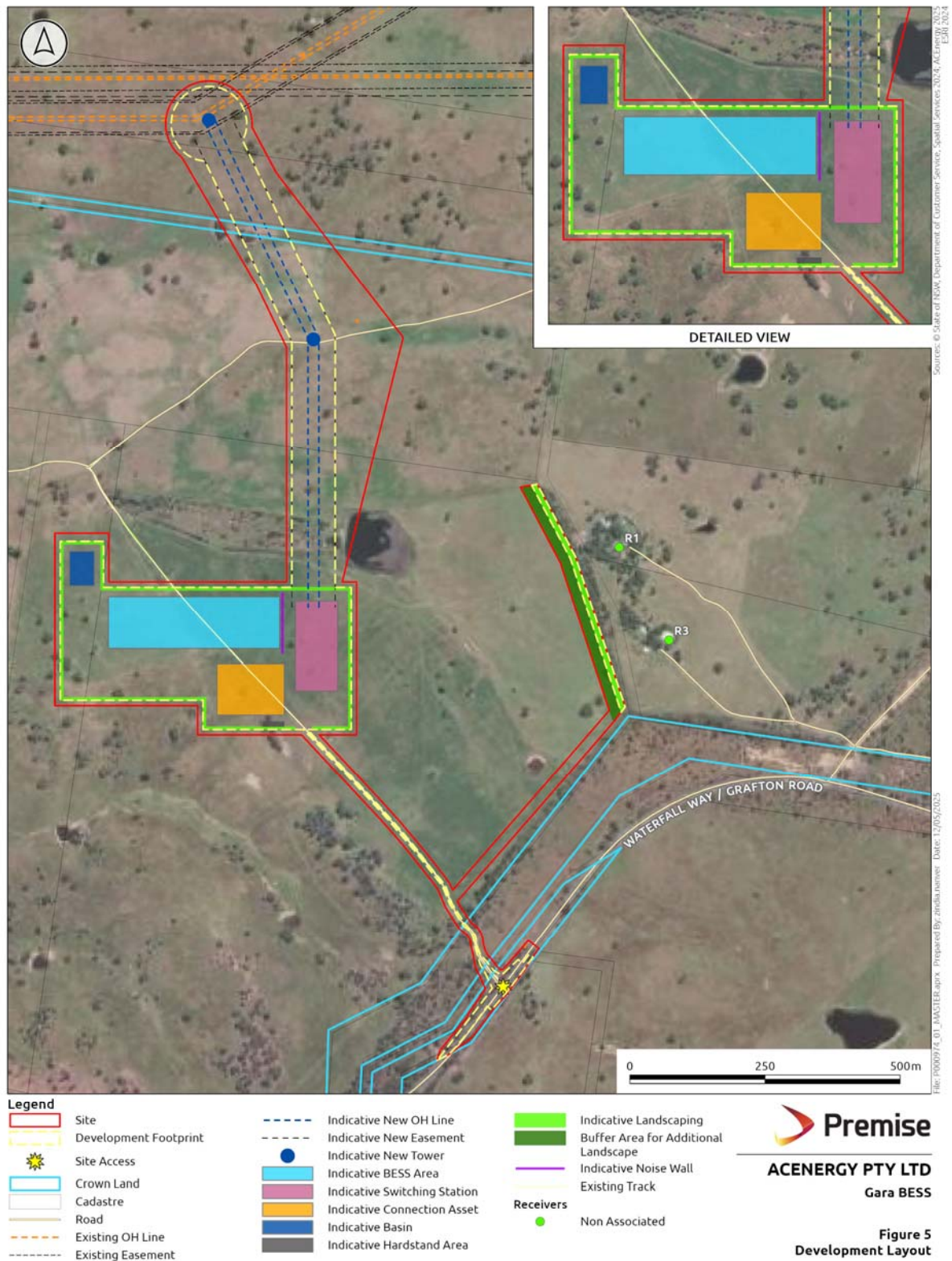


Figure 4: Site plan in detail (from ACenergy, 5.5.25).

