Table 1 – Response to Additional Information Requested

	Additional Information Requested	Comments
1.	***Acoustic Report*** *A revised acoustic report was submitted as part of the additional information package. Following the Planning Panel preliminary briefing, Council engaged the services of another appropriate qualified acoustic expert to conduct a peer review. A copy of the peer review report is attached for your reference.*	A revised acoustic report has been prepared to address the comments provided in the peer review report and is provided as **Attachment 3**.
	• *A response to the acoustic report peer review is to be provided, specifically addressing the recommendations made.*	The revised acoustic report (**Attachment 3**) has been prepared to respond to matters raised within the peer review. The peer review prepared by Rob Bullen Consulting had specifically recommended that either: • *Measurements of existing ambient noise should be conducted before approval, both to confirm A-weighted background sound levels and to confirm the spectrum of the background noise. This may result in adjusted criteria and/or the presence of enough high-frequency ambient noise to mask the tone;* ***OR*** • *The proposed barrier should be constructed as part of the project.* Monitoring has been undertaken via a site investigation in response to the peer review to characterise the existing acoustic environment for the proposed development. It has been concluded in response to monitoring, that the existing noise environment at the site is not sufficiently elevated to 'mask' the potential tonal character of noise associated with the future site equipment. The construction of an acoustic barrier is therefore required as part of the project.
	• *The revised acoustic report has Receptor R07 as commercial premises only. The subject land also contains a dwelling house. The project trigger level for Receptor R07 is to be updated*	The revised acoustic report (**Attachment 3**) considers impacts to both: • R07 – Dwelling at 1 Patemans Lane, Murrumbateman; and, • R07A – 'Dionysus Winery and Woo Chocolate' premises located at 1 Patemans Lane, Murrumbateman

	Additional Information Requested	Comments
	to state the more conservative residential to avoid doubt.	The results of noise modelling details that noise levels at R07 and R07A would not exceed the project trigger noise levels (including tonal adjustment). No significant noise impacts to R07 and R07A are therefore anticipated to result from the operation of the development.
	• *A submission received indicates future intention to make a Development Application for a residential dwelling house at Lot 2 DP 787995, 4 Crisps Lane, Murrumbateman. Whilst there is no dwelling house currently on the site and a Development Application has not been made, to respond to these concerns it would be recommended that the noise model is re-run to consider a potential future receptor. Noting comments received in the peer review, this should also include consideration of reflect of sound from the acoustic barrier back towards the potential receptor.*	The revised acoustic report (**Attachment 3**) consider impacts to: • R08 – Potential future residential dwelling at Lot 2 DP 787995, 4 Crisps Lane, Murrumbateman. The results of noise modelling detailed that that noise levels at R08 would not exceed the project trigger noise levels (including tonal adjustment). No significant noise impacts to R08 are therefore anticipated to result from the operation of the development.
2.	***Acoustic Barrier*** *The response to additional information request indicates that the revised acoustic report provides an indication of the general specifications for the proposed acoustic barrier, including minimum height of 3000mm and the general surface density.* *It is considered that there remains insufficient clarity and detail of the acoustic barrier to enable full assessment of this in accordance with s4.15 Environmental Planning and Assessment Act 1979. In this regard, the following information is to be provided:*	The revised acoustic report (**Attachment 3**) has provided additional clarification on the construction of the barrier and specifications to ensure suitable materials are selected. The proposed acoustic barrier as specified by the acoustic assessment is to be constructed with: • A minimum height of 3000mm. Noting that minor increases to the final height may result according to the assembly of panels. • A surface minimum weight of 12 kg/m^2 • No gaps between panels and between the panels and the ground below. The acoustic barrier must be lined on the equipment side using sound absorbing materials, and WMG have recommended that: *"…the absorption coefficient performance of the sound absorbing lining achieve not less than 0.9 at the 3150Hz one third octave band frequency which has been identified as critical to the assessment. The overall NRC performance can be lower, and in the order of 0.7."*

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		From experience WMG detail that a suitable material for external applications may include Megasorber faced with Soundmesh G8 facing The technical specification sheet for the Soundmesh G8 facing material and other soundproofing products are available via Megasorber's website. The final selection of soundproofing products is subject to the finalisation of design. Several options, however. are available and are capable of being designed to achieve the requirements of the project. The applicant has no objection to a condition of consent requiring the provision of this information to Council's satisfaction prior to issue of a construction certificate.
	• *Separate, dimensioned, elevation drawings of the acoustic barrier, including the maximum height and details of construction type, material, and colours/finishes are to be provided.*	A revised drawing set, including details of the proposed acoustic barrier, is provided as **Attachment 2**. This includes a typical section of the proposed barrier, features of the material proposed and elevations. As noted, final details on the construction type, material, colours and finishes of acoustic products are contingent on the selection of vendors during the detailed design stage. Megasorber's website, however, provides example specification sheets for suitable acoustic products which include dimensions of panels, acoustic properties and options for colours and finishes.
	• *Site plan with clear dimensions for lengths and relative setbacks,*	The revised drawing set (**Attachment 2**) includes an updated site plan to respond to council's request.
3.	***Materials & Colours*** *It is noted in the record of briefing that the Panel considered that visual impacts could be reduced through the use of appropriate materials and colours. In this regard, details of materials and colours are to be provided and should be:* • *Compatible and sympathetic to the surrounding development.* • *Non-reflective.*	The final selection of project infrastructure, including materials and colour for project infrastructure (e.g., batteries and acoustic products), is dependent on the options available during the finalisation of detailed design and the selection of vendor products for the construction of the project. Where possible, suitable materials and finishes would be implemented to minimise the potential for perceived visual effect, and the longevity of materials and durability of the same. A consent condition for the provision of a final schedule would be a practical measure. The applicant has no objection to a condition of consent requiring the provision of this information to Council's satisfaction prior to issue of a construction certificate.

	Additional Information Requested	Comments
	• *Such that supports reducing the visual presence within the landscape.*	
4.	***Bushfire*** *Advice received from the NSW Rural Fire Service (RFS) generally supported the assessment and recommendations made in the Bushfire and Emergency Evacuation Plan submitted with the application, with the exception that a 12m wide asset protection zone (APZ) is to be maintained to the west. A revised or supplementary site plan demonstrating that this can be achieved within the boundaries of the subject land is to be provided. The revised site plan is to also show the location of landscaping in relation to the APZ.* *It is noted in the record of briefing with the Panel that Council needs to consider how the APZ and landscaping requirements can coexist. It is recommended that a statement from the accredited bushfire practitioner is provided which confirms that the proposed landscaping per the landscaping plan is consistent with the assessment and recommendations made in their Bushfire and Emergency Evacuation Plan.*	A revised drawing set (**Attachment 2**) includes an updated site plan to respond to council's request. The updated site plan details: • The provision of a minimum 12 m wide APZ to the west of the BESS; and, • The location of landscaping in relation to the proposed APZ. A revised Bushfire Assessment report has been prepared in consideration of the updated site plan and is provided as **Attachment 4**. As shown in the revised drawings the proposed landscaping area is situated outside of the APZ surrounding the BESS. The revised Bushfire Assessment details that the APZ is located wholly in grassland, with no trees within the development footprint and that grass within the APZ should be kept mown (<100mm in height). It should be noted that Section A1.10 of PBP outlines that certain types of vegetation are classified as low threat vegetation. This includes: *"grassland managed in a minimal fuel condition, mangroves and other saline wetlands, maintained lawns, golf courses such as playing areas and fairways, maintained public reserves and parklands, sporting fields, vineyards, orchards, banana plantations, market gardens and other non-curing crops, cultivated gardens, arboretums, commercial nurseries, nature strips and windbreaks.* *Note: 1. Minimal fuel condition means there is insufficient fuel available to significantly increase the severity of the bush fire attack (recognizable as short cropped grass for example, to a nominal height of 100 mm). 2. A windbreak is considered a single row of planted trees located on a boundary and used as a screen or to reduce the effect of wind on the leeward side of the trees."* Low threat vegetation is excluded from *Australian Standard- Construction of buildings in bushfire-prone areas (AS 3959 2009)* and is not required to be considered for the purposes of PBP. A statement from the bushfire consultant, nevertheless, has been prepared by the bushfire consultant to respond to Council's request and is provided as **Appendix 5**. The statement