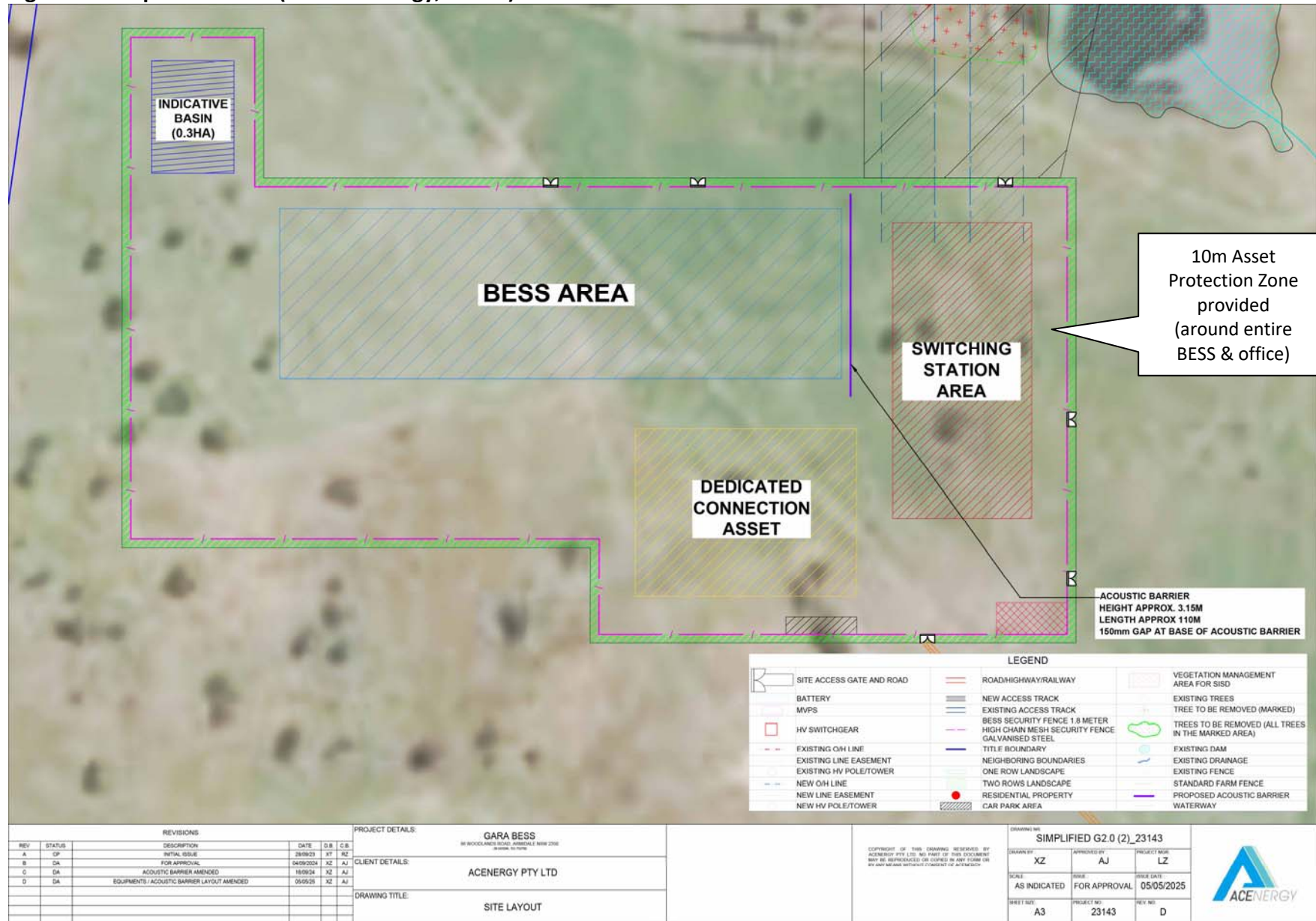


Figure 5: Vegetation PCT's over Development Footprint (from Habitat Environmental Services, undated).

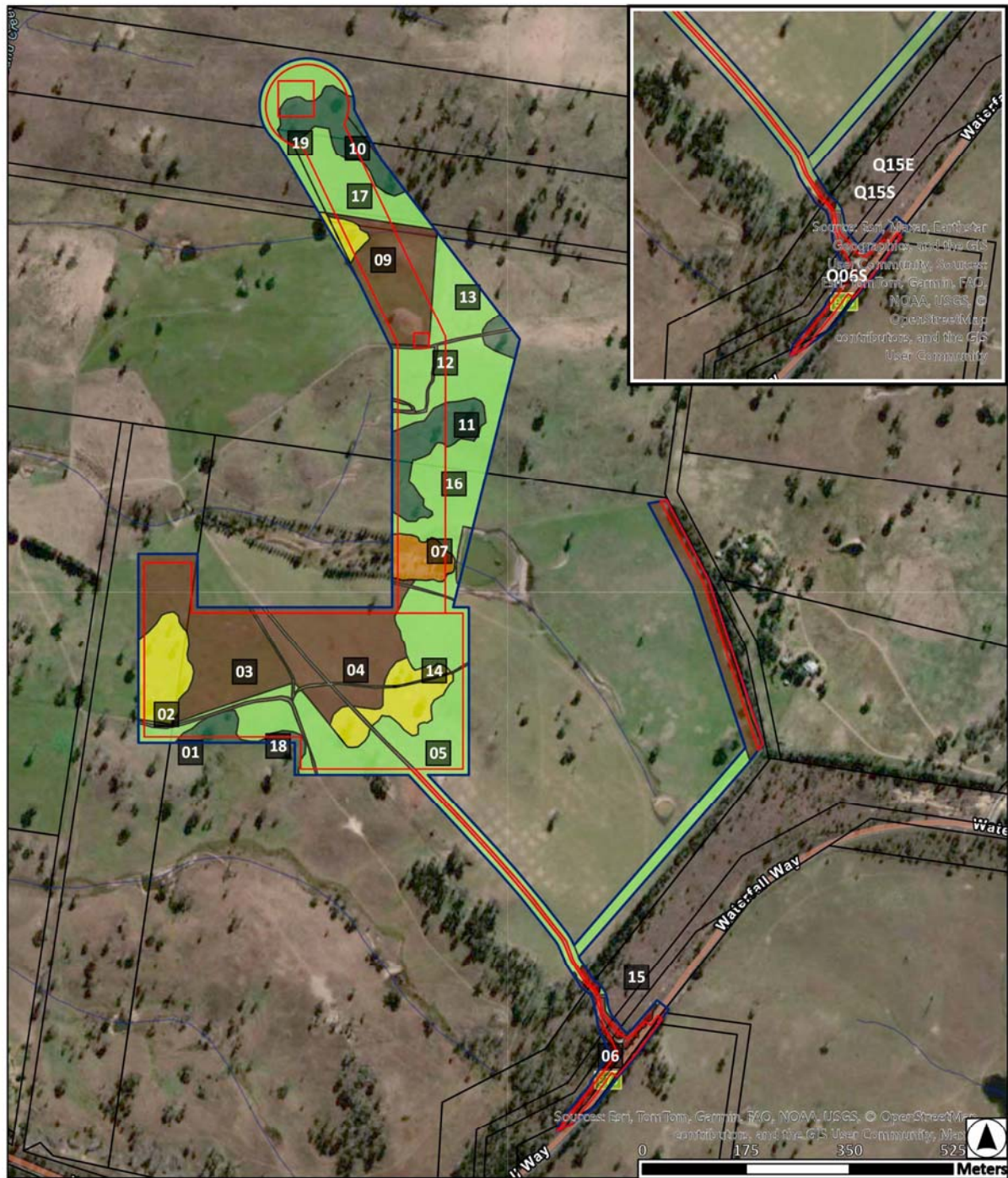


Figure 6: Bush Fire Prone Land Map & Bush fire vegetation assessment over Development Footprint (BESS) and surrounds within 140m (from Premise, undated).