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		confirms that the proposed landscape plan and planting is consistent with the APZ requirements, with all landscape planting located outside of the identified APZ.
5.	***Firefighting Water Contamination Risk and Mitigation Strategies*** *At the briefing the Applicant provided an outline that potential concerns in relation to firefighting water containment could be resolved through the use of a retention basin and infiltration system. Details of this forming part of the proposal are not considered to have been made sufficiently clear in the application to enable complete understanding or assessment. The following information is to be provided:* • Concept details of any retention basin and infiltration system. • Where appropriate, a revised site plan showing the location of any retention basin or other similar infrastructure. • Any other risk and mitigation strategies that are proposed or will be implemented to control firefighting water contamination.	The evaluation of contamination risks associated with firefighting water is dependent on the final sizing and layout of the facility, the implementation of site management plans and the procurement of battery equipment, including embedded safety devices and battery technology. The applicant has no objection to a condition of consent requiring the provision of the final detailed design of the project and associated management plans (i.e., Construction Environmental Management Plan, Emergency Management Plan, etc.) prior to issue of a construction certificate. The implementation of a basin to capture firefighting water was suggested during the briefing meeting as one potential option to manage the potential for contamination. No commitment to the installation of a basin has been provided. An examination of existing information provided in the development application and a review of measures implemented for similar projects, however, has been undertaken to provide an indication on suitable fire management strategies and measures to minimise contamination risks. It should be noted that the existing Groundwater Assessment prepared in support of the development application (Water Technology, 2024) provides the following statement with respect to groundwater contamination: *"Potential battery fires are expected to be contained within the individual units, as each unit has internal fire suppression systems, including flammable gas, smoke and thermal sensors, pressure release systems and aerosol fire extinguishing systems. Therefore, the risk from small individual fires is not considered significant. However, should a larger fire occur necessitating the use of large volumes of external water and fire-fighting chemicals, then there would be a low risk to groundwater from the infiltration of fire-fighting liquids to the shallow aquifer. However, as discussed, the thick clay layer beneath the Subject Site would reduce any downward migration to the underlying groundwater system and therefore, even in this scenario, the risk of contamination to groundwater is considered minimal."*

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		The groundwater assessment therefore establishes a low risk to groundwater associated with the infiltration of contaminated material during a fire event and details that the risk is further minimised by the impervious nature of a clay layer underlying the development site. Notwithstanding it is recommended by the groundwater assessment that groundwater bores are installed as a contingency measure in response to fire events to ensure contamination risks are appropriately managed. While risks to groundwater have been assessed it is acknowledged that surface water associated with firefighting activities may continue to pose a contamination risk if suitable measures are not implemented. The inherent risk of fire and risk of firefighting water contamination at the proposed facility is minimal due to the project's design, scale, and inherent safety features. Contamination risk primarily arises from combustion products, partially combusted materials, and any stored chemicals or oils. However, this project—limited to 5MW on a 0.5ha site—includes only battery containers, MVPS, and switches. No oils, chemicals, or hazardous substances will be stored on-site. The proposed BESS units utilize Lithium Iron Phosphate (LFP) batteries, which do not contain heavy metals like cobalt or nickel, and have no oil-based cooling systems. Additionally, anti-leakage connectors and self-contained designs significantly mitigate the risk of contamination. **Risk Mitigation and Control Measures** To further ensure safe operations, a range of proactive control measures has been proposed to address and manage any unlikely contamination risks: **1. Primary Control Measures: Prevention at the Source** • Automatic Fire Suppression Systems and Safety Devices: The BESS units adhere to stringent standards such as AS/NZS 5139:2019, UL9540, UL9540a, and NFPA-855. Internal fire detection and suppression systems, including aerosol extinguishing mechanisms and gas/thermal sensors, provide immediate containment of potential fire events • Self-Bunding BESS Containers: The BESS units are housed in self-bunded containers, ensuring that any potential electrolyte leakage remains contained within the system and does not reach the surrounding environment.

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		• LFP Chemistry Advantages: LFP batteries offer enhanced safety due to the absence of heavy metals and their lower thermal runaway nature. • Site Layout and Design: Strategic site planning incorporates safety measures, including asset protection zones, fuel-free zones, static water tanks, site access, battery separations, and setbacks, to minimize fire spread. **2. Secondary Control Measures: Managing Larger Incidents** • Firefighting Strategy: A defensive "controlled burn' approach is intended for fire management and would allow battery units affected by fire to consume themselves. This approach would restrict the application of firefighting water to surrounding areas cooling nearby exposures outside of affected battery containers. The application of water directly to affected battery units is considered to have minimal effect, is unlikely to extinguish a BESS fire and would likely only delay the eventual combustion of an affected unit. The defensive firefighting strategy of applying fire to surrounding areas seeks to prevent the propagation of fire and would avoid generating short circuits in adjacent equipment, minimise the amount of water needed for firefighting activities and reduce the volume of contaminated water produced. • Runoff Management: While permanent retention basins are impractical for a small-scale D-BESS due to space considerations, temporary containment measures such as impermeable surfaces, bunding, and portable spill barriers can effectively handle any potential runoff. • Operation and Maintenance: Well-defined Emergency Response Plans (ERP) and Fire Management Plans (FMP) will ensure that, in the unlikely event of substantial water usage, suitable containment, collection, remediation and off-site disposal measures are implemented effectively through an incident management process. Additional safeguards, including regular inspections, water quality testing, and the installation of monitoring bores, will further support efficient containment, cleanup, and safe disposal of firefighting water as necessary.

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Responses to Additional Information Request 1

04/12/2024

Jeremy Knox
Yass Valley Council
Via email: JKnox@yass.nsw.gov.au

Dear Jeremy,

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – DA 240159

Premise have prepared this letter on behalf of ACEnergy Pty Ltd to respond to a request for additional information (RFI) issued by Yass Valley Council (YVC) via the NSW planning portal on 25 October 2024. The request is made in respect of development application (DA) 240159 and relates to the proposed development of Murrumbateman Distribution Battery Energy Storage System (D-BESS) at 3 Turton Place, Murrumbateman.

The table contained in this letter has been prepared to respond to YVC's request and seeks to assist YVC's evaluation of the proposed development. We trust that the information included provides a sufficient response to the questions raised.

Please contact the undersigned with any questions.

Yours sincerely,

Hugh Shackcloth-Bertinetti
Environmental Planner

No. of Attachments – 4

1. Tabular response to Council's RFI letter.
2. Conceptual Design Drawings, P000874-C01-2.
3. Photomontage from receiver with greatest potential for visual impact.
4. Revised Statement of Environmental Effects (including updated specialist assessments).

Table 1 – Response to Additional Information Requested

Additional Information Requested		Comments
1.	***Acoustic report*** *A revised acoustic report is to be provided addressing:* • *The submitted acoustic report has been based on assumptions for background and ambient noise levels. A revised report which has been based on an actual measurement of background and ambient noise levels at the site in order to appropriately determine the acoustic environment, impacts, and the extent of necessary sound attenuation measures, such as acoustic barrier, is to be provided.* • *There is an additional sensitive receptor (dwelling) located on Lot 21 DP 248413, 1 Turton Place, which has been missed in the assessment and is in closer proximity than R02.* • *Clarification from the author of the acoustic report on how the location and design of the acoustic barrier has been determined, noting that there is a gap proposed in the acoustic barrier.* • *Consideration of any alternate sound attenuation measures that would reduce the scale and/or extent of the acoustic barrier which is necessary.* • *Consideration of whether the selection of alternate sites within the subject land may reduce noise impacts to nearby sensitive receivers.*	A revised Acoustic Report (AR) has been prepared to address the information requested by Council (**Appendix I** of revised SEE). The AR has been prepared in accordance with the Noise Policy for Industry (NPfI), which is considered appropriate for the type of development proposed. The AR has adopted a conservative approach in accordance with the methodology of the NPfI determining project intrusive noise criteria and project amenity noise criteria. In accordance with the NPfI, the project trigger levels for the development are conservative and have adopted the lower and more stringent of the determined intrusiveness and amenity noise levels. The AR has been revised to include the additional receiver located on Lot 21 DP248413. A total of 7 surrounding receivers have now been considered in the evaluation of potential noise impacts and include 1 associated receiver and 6 non-associated receivers. Requirements for acoustic barriers have been revised in response to updated specification from manufacturers and electrical components technology improvements which have significantly reduced the noise generated by BESS facilities. As detailed via the revised AR, a single acoustic barrier is now proposed as a conservative mitigation measure to minimise the potential for noise impacts to the southeast. The final specification of electrical components including their potential to generate noise impacts and the requirements for noise mitigation measures would be subject to the completion of detailed design and the final selection and commissioning of electrical equipment. The AR details that all non-associated receivers are compliant with adopted project trigger noise levels in the absence of noise control and without consideration of NPFI modifying factors.