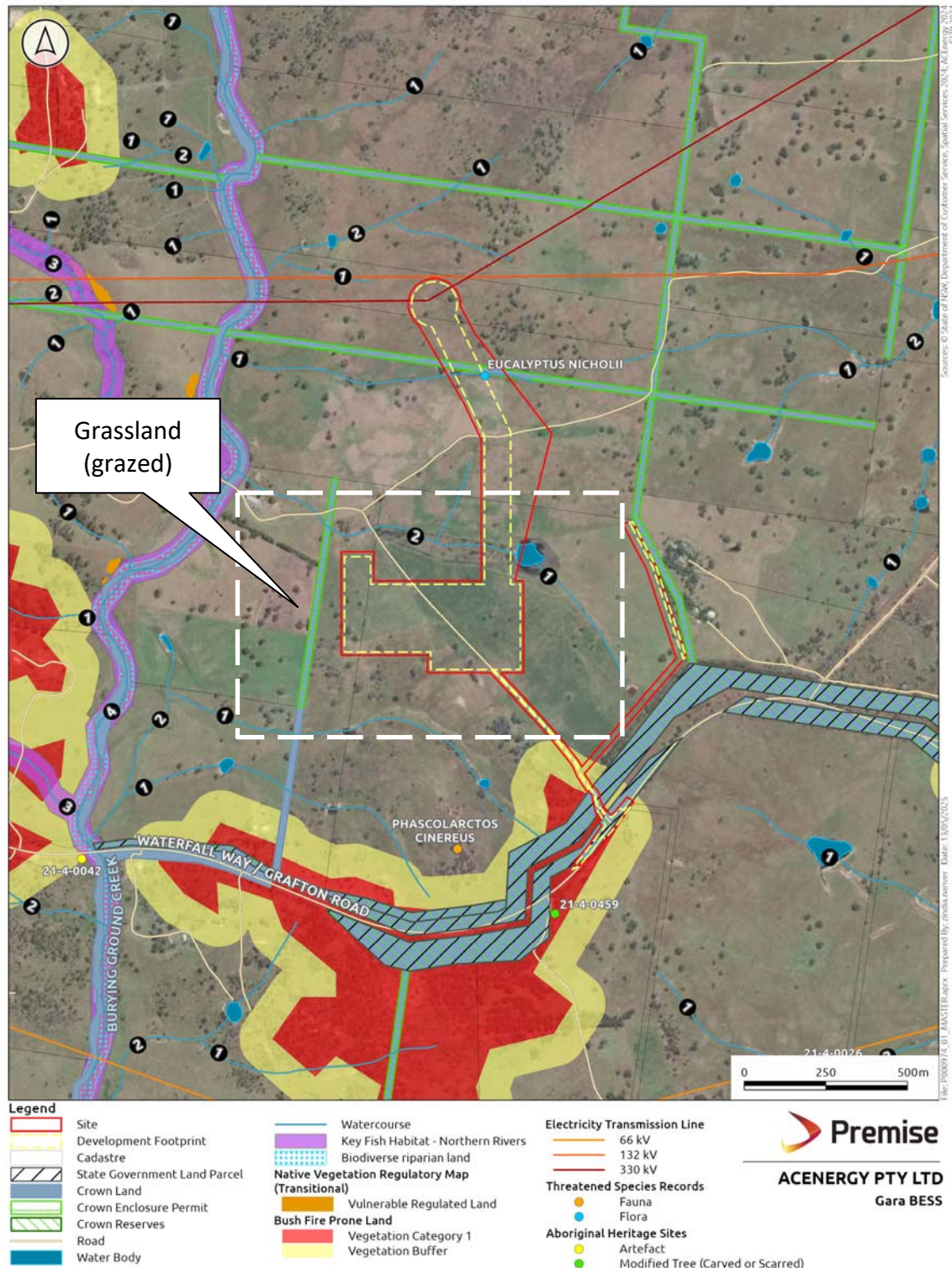


Figure 7: Landuse over Project Area and surrounds within 140m (from Premise, May 2025).

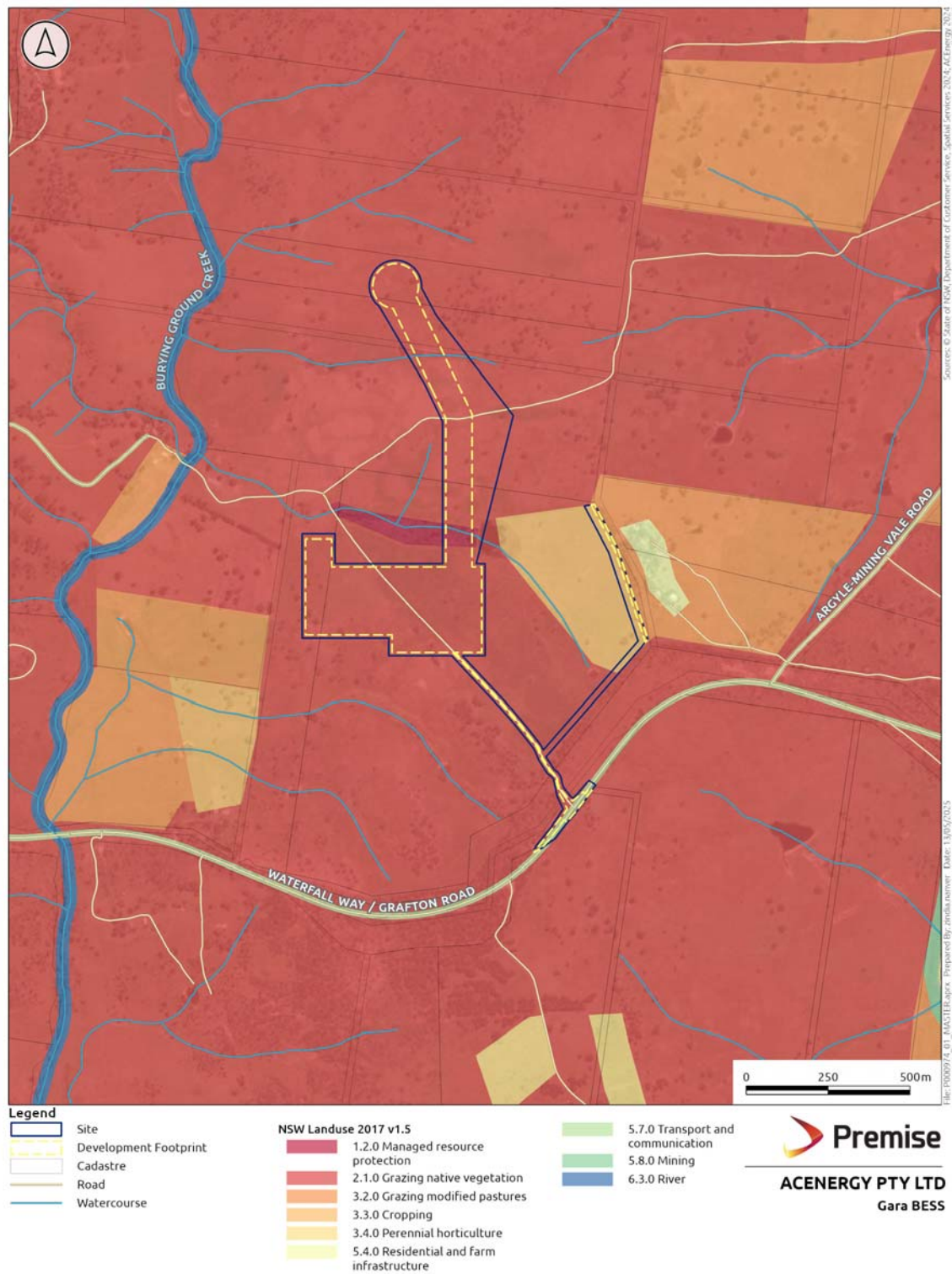
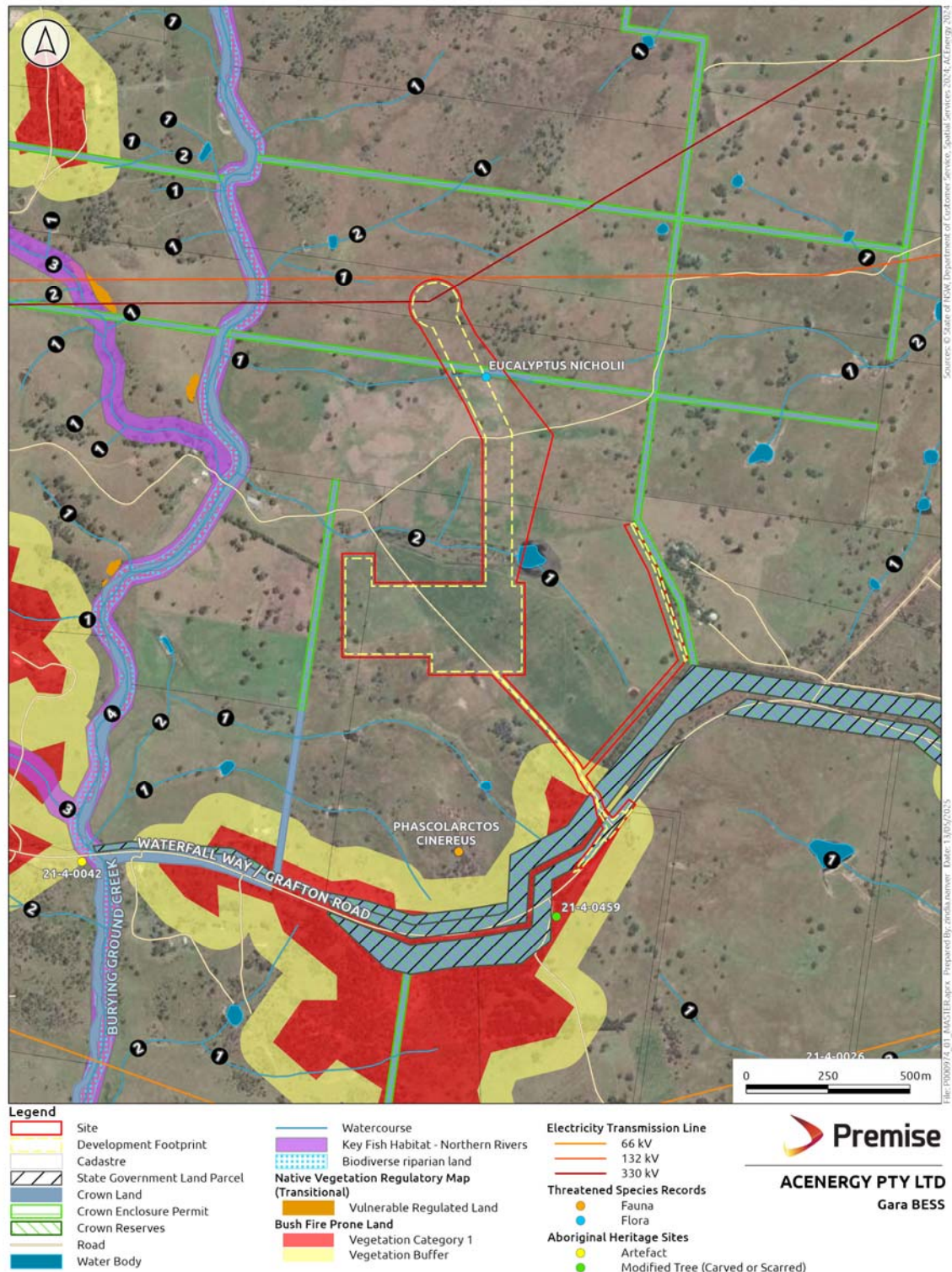


Figure 8: Bush Fire Prone Land Map of Project Area (from Premise, Feb 2025). BESS development site not mapped as Bush Fire Prone Land.