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		Notwithstanding this, the AR has provided a conservative assessment and considers NPfI modifying factors with a 5 dB(A) tonal adjustment. The acoustic barrier has been recommended as a provisional control measure to respond to the consideration of the tonal modifying factors. The acoustic barrier would be implemented where required in the event that a 5 d(B) tonal adjustment was identified, ensuring that sufficient noise shielding is provided. The AR details the acoustic barrier as a practical solution for the project noting that its implementation is subject to project commissioning. The final design and specifications of the project have the potential to avoid or reduce the scale and extent of the acoustic barrier/. Several other measures to minimise the potential for noise impacts during the construction of the project are detailed within the AR including measures associated with general work practices, plant and equipment, community relations and construction activities. As detailed via the SEE, the suitability of the site and development has been considered in the context of various factors including physical constraints, topography and drainage, adjoining land uses, access arrangements, servicing, restrictions on land use and setbacks. Subject to the implementation of appropriate mitigation measures, the proposed location is suitable for the proposed development.
2.	***Acoustic barriers*** *The acoustic report prepared by Watson Moss Growcott dated 6 May 2024 details recommendations for the installation of an acoustic barrier to achieve acceptable noise levels. This is shown on Site Plan 1 of 2 (drawing G-1.1._023118), however not on all other relevant drawings and documents. The following information is required:*	The revised acoustic report provides an indication on the general specifications for the proposed acoustic barrier. To achieve the noise reduction qualities the AR details that the barrier must be designed and constructed to achieve: • A minimum height of 3000 mm to address predicted noise levels and the results of the noise model. • A surface minimum weight of 12 kg/m$^{2/}$ • No gaps between the panels and between the panel and ground

Additional Information Requested		Comments
	• *Separate, dimensioned, elevation drawings of the acoustic barrier, including details of construction type, material, and colours/finishes.* • *Security Fence & Landscape Elevation (drawing G-5.0_023118) is to be revised to also show acoustic barrier.* • *Landscape plans prepared by Ground Control Landscape Architects to be revised to show acoustic barrier.*	• Lining on the electrical infrastructure side of the barrier that implements 100 mm of thick absorbing materials which achieve a Noise Reduction Coefficient (NRC) of not less than 0.9. As noted above, the final specification of selected electrical equipment and determination if acoustic wall is deemed required or not will be finalised after completion of project detailed design. The final dimensions, elevations of noise wall including finishing materials and colour can be provided to Council once project detailed design is completed. The applicant has no objection to a condition of consent requiring the provision of this information to Council's satisfaction prior to issue of a construction certificate. Notwithstanding this, the revised DA Drawings including the Security Fence & Landscape Elevation (Refer to **Appendix A** of revised SEE) together with the revised Landscape Plan (Refer to **Appendix F** of revised SEE) have been amended to provide an indication of the proposed acoustic barrier.
3.	***Visual impact assessment*** *Whilst it is noted that topography and existing vegetation influence and reduce the extent of visual impacts, a site inspection has indicated that there remains a degree of visibility of the development within the landscape, especially with the extent of the proposed acoustic barriers. In this regard, a visual impact assessment, including photo montage where appropriate:* • *Consideration of visual impacts from public domains, including Murrumbateman Road and Patemans Lane.* • *Consideration of view lines from nearby surrounding development, including dwelling houses.* • *Consideration of existing deciduous vegetation*	A site visit was completed on 19 November to further review the potential for visual impacts and to respond to Council's request. Photographs were collected during completion of the site visit to provide an indication on perspectives of the development from six (6) surrounding non-associated receivers and two (2) roadways, Murrumbateman Road and Patemans Lane. Consultation with receivers was undertaken for the site visit to confirm access arrangements to properties. Where access to surrounding properties could not be secured, photographs were collected at the next best accessible location within the boundary of the proposed development site. It is noted that Council's RFI has requested the preparation of photomontages where appropriate to assist with evaluating potential visual impacts.

Additional Information Requested		Comments
		Panoramic photographs have been produced as a result of the site visit and are provided within **Appendix J** of the revised SEE. The photographs demonstrate that existing vegetation and topography already significantly obscure views of the proposed development site from surrounding receivers and roadways. The inclusion of a landscaping area as detailed within the SEE, as a conservative measure, will further minimise the potential for adverse visual impacts. Given the photograph evidence provided via the site visit and the conservative approach to include landscaping around the BESS, no significant visual impacts are anticipated. As the potential for visual impact is considered unlikely, it is considered that photomontages will not provide any meaningful additional value to the assessment. Notwithstanding this, a single photomontage has been prepared to address the receiver with the greatest potential for visual impact. The photomontage is provided as **Attachment 3** of this letter and has been prepared following the construction of a 3D visual model including an analysis of surrounding topography, vegetation and the conceptual design of the project. As demonstrated via the representative viewpoint provided via the photomontage, no significant visual impacts are anticipated at the receiver with the greatest potential for visual impact.
4.	***Landscaping*** *All plans are to show the two rows of landscaping as proposed, noting that some plans are incorrectly only showing one row.*	The legend on the landscaping plan has been amended to clarify that two rows are proposed for landscaping (refer to **Appendix F** of revised SEE).
5.	***Yass Valley Development Control Plan 2024*** *The Yass Valley Development Control Plan (YV DCP) 2024 came into effect on 1 August 2024, and had been adopted by Council in draft form for public exhibition at time of Development Application*	An assessment relevant provisions and controls of the DCP has been provided in **Appendix B** of the revised SEE.

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	lodgement. Legal advice now sought by Council has indicated that the YV DCP 2024 must be considered under s4.15(a)(iii) of the Environmental Planning and Assessment Act 1979 in relation to Development Applications which were lodged prior to it coming into effect. It is noted that the YV DCP 2024 does not contain a savings provision. *Whilst the response to submissions provided to date has noted s3.42 of the Environmental Planning and Assessment Act 1979 in that the provisions of DCP are not a statutory requirement. However, to enable consideration of areas of compliance and non-compliance, a consolidated assessment against the relevant provision of the YV DCP 2024 is to be provided. Where there are areas of non-compliance, the environmental planning grounds should be outlined in relation to the departure.*	The assessment details that the development is generally compliant with the provisions of the DCP and capable of implementing appropriate measures to achieve DCP objectives.
6.	***External lighting*** *Clarification on details of any external lighting that are proposed, including arrangements for nighttime usage (such as timer, sensor, etc.).*	No external lighting is currently proposed as part of the development. Requirements for security lighting are subject to the finalisation of detailed design. External lighting if proposed would be designed to achieve relevant Australian standards. The applicant has no objection to a condition of consent in this regard.
7.	***End of life*** *Clarification shall be provided on the anticipated life expectancy of the distribution battery energy storage system. Details of any potential measures that could be implemented to ensure appropriate rehabilitation and recycling at the end of the facility's operational life is to be provided.*	The proposed development is expected to have a life span of approximately 40 years, however, infrastructure may be upgraded to extend the operational life. The applicant has no objection to a condition of consent requiring that any extension of the life of the project be subject to further approvals Alternatively, the proposed development may be decommissioned sooner, subject to technology and project viability. Decommissioning of a BESS facility will likely involve: • Dismantling and removing the BESS facility infrastructure • Removing related infrastructure

Additional Information Requested		Comments
		• Rehabilitation of the site The BESS operator will be responsible for the decommissioning of the BESS. Requirements for decommissioning, such as reinstating the land, are set out in contracts with landowners and in planning approvals. Details of the decommissioning process are typically outlined by way of a Decommissioning Management Plan, that is prepared just prior to a BESS being decommissioned and identifies all infrastructure, equipment, buildings and structures to be removed and details of how these will be removed. Decommissioning of a BESS facility will be undertaken in accordance with the applicable regulations that govern the safe transport and disposition of used equipment or waste. Where possible, balance of plant material (such as steel and concrete) will be recycled. Whilst inverters, control systems and other electronic equipment may be more challenging to recycle, useful materials from these components can often be recovered. Whilst the research and opportunities for recycling BESS components is in its infancy, the industry continues to develop processes that are in line with circular economy principles including cradle to-cradle design and the achievement of 100% recyclability, The applicant has no objection to a condition of consent requiring the preparation of a decommissioning plan prepared prior to the cessation of the project.
8.	***Biodiversity Offset Scheme area threshold*** *The flora and fauna assessment prepared Waratah Ecology dated 7 May 2024 suggested that the area threshold for entry into the Biodiversity Offset Scheme is not triggered as the proposed development will not involve the clearing of 0.5ha or more of native vegetation.*	A revised flora and fauna assessment report (FFAR) has been prepared to respond to council's request and is provided within **Appendix D** of the revised SEE. Table 1 of the revised FFAR details the clearing required for the electrical equipment area, the bushfire asset protection zone, the access road and the connection & easement.

Additional Information Requested		Comments
	A revised flora and fauna assessment or addendum which includes the area calculation of the native vegetation to be cleared, including the numerical area and a plan showing the area. *The bushfire asset protection zone must be included for the purposes of determining the area threshold calculation*	The revised FFAR details that the proposed development will require the removal of approximately 0.72 ha of agricultural grasslands, which has been historically cleared for livestock grazing. This vegetation consists predominantly of exotic grass species and is considered to be of low ecological value. Section 3.2 of the FFAR details that the study area for the survey is predominantly mapped as Category 1 Exempt Land with pockets of Category 2 – Regulated Land under the NSW Draft Native Vegetation Regulatory Map. The FFAR estimates that the proportion of native groundcover is less than 30% of the development footprint. Applying the 30% estimate to the total area of 0.72 ha proposed for clearing across the development footprint provides a conservative calculation indicating that approximately 0.216 ha of native vegetation will require removal. The site has a mapped minimum lot size of 15 ha pursuant to the LEP such that the relevant clearing threshold for the development under the *Biodiversity Conservation Act 2016* is 0.5 ha. The proposed clearing of approximately 0.216 ha of native vegetation does not exceed this threshold. The FFAR has concluded that the Biodiversity Offset Scheme is not triggered by the proposed development and no BDAR is therefore required.
9.	***Finished levels*** *The flood and groundwater assessment report prepared by IGS and dated 26 April 2024 indicates that finished levels of infrastructure are to be at least +150mm above existing ground level. Finished RLs of the BESS compound are to be provided.*	A conceptual design has been prepared to review cut and fill arrangements for the proposed development and is provided as **Attachment 2** of this letter. Two options have been considered with respect to the design of the BESS compound including the establishment of a generally flat finished level across the BESS compound and an alternative option to arrange electrical components on pylons following the existing contours of the site.

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		To avoid excessive fill requirements and potential visual impacts resulting from providing a generally flat but elevated BESS compound, electrical components of the development including the MVPS and Battery units, are currently proposed to be situated on platforms with variable length pylons. The pylons would elevate the electrical components from the existing ground surface and result in electrical components stepping down the slope of the BESS compound. The elevation provided from the pylons would be designed to achieve the recommendation of the FGAR, elevating critical infrastructure to a minimum of 150 mm above the existing ground surface. Further consideration of cut and fill arrangements and construction finished levels would be provided at construction certificate stage as a result of the finalisation of detailed design.
10.	***Importation of fill material*** *The flood and groundwater assessment report prepared by IGS and dated 26 April 2024 suggests that importation of fill material to raise area where infrastructure is to be located may be a suitable option to achieve finished levels of at least +150mm above existing ground level.* *Clarification is to be provided on whether fill material is proposed to be imported for earthworks to achieve these levels, and if so, details of the volume to be imported and how this has been calculated.*	As detailed above a conceptual design has been prepared to review cut and arrangements (refer to **Attachment 2**). To avoid excessive fill requirements, electrical components of the development including the MVPS and battery units are currently proposed to be situated on platforms with variable length pylons. No fill (and very limited cut) within the extent of the BESS compound is therefore proposed. Calculations of cut and fill have been reviewed as part of the conceptual design. It has been estimated that approximately 580 m^3 of cut will be required to grade the internal access road. Further consideration of cut and fill arrangements and construction finished levels would be provided at construction certificate stage as a result of the finalisation of detailed design.
11.	***Internal access road*** *Clarification is to be provided on the design of the design standard of the proposed internal access road, including the design width.*	The project drawings have been amended to provided additional detail on the design of the internal access road (refer to **Appendix A** of the revised SEE).

Additional Information Requested		Comments
		As detailed via Sheet G-2.2_023118 of the revised DA drawings and within the TIA, the access arrangement for the development shall be constructed in accordance with figure 7.4 under Part 4 of the Austroads Guide to Road Design. The indicative width of the access arrangement and internal access roadway through to the proposed BESS compound is indicated on Drawing G-2.2_023118. A conceptual design has additionally been prepared to review cut and fill arrangements for the proposed development (refer to **Attachment 2**). The conceptual design provides a typical driveway cross section and outlines excavation works required to grade the internal access road. Further consideration of cut and fill arrangements and access requirements would be provided at construction certificate stage as a result of the finalisation of detailed design.
12.	***Revised Statement of Environmental Effects*** *A revised Statement of Environmental Effects which addresses:* • *That the proposed development is Regionally Significant Development for the purposes of State Environmental Planning Policy (Planning Systems) 2021 due to the estimated development cost (EDC).* • *That the development is not Integrated Development for the purposes of Water Management Act 2000 following advice received from Department of Climate Change, Energy, the Environment and Water.*	A revised Statement of Environmental Effects (SEE) has been prepared to respond to councils' request together with updated assessments of revised specialist assessments and a consideration of the DCP (refer to **Attachment 4** of this letter). The revised SEE addresses the following in relation to requirement 12 of councils RFI: • The updated estimated development cost and reclassification of the development as Regionally Significant Development (RSD). • Changes to consideration of the development as integrated development. As previously noted, consultation with DPIE Water has confirmed that the development is not considered integrated development for the purposes of the *Water Management Act 2000.* Section 4.46(3) of the EP&A Act however further provides that development is not integrated development in respect of the consent required under section 138 of the *Roads Act 1993* if, in order for the development to be carried out, it requires the

Additional Information Requested		Comments
		development consent of a council and the approval of the same council. The reclassification of the development as RSD has changed the consent authority from Council to a regional planning panel. As a result, the roads authority, being Yass Valley Council, is no longer the consent authority for the development application. A Section 138 approval is required for roadworks associated with the project including the proposed connection to Turton Place. The requirement for a Section 138 approval triggers reconsideration of the proposal as integrated development. The applicant has no objection to a condition of consent requiring the attainment of a Section 138 approval to Council's satisfaction prior to issue of a construction certificate. As noted above in response to requirement 12 of Council's RFI, the TIA details the design standard for the proposed access arrangement and a conceptual design includes a consideration of the typical driveway cross section and excavation works. Further consideration of cut and fill arrangements and access requirements would be provided at construction certificate stage as a result of the finalisation of detailed design.


Proposed BESS Location

Southeast Corner of Project Site facing Northwest (Indicative view from R05 and R06)

1 Patemans Lane facing Southwest (Indicative view from R07)

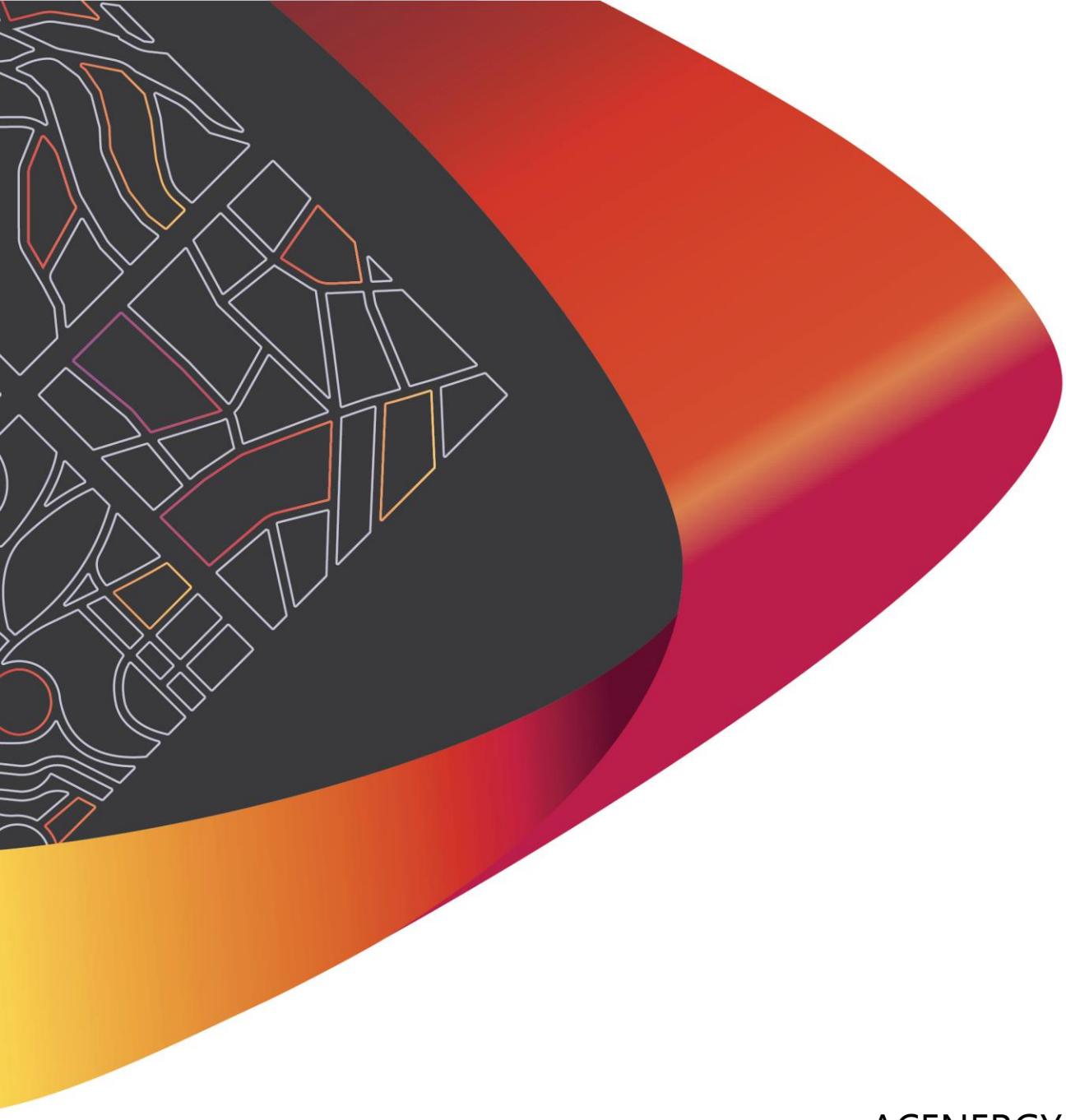
4 Turton Place facing North (Indicative view from R02)