2.0 SPECIFICATIONS, UTILITIES, ACCESS AND SURROUNDING LANDUSE

2.1 KEY PROJECT FEATURES

Acenergy 2024 (Figures 3 & 4) state:

The project includes the following key infrastructure:

- *Enclosed lithium-ion batteries;*
- *Power conversion systems including associated transformers;*
- *Overhead power and fibre optic cabling interconnecting the equipment;*
- *Grid connection equipment including switchgear, protection and control equipment, metering, reactive power equipment, filtering equipment, auxiliary transformers and enclosures/buildings for housing equipment;*
- *Earthing and lightning protection systems;*
- *Site office, storage area/enclosure, internal access tracks, on-site parking, security fencing, CCTV, and temporary construction laydown area; and*
- *Vegetation screening (>10m from BESS containers);*
- *Noise wall comprising a fibre cement outer shell, and fire retardant polyurethane inner core) located 10m from BESS containers.*
- *Provision of an upgraded existing site access from Waterfall Way to the south.*

The primary components associated with the installation of the BESS are as follows:

- *Site investigations, vegetation clearing, levelling, access way construction, drainage system installation and installation of foundations/supports to install equipment on;*
- *Transport to site and installation of equipment;*
- *Testing and commissioning of the equipment;*
- *Operation and maintenance.*

2.2 PROJECT PHASES

Premise 2024 state:

CONSTRUCTION:

The Project comprises three phases, construction, operation and decommissioning.

The construction period is estimated to be 10 months and is expected to commence early 2026. Duration of peak construction period is approximately 4.5 months.

Construction or upgrading activities would occur during standard construction hours (7 am to 6 pm Monday to Friday, 8 am to 1 pm Saturdays; and at no time on Sundays and NSW public holidays.)

Some construction and upgrading activities that are inaudible and would not result in amenity impacts to surrounding receivers may be undertaken outside of standard hours in accordance with construction noise protocol.

Seven key construction stages (stages 3, 4, 5, 6 overlap during the 4.5 month peak construction period):

- 1. Establishment, drainage, roads & fencing*
- 2. Footing installation*
- 3. Delivery and installation of cabling*
- 4. Steel platform installation*
- 5. MVPS & BESS delivery & installation, including electrical installation*
- 6. Control room, transformer & switchgear delivery & installation*
- 7. Commissioning & demobilisation*

The primary components associated with the installation of the BESS are as follows:

- Site investigations, vegetation clearing, levelling, access way construction, drainage system installation and installation of foundations/supports to install equipment on;*
- Transport to site and installation of equipment;*
- Testing and commissioning of the equipment;*

Electricity generated by the project will be injected into the grid via a new cut-in and grid substation connected to TransGrid's 330 kV transmission line that runs to the north of the project area.

A summary of the connection works is as follows:

- Cut-in to existing 330kV line through installation of interface structures to replace the existing tower.*
- Establishment of a new 330kV switching station within the project footprint.*
- Loop-in, loop-out 330kV overhead lines connecting the line interface to the new switching station with approximately 1km length and supported by dual-circuit tower structures.*

OPERATION:

It is anticipated that the BESS would be operational for a period of approximately 23 years, operating 24 hours and day, seven days a week.

Once operational the BESS will be operated by site-based staff whose routine work generally involves:

- Monitoring, testing and maintenance of onsite equipment;*
- Receipt of goods;*
- Removal of waste; and*
- Other general site maintenance (e.g. vegetation /Asset Protection Zone management).*

The above activities are expected to generate up to five (5) FTE jobs during operation, associated with operation, maintenance, and vegetation management.

The remainder of the Host Lot could continue to be used for agricultural purposes surrounding the BESS development site, such as livestock grazing or cropping. This would assist to control fuel loads surrounding the development and maximise economic output from the subject land.

DECOMMISSIONING

It is anticipated that the BESS would be operational for a period of approximately 23 years after which time the existing BESS would be removed and the development site would be decommissioned, noting that the switching station may remain on site after decommissioning subject to a decision by the electricity authority.

2.4 SURROUNDING LAND USE

The site is located in a rural area, which is grazed by livestock over the site, and surrounds. Ongoing stock grazing will continue within the remainder of the Host Lot, outside Development Footprint, with some new/adjusted exclusionary fencing where required for safety or habitat management purposes.

Acenergy, 2025 state:

The ‘site’ is the land required to carry out the development and is defined by the red line boundary identified in Fig 3. The ‘development footprint’ is the extent of physical impacts to be impacted by the construction of the project and is defined by the yellow line boundary identified in Fig 6. Both the site and the development footprint are located across seven lots (Lot 1 DP246878, Lot 1 DP573787, Lots 144, 145 and 153 DP755826, Lot 7003 DP1060212, and Lot 7009 DP1060213), also known as 86 Woodlands Road, Armidale NSW and 67 Argyle-mining Vale Road, Metz NSW.

The site is bound by Waterfall Way (Grafton Road) in the south, and agricultural lands in the west, north and east. The site is located on land zoned as RU1 - Primary Production under the Armidale Regional Local Environmental Plan 2012 (ARLEP) and is used primarily for agricultural activities such as dryland grazing. The site has an area of approximately 35.24 ha (of which the development footprint comprises approximately 22.43 ha).

The site is generally cleared of vegetation due to historic agricultural activities, with remaining vegetation comprising a mixture of exotic grassland and native vegetation. There is also planted vegetation located towards the north of the site, as well as along Waterfall Way (Grafton Road). The site does not contain any dwellings. There will be some impacts to exotic and native vegetation on site as assessed by the project biodiversity assessment. A number of environmental constraints apply to the land, including mapped bushfire prone land in the southern extent of Lot 1 DP246878.

The site does not contain any mapped items of heritage significance and is not mapped as containing sensitive biodiversity. The site is not mapped as a flood planning area via the ARLEP. Waterways in the area include Burying Ground Creek to the west of the site, Gara River to the west of the site, and Commissioners Waters to the south of the site.