5 Turton Place facing Northeast (Indicative view for R03)

Murrumbateman Road facing South

Northwestern Corner of Project Site facing South (Indicative view from R04)

Patemans Lane facing West



ACENERGY PTY LTD

P000874_SEE_001D

STATEMENT OF ENVIRONMENTAL EFFECTS

Report No: P000874_SEE
Rev: 001D
4 December 2024

Premise

DOCUMENT AUTHORISATION					
Revision	**Revision Date**	**Proposal Details**			
A	25/04/24	Draft for Internal Review			
B	31/05/24	Draft for Client Review			
C	04/06/24	Final			
D	04/12/24	Revised in response to Council RFI.			
Prepared By		**Reviewed By**		**Authorised By**	
Tamera Rudd		Hugh Shackcloth-Bertinetti		David Walker	
Hugh Shackcloth-Bertinetti					

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APPENDICES

1. INTRODUCTION

Premise Australia Pty Ltd (Premise) has been commissioned by ACEnergy Pty Ltd to prepare a Statement of Environmental Effects (SEE) to accompany a Development Application (DA) for the development of a Distribution Battery Energy Storage System (DBESS) on land at 3 Turton Place, Murrumbateman, NSW. The site of the proposed DBESS is located within a land parcel legally described as Lot 23 DP24841 (otherwise referred to as the 'the host lot').

The site is located in the Yass Valley Council (YVC) Local Government Area (LGA) and is situated within land zoned as RU4 – Primary Production Small Lots via the *Yass Valley Local Environmental Plan 2013* (LEP). The proposed development is consistent with the definition of 'electricity generating works' pursuant to the LEP and is to be located in the northwestern extent of the host lot. The DBESS is to have an approximate capacity of 5 megawatts (MW).

This SEE has been prepared pursuant to the relevant provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation).

The proposed development:

- Is not designated development as, by way of Schedule 3, clause 24 of the EP&A Regulation, it does not supply (nor is it capable of supplying) 30 MW of electrical power;
- Is not State significant development (SSD) as, by way of Schedule 1, Section 20 of State Environmental Planning Policy (Planning Systems) 2021 (the Systems SEPP), it does not have an estimated development cost (EDC) of more than $30 million, nor is it located within an environmentally sensitive area of State significance; and
- Is regionally significant development (RSD) as, by way of Schedule 6, Section 5 of the Systems SEPP, it has an EDC of more than $5 million.

This SEE is provided in the following format:

- **Section 2** of this report provides a description of the subject site and its locality.
- **Section 3** outlines the proposed development.
- **Section 4** details the planning framework applicable to the subject site and proposed development.
- **Section 5** identifies the impacts of the proposed development.
- **Section 6** provides a conclusion to the SEE.

2. THE SITE & ITS LOCALITY

2.1 The Locality

The town of Murrumbateman is situated in the Southern Tablelands region of New South Wales, approximately 19 km southeast of Yass and 38 km north of Canberra.

The site of the proposed development is located approximately 2.62 km southeast of the centre of Murrumbateman (refer to **Figure 1**).

The site is located alongside and will be accessible via a new driveway connected to Turton Place to the south. Turton Street extends in a general east to west alignment to the south of the host lot, connecting to Patemans Lane in the east. Patemans Lane connects to Murrumbateman Road in the north and provides a connection with Euroka Road in the south prior to terminating approximately 2.7 km to the south of the host lot. Murrumbateman Road extends eastward connecting to the Sutton Road and westward connecting to the Barton Highway a state classified road, passing through the centre of Murrumbateman.

The entirety of the host lot and site is zoned RU4 - Primary Production Small Lots, pursuant to the LEP.

The town of Murrumbateman consists of a mixture of rural, residential, commercial and industrial land uses. The locality surrounding the project site is predominantly characterised by rural land uses and living, including several dwellings, scattered vegetation and a mixture of cropping and grazing activities.

While the locality is predominantly rural and land in the immediate proximity of the proposal is generally vacant, there are five (5) receivers within the immediate vicinity of the development site**.** As shown in the project drawings at **Appendix A**, the closest residential receiver is R01, which is an associated receiver located approximately 236 m southeast of the DBESS footprint. Other non-associated receivers in proximity are situated approximately 569 m to the southeast and 354 m to the southwest of the DBESS with access arrangements along the Turton Place.

Other remaining land uses in proximity to the site include Cavalier Performance Horse riding school approximately 1.6 km to the west, an Alpaca Farm situated at the southern extent of Patemans lane and several vineyards including but not limited to Four Wines Vineyard. Dionysus Winery and Woo Chocolate located approximately 650 m to the east, Caruluma Vineyard approximately 1.8 km to the south, Clonakilla Vineyard approximately 1.4 km to the west and the Vintner's Daughter Winery located approximately 1.6 km to the west. It is anticipated that the land surrounding the site will be developed over time in accordance with the adopted land use zoning.

As shown in **Figure 2** one overhead 22 kV Essential Energy distribution line traverses the site in a general northwest to southeast alignment. Separate overhead 22 kV essential energy transmission lines transects the land within the eastern extent of the site near the existing dwelling of the associated receiver and transect land to the south of Turon Road near the proposed access arrangement. Other electrical transmission infrastructure within the locality, including overhead and underground services, provide connections to properties located along Turton Street to the southwest of the development site.

No national parks and reserves are identified in the immediate vicinity of the site. Namima Hill, however, is situated approximately 2 km to the east of the site.

2021 Census data for the suburb and locality of Murrumbateman identifies an estimated population of approximately 3,607 people. Industries of employment are characterised by public and education services with major industries of employment recorded within Central Government Administration, Defence, Computer System Design, State Government Administration and Primary Education (ABS, 2021).

2.2 The Site

The site is situated at 3 Turton Place, Murrumbateman within land legally described as Lot 23 DP248413. The lot containing the development has an approximate area of 16 hectares. The footprint of the proposed BESS is to occupy an area of approximately 0.5 ha in the northwestern extent of the host lot. The extent of the site is depicted in **Figure 2**.

The site is currently used for agricultural activities with the broader host lot consisting of several cleared paddocks. Several isolated paddock trees are located throughout the host lot with larger vegetation strand extending along the boundaries of paddocks and the southern boundary of the host lot. Every effort has been made to avoid clearing to the greatest extent possible. The development will require the removal of several trees from along the property's southern boundary, to facilitate the connection of a driveway to Turton Place.

The site currently features a single residential dwelling together with infrastructure ancillary to the existing agricultural landuse including paddock fencing, sheds, farm dams and internal access tracks. Access to the development site is to be provided to the southwestern extent of the host lot with an internal access road extending from a connection with Turton Place to the footprint of the DBESS.

Two (2) farm dams are located in proximity to the DBESS. The first is located in the northwestern corner of the host lot and has an approximate area of 2500 m^2 while the second is situated in the southwestern extent of the host lot and has an approximate area of 630 m^2. The adjacent properties also contain a number of farm dams and are utilised for agricultural purposes. An ephemeral unnamed drainage line connects farm dams across the northern portion of the site and extends into surrounding properties to the east and west.

As detailed above, an existing overhead power line runs in a general north to south alignment through the eastern portion of the site, with separate overhead transmission lines transecting land near the associated residential dwelling and the southern portion of the access arrangement.

Figure 1 – The Locality

Figure 2 – The Site

Figure 3 – Land Zoning

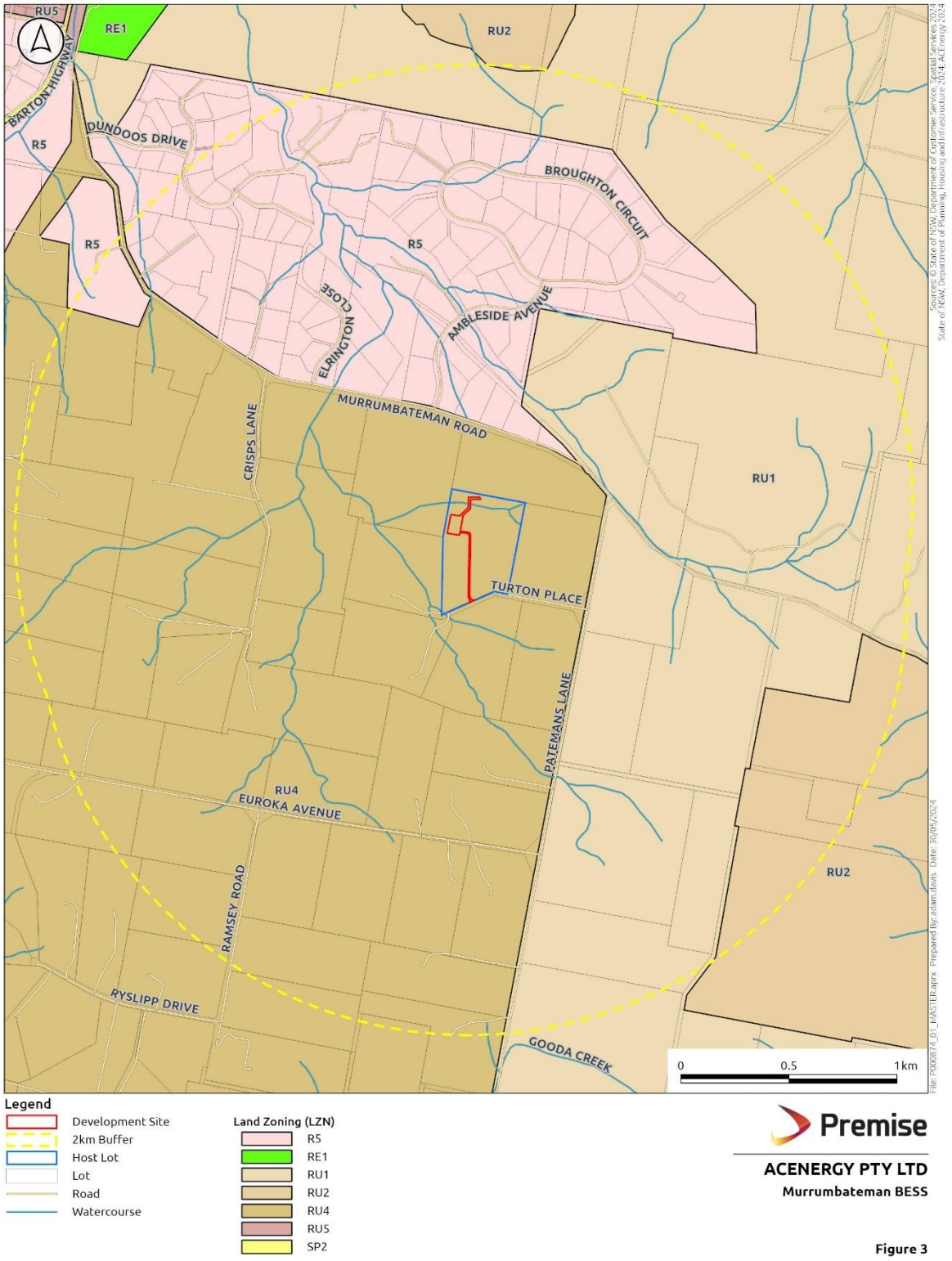


Figure 4 – Land Capability

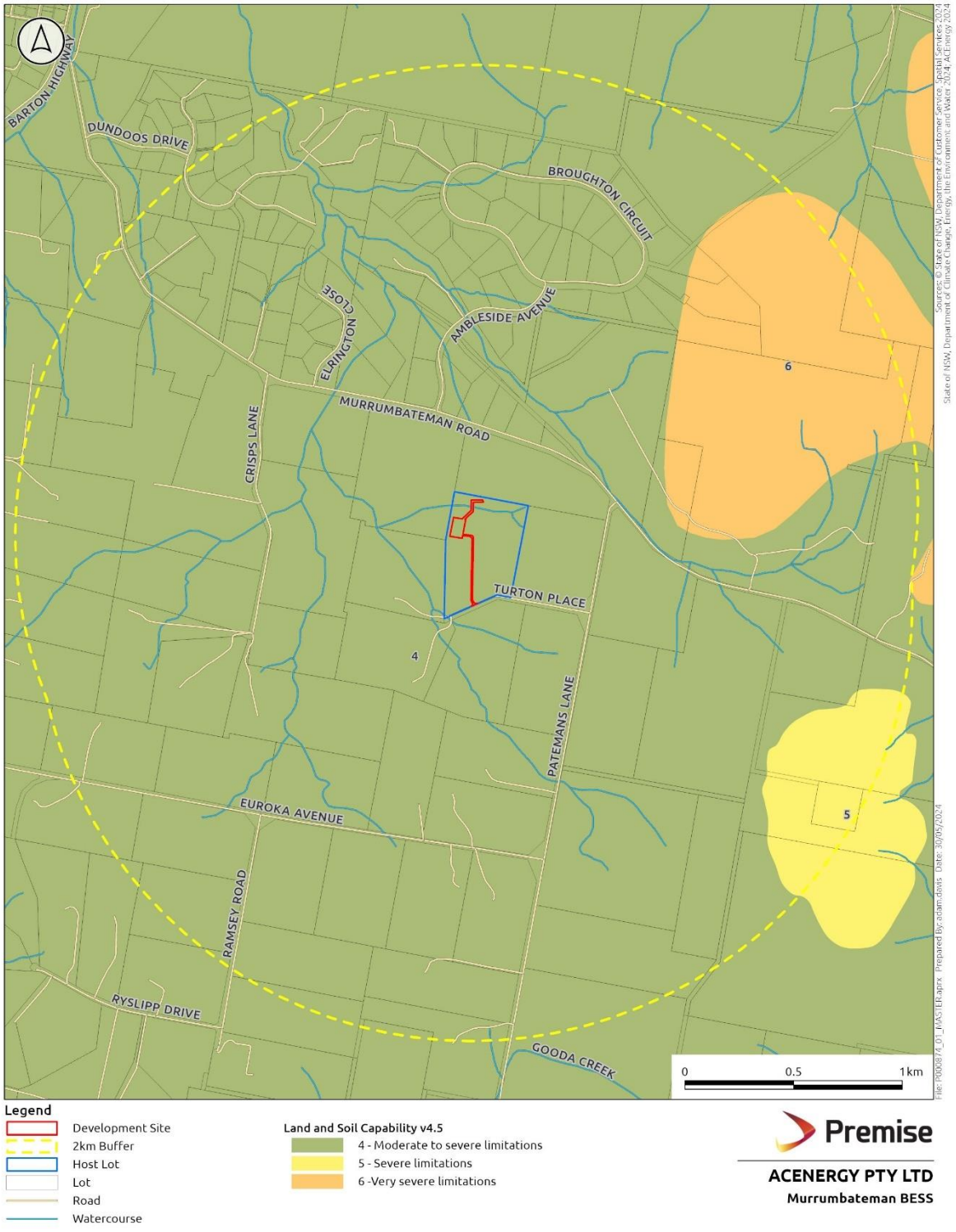


Figure 5

3. THE DEVELOPMENT

3.1 Development Description

The project comprises a DBESS that will occupy a footprint of approximately 0.5 hectares. The proposed DBESS is situated in the northwestern extent of the site and will have an approximate capacity of approximately 5 MW. The proposed DBESS, associated infrastructure and development footprint will largely align with, and be contained within, the development area shown in **Figure 2**.

The project will be designed to provide grid flexibility services. It will support the efficiency of the electrical network by charging from the grid during periods of low demand and discharging back to the grid during periods of higher demand. It would also have the capacity to charge or discharge when power system services are required, assisting to maintain the stability of the broader electricity grid by making stored energy available during high demand periods.

Power would transition to and from the DBESS switching station via a new 22 kV line connected to the existing 22 kV transmission lines to the east. The power conversion systems rectify the power into a form that is suitable for storage in the facility's batteries. The DBESS strengthens the power network by providing greater flexibility in grid management.

The key project infrastructure includes:

- The installation of a new access from Turton Place, connecting to an internal driveway extending northwards through the site to a gated entry to the DBESS. The proposed access arrangement includes the removal of two trees near the entrance to the site together with the relocation of an existing shed.
- Security fencing and landscaping around the DBESS.
- Electrical components of the DBESS, including 10 battery containers (separated into blocks); a medium voltage power station (MVPS) and high voltage switchgear in the northern corner of the site; and
- Ancillary electrical sub-transmission lines to connect the DBESS to the existing powerlines to the east.

The project would include the implementation of mitigation measures considered necessary to minimise risks posed by and to the proposed development.

4. STATUTORY PLANNING

4.1 Biodiversity

Section 1.7 of the Environmental Planning and Assessment Act 1979 (the EP&A Act) provides that the EP&A Act has effect subject to the provisions of Part 7 of the *Biodiversity Conservation Act 2016* (the BC Act) and Part 7A of the *Fisheries Management Act 1994* (the Fisheries Act).

Subsection 7.2(1) in Part 7 of the BC Act provides the three triggers for development or activities to be considered as "likely to significantly affect threatened species". Under subsection 7.7(2) of the BC Act, the

development application is required to be accompanied by a development assessment report (BDAR) if it meets one or more of conditions for "likely to significantly affect threatened species".