One 132kV and one 330kV electricity transmission line run to the north of Lot 1 DP246878 and two 132kV lines run to the south of Waterfall Way (Grafton Road) adjacent to Lot 1 DP246878.

Lot 1 DP246878 has a frontage to Waterfall Way (Grafton Road) to the south, which will be the point of access for construction and operation via an upgraded access point. The current access to Lot 1 DP246878 is through a gravel driveway off Waterfall Way (Grafton Road), which will be upgraded as part of the proposed development.

The site is located in an undulating, rural locality.

2.5 ACCESS

All public and internal roads used for Project access will be constructed to meet the requirements of PBP, 2019.

The development site entrance and access road will be located at the southern corner of the Lot 1 DP246878 entering from Waterfall Way/Grafton Road, as shown in Figures 2-5. Grafton Road is a sealed public through road in good condition. The Project involves upgrading existing site access to the proposed security fence of the development.

There is ample room for fire fighting vehicles to access and turn around on site, and access the Asset Protection Zone around the perimeter of the BESS.

2.6 UTILITIES/WATER SUPPLIES

The Development Footprint is not serviced by reticulated town water supplies. There is one dam over the site.

Water for construction & ongoing purposes will be sourced from the following methods:

- *Construction and operation water will be trucked in regularly by contractors*

It is recommended that the proposed development will have at least one (1) dedicated non combustibile 100,000 litre (l) water tank with Storz fitting, and other fire fighting equipment in compliance with Australian Standards. Emergency fire fighting water would be stored in a suitable accessible location.

Section 8.3.5 PBP, 2019 makes no reference to water supply required amount for Solar & Wind Farms. This dedicated water tank supply, is considered adequate, based upon the scale of the project, lack of permanent on site dwellings, and is consistent with other Solar & Wind Farm developments.

The Development Footprint is serviced by above ground power to the site. There are no permanent proposed gas tanks/bottling.

2.7 CONSTRUCTION STANDARDS

No construction standards are applicable for the Wind/Solar/Battery Farm development as it is a commercial development. Construction standards are only applicable for any temporary workers camp, which is not proposed.

PBP, 2019 states *“Buildings of Class 5 to 8 and 10 of the BCA- The BCA does not provide any bush fire specific performance requirements and as such AS 3959 does not apply as a set of deemed to satisfy requirements. The general fire safety construction provisions are taken as acceptable solutions, but the aim and objectives of PBP 2006 apply in relation to other matters such as access, water and services, emergency planning and landscaping/vegetation management.”*

This report has addressed PBP, 2019 aims and objectives. Recommendations have been made to ember screen the office facility.

For the purposes of this assessment it has been assumed that the equipment and activities required for decommissioning will be similar to those of construction, however noting that, decommissioning would likely occur over a shorter duration of time. Based on this, the same recommendations for mitigation measures should be implemented for construction and decommissioning phases of the Project.

A hazard assessment has been undertaken by Riskcon, dated 24th Oct, 2024 to investigate hazardous events and risks such as the explosion / spontaneous ignition risk associated with the operation of batteries. The level of risk / hazard depends on the type of battery and design, placement, safety measures etc.

Riskcon, 2024 state:

A hazard identification table was developed for the Gara BESS project to identify potential hazards that may be present at the site as a result of operations or storage of materials. Based on the identified hazards, scenarios were postulated that may result in an incident with the potential for offsite impacts. Postulated scenarios were discussed qualitatively and any scenarios that would not impact offsite were eliminated from further assessment. Scenarios not eliminated were then carried forward for consequence analysis.

A review of the incidents carried forward for further analysis indicates that there were no observed offsite impacts; therefore, based on the analysis conducted, it is concluded that the risks at the site boundary are not considered to exceed the acceptable risk criteria; hence, the project would only be classified as potentially hazardous and would be permitted within the current land zoning for the site. It must be noted that the required bushfire assessment is provided under separate cover.

Recommendations

The following recommendations have been made as a result of the assessment:

- *End-to-end spacing (short side) of BESS containerised units shall be a minimum of 3 m*
- *Back-to-back spacing (long side) of BESS containerised units shall be a minimum of 3 m*
- *Spacing between BESS container accumulations (i.e. 4 containerised units) shall be a minimum of 3 m.*
- *The BESS containerised units shall be provided with the fire protection system specified by the BESS manufacturer.*
- *The vents shall not be located above battery packs within the BESS container.*

- *The vent covers of the BESS shall be constructed of non-combustible material.*
 - *Prior to commissioning, the UL test data for the selected battery units shall be made available to the DPHI.*

These recommendations are to be adopted by ACenergy in the BESS design.

2.8 OTHER FIRE PROTECTION MEASURES/EMERGENCY EVACUATION

The EIS will document the requirement to prepare and implement an Emergency Response Plan – which will be developed with Department of Planning, Housing and Infrastructure (DPHI) Hazards / FRNSW / RFS. There will also be a commitment to prepare and implement a Bushfire Emergency Management Plan in consultation with FRNSW/RFS.

There will be up to 5 personnel during operations, operated by site-based staff during normal work days.

APZs will be established around selected Project infrastructure as detailed in Section 5.1. All vegetation and landscaping within the APZs shall be in accordance with PBP, 2019.

A Bushfire Emergency Management Plan is required, nominating an emergency meeting point, and preferred evacuation route, and methodology for ensuring all occupants are safe and accounted for. In regards to bushfire, the threat at this site is considered low, being possible ember and smoke attack only assuming the APZ is maintained. Therefore the safest place would be to stay within the Site Office as it will protect occupants from embers in the air/ and smoke if all windows and doors are shut, and is recommended to be constructed of non combustible materials and ember screened.

All landscaping within the nominated APZ should be in accordance with APZ requirements as detailed within PBP, 2019. The proposed row of trees shall not be within the 10m wide Asset Protection Zone.