The proposed development is considered against the three triggers in **Table 1.**

Table 1 – Section 7.2 of the BC Act

Test		Assessment
(a)	it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in section 7.3, or	The site is disturbed as a result of previous land clearing and agricultural development. Accordingly, vegetation within the site is generally limited to non-native species planted in conjunction with the former land use. An assessment of potential impacts to biodiversity is provided in **Section 5.7**, together with a Flora and Fauna Assessment Report (FFAR) in **Appendix D**. No significant impacts to threatened species or ecological communities, or their habitats are anticipated.
(b)	the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values, or	As per Section 7.4 of the BC Act, development exceeds the biodiversity offsets scheme threshold if it is: (a) Of an area declared by clause 7.2 of the BC Regulation as exceeding the threshold, or (b) On land included on the Biodiversity Values Map published under clause 7.3. The site has a mapped minimum lot size of 15 hectares pursuant to the LEP such that the relevant clearing threshold for the site is 0.5 hectare. The development does not propose to clear more than 0.5 hectares of native vegetation. The site does not contain land mapped via the Biodiversity Values Map. A BDAR is not required.
(c)	it is carried out in a declared area of outstanding biodiversity value.	The site is not located within a declared area of outstanding biodiversity value under Part 3 of the BC Regulation.

4.2 Designated development

Section 4.10 of the EP&A Act and Schedule 3 of the EP&A Regulation outline that certain types of development are classified as designated development. Designated development requires the preparation of an Environmental Impact Assessment for an application for consent.

The proposed DBESS represents a 'battery storage facility' for the purposes of Section 7 of Schedule 3 of the EP&A Regulation.

The approximate capacity of the proposed DBESS of approximately 5 MW is below the threshold of 30 MW provided by the EP&A Regulation such that the development is not classified as designated development.

4.3 Bush fire prone land

Section 4.14 of the EP&A Act provides that development consent cannot be granted for any development for any propose if located on bush fire prone land unless the consent authority:

> *(a) is satisfied that the development conforms to the specifications and requirements of the version (as prescribed by the regulations) of the document entitled Planning for Bush Fire Protection prepared by the NSW Rural Fire Service in co-operation with the Department (or, if another document is prescribed by the regulations for the purposes of this paragraph, that document) that are relevant to the development (the relevant specifications and requirements), or*
>
> *(b) has been provided with a certificate by a person who is recognised by the NSW Rural Fire Service as a qualified consultant in bush fire risk assessment stating that the development conforms to the relevant specifications and requirements.*

The project is not identified as a subdivision of land that could be used for residential purposes or rural residential purposes or development for a special fire protection purposes under 4.14(1) of the EP&A Act and it is not considered integrated development under Section 4.46 as no approval under section 100B of the *Rural Fires Act 1997* (RF Act) is required (refer to **Section 4.4**).

The site of the proposed development, however, contains land mapped as bushfire prone including Vegetation Category 3. A consideration of the proposed development with respect to the specifications and requirements of the document entitled *Planning for Bush Fire Protection,* pursuant to Section 4.14(1)(a), is therefore required.

An assessment of potential bush fire impacts associated with the proposed development is provided within **Section 5.14.2**.

4.4 Integrated development

Section 4.46 of the EP&A Act states that development requiring consent and another activity approval is defined as Integrated Development.

A review of whether the development is classified as integrated development has been undertaken following the revision of an EDC report and the reclassification of the project as RSD. The proposed development is now classified as Integrated Development as it requires the following approvals identified via Section 4.46 of the EP&A Act:

- A consent under section 138 of the *Roads Act 1993* to carry out work in, on or over a public road. The proposed development will connect to Turton Place, a local road managed by Yass Valley Council.

For the avoidance of doubt section 4.46(3) of the EP&A Act previously applied to the classification of the project as local development. The requirement for a section 138 approval did not previously trigger consideration of the project as integrated development as the consent authority, Yass Valley Council, was also the roads authority. The refinement of the EDC and reclassification of the project as RSD, however, has

changed the consent authority to the Southern Regional Planning Panel. Section 4.46(3) therefore no longer applies and the Section 138 approval triggers consideration of the project as integrated development.

The applicant has no objection to a condition of consent requiring the attainment of a Section 138 approval to Council's satisfaction prior to issue of a construction certificate. Further consideration of access requirements, including with respect to the Section 138 approval, would be provided at construction certificate stage and as a result of the finalisation of detailed design.

It is noted that the proposed development seeks to establish an underground electrical cable to connect the proposed DBESS to existing transmission lines located within the eastern extent of the host lot. The proposed route for the electrical connection transects a drainage line which extends through the northern extent of the host lot. From a review of aerial photography, the drainage line is considered to be ephemeral in nature with intermittent flows conveying water from infrequent spills from farm dams in the east in a westward direction, across the site, to farm dams in the west. It, however, is mapped as mapped as a 2nd order hydroline via state mapping.

Consultation with DPIE Water has occurred following the original lodgement of the development application to determine requirements to attain a controlled activity approval (CAA) under Section 91 of the *Water Management Act 2000* (WM Act). The response received from DPIE Water has been provided to YVC and has detailed that the proposed works are not situated on waterfront land. DPIE Water have confirmed that no CAA is therefore required for the proposed development.

4.5 Environmental Planning Instruments

The EP&A Act facilitates the preparation of Environmental Planning Instruments (EPIs), including State Environmental Planning Policies (SEPP) and Local Environmental Plans (LEP).

In relation to the site and proposed development, the relevant EPIs include:

- *Yass Valley Local Environmental Plan 2013:* Refer to **Section 4.5.1**.
- *State Environmental Planning Policy (Biodiversity and Conservation) 2021:* Refer to **Section 4.5.1.4**.
- *State Environmental Planning Policy (Resilience and Hazards) 2021:* Refer to **Section 4.5.3**.
- *State Environmental Planning Policy (Transport and Infrastructure) 2021:* Refer to **Section 4.5.4**.

4.5.1 YASS VALLEY LOCAL ENVIRONMENTAL PLAN 2013

The following relevant provisions of the *Yass Valley Local Environmental Plan 2013* (LEP) are addressed in the following subsections:

- Clause 2.1 Land Use Zones: Refer to **Section 4.5.1.1**.
- Clause 6.1 Earthworks**:** Refer to **Section 4.5.1.2**.
- Clauses 6.3 Terrestrial Biodiversity: Refer to **Section 4.5.1.3**.
- Clause 6.8 Essential Services: Refer to **Section 4.5.1.4**.

4.5.1.1 Clause 2.1 Land Use Zones

The site is located on land zoned, RU4 - Primary Production Small Lots (refer to **Figure 3**). The proposed development consists of a DBESS, which is most appropriately defined as (emphasis added):

> ***electricity generating works*** *means a building or place used for the purpose of:*
>
> *a) making or generating electricity,*
>
> *b) or* ***electricity storage****.*

Development for the purposes of electricity generating works is prohibited within the RU4 Land use zone applying to the site under clause 2.3.

Notwithstanding this, Division 4 of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Infrastructure SEPP) provides that development for the purposes of electricity generating works including electricity storage, is permitted with consent in a prescribed non-residential zone (refer to **Section 4.5.4**). The Infrastructure SEPP prevails to the extent of any inconsistency with another planning instrument. The RU4 zone is a prescribed non-residential zone and therefore the development is permitted with consent.

The proposed DBESS is not antipathetic to the objectives of the RU4 land zone. The implementation of appropriate mitigation measures as part of the design of the project and during the construction and operational phases would seek to minimise significant impacts to the objectives of the land zone and surrounding land uses.

4.5.1.2 Clause 6.1 Earthworks

Section 6.1 of the LEP requires consideration of a range of factors prior to granting consent for earthworks. It provides that development involving earthworks must not have a detrimental impact on environmental functions and processes, neighbouring uses, cultural or heritage items or features of the surrounding landscape.

Subclause 6.1(2) of the LEP provides that development consent is required for earthworks unless they are exempt development under the LEP or another applicable EPI, or ancillary to other development for which consent has been given. Where consent is required, the consent authority is required to consider the matters in subclause 6.1(3) before granting development consent.

The proposed works are considered in the context of the matters in subclause 6.1 (3) in **Table 2**.