Other mitigation measures which are recommended to improve bushfire safety include:

- Noise wall shall be of non combustible exterior. It may assist in protecting the BESS from potential grassland fire, and conversely also prevent any fire within the BESS from spreading outwards into Grassland. It is noted that the noise wall is only located in some areas (see Fig 4), and is up to 4m high, and greater than 10m from the BESS.
- Informing Local Fire & Rescue Brigade of the proposal once approved regarding its operation, water supplies, and layout;
- The interior of any Office buildings will have all necessary fire safety provisions (sprinklers, fire extinguishers, etc) as required by the relevant Australian Standards and legislation.
- Windows and doors of site buildings should be shut in a fire event, and ember proofing is recommended for the Office.
- It is anticipated relevant exterior fire fighting equipment will be provided including a protective clothing/PPE clothing/equipment, CO2 fire extinguishers, etc.
- 100 000l water tank, with Storz fitting (to be installed at the Office /carpark during construction accessible at all times to NSW RFS fire tankers/others.

- Training for all on-site personnel regarding bushfire response procedures.
- Fire fighting training for operational workers.

3.0 VEGETATION

The predominant vegetation types over and within 140m of the Development Footprint are Grassland assessed as per PBP 2019 (Figure 6, Appendix 1 - photos).

ACEnergy state all vegetation outside of the Development Footprint is to be grazed on an ongoing basis. This therefore effectively manages the Grassland, so that it has lower fuel loads and if <100mm grass height is not classed as a hazard at all (as per the Bush Fire Prone Land Map, Fig 6) being equivalent to an Asset Protection Zone.

It has been mapped conservatively as Grassland within this report as ongoing grazing regime not known.

Note scattered trees can be retained and are not considered a bush fire threat or hazard, and can actually help trap airborne embers and provide partial ember filtering. There are no known vegetation regeneration/protection areas, so it is taken as not being able to regenerate back to a Woodland or Forest structure within 100m of the Development Footprint. Note- if this is proposed the outcomes /recommendations of this report remain unchanged anyway.

It is noted a vegetation screen is proposed being approximately three rows of trees of 10m width over 300m from the BESS to the east. These shelter belts/screens are considered managed land/not a hazard under Sect A1.10 PBP, 2019. They shall however not be located within the Asset Protection Zone.

Forest (Category 1 Vegetation) has been mapped over the southern part of the subject lot on the Bush Fire Prone Land Map. It is well over 300m from the BESS site, grazed/part cleared/limited in extent, and of lower risk, and not further assessed as per PBP, 2019.

4.0 SLOPE

PBP, 2019 states: - *“The effective slope is considered to be the slope under the vegetation which will most significantly influence the bush fire behaviour for each aspect. This is usually the steepest slope. In situations where this is not the case, the proposed approach must be fully justified. Vegetation located closest to an asset may not necessarily be located on the effective slope”.*

The Project Compound Area and surrounds within 100m is gently undulating, being a low slope falling downslope to the north.

While slopes across the Project Compound Area are <5 degrees, it is noted that slope is irrelevant for determining APZ requirements for wind and solar farm developments. Minimum 10 m APZs are required as per Section 8.3.5 of PBP, 2019. Therefore no further slope site assessment is required under PBP, 2019, and this is considered adequate detail.

5.0 BUSH FIRE ASSESSMENT

The legislation as it relates to this site calls for APZ to be established around the proposed development, provision of adequate access, design staging and citing of the development and provision of appropriate water supply for bush fire fighting purposes.

5.1 SETBACKS INCLUDING ASSET PROTECTION ZONE

Table 1 shows the bush fire assessment for the Development Footprint.

APZs will be established for the Project as follows, in compliance with PBP, 2019:

- Ten (10) m wide APZ around the main project compound inside the security fence and around the site office building.

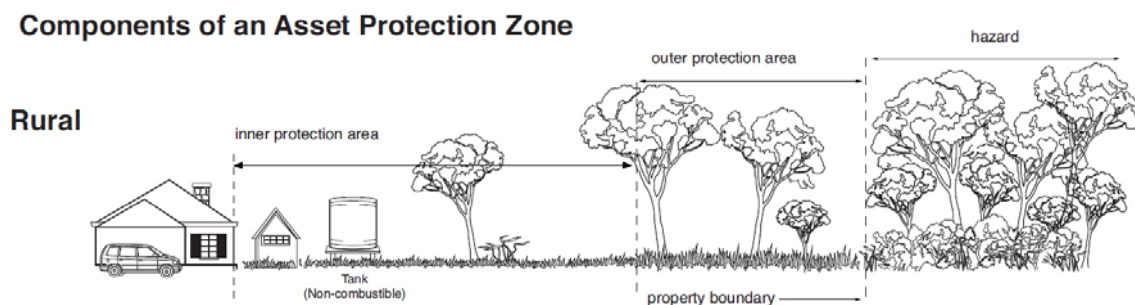
Table 1: Bush Fire Site Assessment –Fire Danger Index (FDI) 80 –BESS development

DIRECTION TO BUSH FIRE HAZARD	EFFECTIVE SLOPE	PREDOMINANT VEGETATION TYPE WITHIN 140m as per PBP, 2019	Distance to edge of hazard	PBP, 2019 required min APZ	Bush Fire Attack Level (BAL) (from PBP, 2019)
All directions	0-5° up & downslopes	Grassland	>10m	10m	N/A

Note: BAL refers to the maximum Bush fire attack level expressed in kW/m² radiant heat flux exposure for the given slope, distance to hazard, and type of hazard (i.e. vegetation type and fuel load).

The proposal is located in an area of low bush fire risk, with low risk from any fire caused by the proposal as determined by the PHA. The project is of low risk of being impacted by bush fire after implementing all mitigation measures, and there is a low risk of bush fire on the subject land due to the project being developed, and due to it being primarily cleared and grazed, and managed to a low fuel load.

Figure 9: Pictorial diagram of an APZ (diagram from PBP, 2006)



6.0 BUSH FIRE RECOMMENDATIONS

The development complies with PBP, 2019:

- ❑ Construction - No BAL applicable for the BESS/commercial development. The Office building(s) however shall be constructed to BAL 12.5 & external walls, floor & roof constructed from non-combustible materials- complies with PBP, 2019
- ❑ Serviced by static water supplies - complies with PBP, 2019.
- ❑ Serviced by above ground power - complies with PBP, 2019.
- ❑ Serviced by public road & interior property access roads - complies with PBP, 2019.
- ❑ APZ - 10m provides a defensible space available around the proposed development, and safe access/egress - complies with PBP, 2019.
- ❑ Landscaping- complies with PBP, 2019.
- ❑ Emergency Management - complies with PBP, 2019.

The Project therefore meets the criteria outlined in Section 8.3.5 PBP, 2019 (Wind and Solar Farms which includes the BESS).

The following recommendations are made:

- ❑ **Design and Construction:** - The intent of measures is that buildings are designed and constructed to withstand the potential impacts of bush fire attack. To achieve this, the following is recommended:
 - Office building shall comply with Sections 3 and 5 (BAL 12.5) of Australian Standard AS3959-2018 'Construction of buildings in Bush Fire-prone areas', except as modified by Section 7.5 of PBP, 2019.
 - 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. It should also be designed and maintained so that it will not serve as a bush fire risk to surrounding bush.
 - Fire protection equipment within buildings including fire extinguishers, fire hose reels, evacuation signage, first aid kits, etc be available at all times and serviced /maintained regularly;
 - The office shall have a policy to shut all windows & doors in a bush fire emergency, as part of their Emergency Evacuation Plan procedures;
- ❑ **Asset Protection Zone:** - The intent of measures is to provide sufficient space and maintain reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact. To achieve this, the following should apply:
 - During Construction works and for the life of the Project, a 10m Asset Protection Zone shall be established as set out in Table 1 Section 5.1 & Fig 4 as outlined within Appendix 4 of PBP, 2019.

In summary PBP, 2019 states “Asset Protection Zone should consist of mown grass, concrete, pavers, pebbles, small clumps of vegetation, isolated trees, etc. Lawns and garden should be maintained so that they do not become overgrown, vegetation does not grow over or touch the dwelling, and canopy of trees do not touch or

become continuous with the surrounding bushland (at least 2-5 metres between tree canopies).

Please note in this modified agricultural landscape that isolated paddock trees, woodlots, shelterbelts, conservation areas outside of the Asset Protection Zone/development footprint can be retained as they are environmentally important and of a low risk.

- ❑ **Water and Utilities:** - The intent of measures is to provide adequate services of water for the protection of buildings during and after the passage of a bush fire, and to locate gas and electricity so as not to contribute to the risk of fire to a building. To achieve this, the following should apply:
 - Water, electricity and gas shall comply with Table 7.4a (where relevant) of PBP, 2019.
 - The proposed development is to have a non-combustible 100,000l dedicated water tank with Storz fitting, and other fire fighting equipment in compliance with Australian Standards. Dedicated fire fighting water supply from this tank is specifically for fire tanker refilling/on-site fire fighting. This Static Water Supply (SWS) should be located in an easy to access part of the Development Footprint by fire tanker, within the carpark or similar, with 10m APZ around it, and signposted “SWS”.
- ❑ **Access:** - The intent of measures for access roads is to provide safe operational access for emergency services personnel in suppressing a bush fire, while residents are accessing or egressing an area. To achieve this, the following should apply:
 - The internal road network shall conform to PBP, 2019.
 - Internal roads should have a minimum 4m vertical clearance to any overhanging obstructions, and be a minimum 4m width with 1m traversable shoulders, unsealed/sealed all weather traversable road with suitable load bearing capacity, drainage structures and feature crossings. Road grade should be less than 10°, short steep sections are acceptable if sealed and <15° and then suitable cross fall of the road surface provided. Two way traffic flow (with capacity for passing and turning areas) which enables safe access & egress for emergency services and allow crews to work with equipment about the vehicle is to be provided by the proposed road system & APZs.
- ❑ **Landscaping** - The intent of measures is that landscaping is designed and managed to minimise flame contact and radiant heat to buildings, and the potential for wind-driven embers to cause ignitions. To achieve this, the following should apply:
 - Landscaping of the Asset Protection Zones is to comply with the principles of APZ standards - Appendix 4 of PBP, 2019.
- ❑ **Emergency management planning-** The intent of measures is to provide suitable emergency and evacuation arrangements for occupants of the development, and to reduce bush fire risk from the proposed development. To achieve this, the following measures are recommended:
 - A Bush Fire Emergency Management and Operations Plan should identify all relevant risks and mitigation measures associated with the construction, operation and decommissioning of the Project. This should include:
 - 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.

It is important to be aware of operations that may 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 the *Rural Fires Act 1997* s.99. The Bush Fire Emergency Management and Operations Plan should include training, awareness and notification protocols in this regard.

The following information is provided for the proponent in order to improve bush fire safety if desired. It is not compulsory under PBP, 2019:

- o Training is recommended for all on-site personnel regarding bushfire response procedures.
- o Fire fighting training is recommended for operational workers.
- o Operational vehicles should be fitted with basic fire fighting equipment.

The bush fire risk is considered to be adequately managed through the recommendations made above, and in conjunction with consent conditions from NSW DPE/NSW Rural Fire Service.

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DISCLAIMER: Whilst every effort is made to present clear and factual information based on fieldwork and current legislation no guarantee is made that the development or its occupants are safe from bush fire, or development will be approved or to the recommended BAL, as this is in the hands of the approving statutory authority. No warranty or guarantee, whether expressed or implied, is made with respect to the observations, information, findings and inclusions expressed within this report. No liability is accepted for losses, expenses or damages occurring as a result of information presented in this document.

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APPENDIX 1: PHOTOS OF SITE AND SURROUNDS

Looking west from BESS site



Looking east from BESS site



Looking north from BESS site



Looking south from BESS site



Existing dams over site



Livestock present over site and surrounds