Table 2 – Earthworks Considerations

Matters for Consideration		Comment	
(a)	The likely disruption of, or any detrimental effect on, drainage patterns and soil stability in the locality of the development	The proposed earthworks are limited to minor volumes associated with the installation an approximate 5 MW DBESS and therefore is not anticipated to result in any impacts on drainage patterns and soil stability in the locality.	✓

Matters for Consideration		Comment	
		Ground would be remediated post work to ensure a stable environment, with no additional run-off.	
(b)	The effect of the development on the likely future use or redevelopment of the land	The proposed earthworks are associated with the installation and operation of an approximate 5 MW DBESS. Earthworks are minor and unlikely to result in any demonstrable changes in land levels.	✓
(c)	The quality of the fill or the soil to be excavated	Excavation works will be limited to establishing footings/slabs for the proposed development and trenching for cables, with only minor amounts of soil excavated. In the event that excavated soil requires removal from the site it will be transferred as required to an appropriately licenced facility. Standard checking and tracking requirements will be applied.	✓
(d)	The effect of the development on the existing and likely amenity of adjoining properties	Levels near the site boundaries would be maintained, ensuring that the earthworks would not impact on the amenity of adjoining properties.	✓
(e)	The source of the fill material and the destination of the excavated material	The source any fill material and destination of any excavated material is to comply with Council's requirements.	✓
(f)	The likelihood of disturbing relics	The likelihood of disturbing relics is low as the site is located within a disturbed rural setting. The development footprint is considered unlikely to contain any of the natural features typically associated with Aboriginal sites or places.	✓
(g)	The proximity to, and potential for adverse impacts on, a waterway, drinking water catchment or environmentally sensitive area	The site is not located within a mapped environmentally sensitive area. The closest watercourse to the DBESS consists of a farm dam situated approximately 45 m to the north. The proposed electrical connection route however transects land mapped as containing a second order stream. Due to the distance between the DBESS footprint and subject to the implementation of appropriate mitigation measures, no adverse impacts to watercourses are anticipated to result	✓

Matters for Consideration		Comment	
		from the proposed development. Trenching of the electrical connection route	
(h)	Any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development	No additional measures are required to minimise or mitigate the impacts referred in paragraph (g).	N/A

4.5.1.3 Clauses 6.3 Terrestrial Biodiversity

Clause 6.3 of the LEP applies to land identified as biodiversity via the Terrestrial Biodiversity Map. The site of the DBESS consists of land mapped on the terrestrial biodiversity map.

Subclause 6.3(3) of the LEP prevents the consent authority from granting consent unless it has considered the matters under subclause 6.3(3) and is satisfied that potential impacts to biodiversity, with respect to subclause 6.3(4), are minimised.

An assessment of potential biodiversity impacts is provided within **Section 5.7.** Subject to the implementation of appropriate mitigation measures the proposed project is not anticipated to result in any significant adverse impacts to biodiversity.

4.5.1.4 Clause 6.8 Essential Services

Clause 6.8 of the LEP prevents the consent authority from granting consent unless it is satisfied that essential services are available or that adequate arrangements have been made to make them available when required. These include the supply of water and electricity, disposal and management of sewage, stormwater drainage or on-site conservation and suitable vehicular access.

The following is noted in the context of Clause 6.8:

a. No reticulated water network is available for the proposed development. It is anticipated that water for the construction activities would be sourced and transported to the site via water trucks. Water supply arrangements would be confirmed in consultation with Council, Regulatory Authorities, and the existing landowner prior to construction and during the refinement of detailed design, ensuring a sufficient supply of water is available for the operation of the project – refer to **Section 5.6**.
b. The development would include the installation of ancillary electrical infrastructure. The proposed electrical connection would extend eastward from the proposed DBESS, connecting to an existing overhead transmission line located in the eastern extent of the site.
c. No permanent connection to a reticulated sewer network is proposed. Portable ablution facilities would be temporarily installed on site during the construction phase of the project. It is anticipated that chemical port-a-loo's, as temporary portable ablution facilities, will be provided at strategic locations around the site for use by personnel during the construction and decommissioning phases of the project. Where possible these port-a-loo's will be located on a trailer to allow for easy redistribution. Waste from port-a-loo's will be disposed of offsite at a licensed treatment facility.

d. The proposed development is not anticipated to result in significant impacts to surrounding water courses. Stormwater management measures would be provided as appropriate to minimise the potential for adverse impacts - refer to **Section 5.6** and Drawings provided in **Appendix A.**

e. The development includes the installation a new driveway and access arrangement connected to Turton Place. The access arrangement would be designed to provide safe ingress and egress for vehicles associated with the project – refer to **Section 5.8** and Drawings provided in **Appendix A.**

On the basis of the above, the development is considered to be acceptable in the context of clause 6.2 of the LEP.

4.5.2 STATE ENVIRONMENTAL PLANNING POLICY (BIODIVERSITY AND CONSERVATION) 2021

4.5.2.1 Chapter 2 Vegetation in non-rural areas

Chapter 2 of the Biodiversity SEPP relates to vegetation in "non-rural areas of the State", defined in Section 2.3 as land with any non-rural zoning. The RU4 – Primary Production Small Lot land zone applying to the site is not listed as a non-rural area under Section 2.3(1)(b).

The entire site is within the RU4 land zone and therefore, Chapter 2 does not apply to the proposed development.

4.5.2.2 Chapter 3 Koala habitat protection 2020

Under Section 3.3(1) of the Biodiversity SEPP, this Chapter applies to land within the RU1 Primary Production, RU2 Rural Landscape and RU3 Forestry and equivalent zones in an LGA not marked with a '*' in Schedule 2 of the SEPP. A three-step process applies where the SEPP applies and the site (including adjoining land in the same ownership) has an area of more than one hectare.

The entire site is within the RU4 zone and the Yass Valley LGA is not marked a '*' in Schedule 2 of the SEPP. Chapter 3 of the SEPP therefore does not apply to the proposed development.

4.5.2.1 Chapter 4 Koala habitat protection 2021

Under Section 4.4(1) of the Biodiversity SEPP, this Chapter applies to LGAs listed in Schedule 2 of the SEPP. Section 4.4(3) of this chapter, however, provides that it does not apply to the land within the RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry zone or an equivalent land use zone, unless the zone is in a LGA marked with an '*' in Schedule 2 of the SEPP.

The entire site is within the RU4 zone and the Yass Valley LGA is listed without a '*' in Schedule 2 of the SEPP. Chapter 4 therefore applies to the proposed development.

As detailed in **Section 5.7**, the proposed activity is on land disturbed by agricultural operations.

Given existing disturbance and the minimal extent of vegetation impacted no significant impacts to koalas or koala habitat are expected. This is further discussed in **Appendix D.**

4.5.3 STATE ENVIRONMENTAL PLANNING POLICY (RESILIENCE AND HAZARDS) 2021

4.5.3.1 Chapter 3 Hazardous and Offensive Development

Section 3.7 of the *State Environmental Planning Policy (Resilience and Hazards) 2021* (The Hazards SEPP) requires the consideration of current circulars or guidelines prepared by the Department of Planning in determining whether a development is:

- hazardous storage establishment, hazardous industry or other potentially hazardous industry; or
- offensive storage establishment, offensive industry or other potentially offensive industry.

The current and most recent guidelines prepared by the Department of Planning, the *Hazardous and Offensive Development Application Guidelines – Applying SEPP 33* (Applying SEPP 33 Guideline; Department of Planning 2011), includes the screening tests to be used to determine whether a development is potentially hazardous development. If the screening tests indicate that a development is potentially hazardous development, a preliminary hazard analysis (PHA) is required to be provided as part of the DA. The type of screening test to be used is dependent upon the class, as categorised under the Australian Dangerous Goods Code (the ADG code; National Transport Commission 2020) of dangerous goods proposed to be accommodated on-site.

The project includes delivery of a DBESS. The dangerous good associated with DBESS are lithium batteries which are a class 9 dangerous good under the ADG Code. Class 9 goods do not exceed the screening thresholds under the guidelines under the Applying SEPP 33 Guideline as they "pose little threat to people or property" (Department of Planning 2011, p. 33). The proposed development is therefore considered unlikely to pose a significant hazard or risk associated with the use of lithium batteries.

4.5.3.2 Chapter 4 Remediation of Land

Section 4.6(1) of the Hazards SEPP states that a consent authority must not consent to the carrying out of development unless it has considered whether the land is contaminated. If the land is contaminated, the consent authority must not consent to the carrying out of development unless it is suitable for the proposed use in its contaminated state or will be suitably remediated before the land is used for that purpose.

A search of the NSW EPA Contaminated land record was completed on 21 November 2024 for contaminated land within the Yass LGA. The search identified 15 notices related to two (2) contaminated sites within the LGA. The two sites included a former gasworks located along Dutton Street and a former Mobil depot located at 54-58 Laidlaw Street. No sites were identified within the town of Murrumbateman.

The EPA's list of notified sites dated 8 November 2024 was reviewed on 21 November 2024 for suburbs within the Yass Valley LGA. The search did not identify any sites at or within the vicinity of the project site.

Notwithstanding the above, the proposed activity is located on a site historically used for agricultural purposes and there is therefore the potential for contamination on site.

Through the discussions with the landowner, and a review of available historical aerial photography (refer **Section 5.1**), there are no indications of historic use of the land for a potentially contaminating purpose.

Whilst no known contamination risks have been identified, appropriate safeguards and mitigation measures, are recommended for implementation during the completion of site works and operation of the proposed activity to minimise the potential risks associated with encountering contamination (Refer to **Section 5.3**). The implementation of waste management measures (Refer to **Section 5.13**) together appropriate soil and water management measures (Refer to **Section 5.2** and **5.6**) would additionally assist to reduce the risk of site contamination occurring as a result of the proposed activity.

Accordingly, the development is considered to satisfy the requirements of Chapter 4 of the Hazards SEPP.

4.5.4 STATE ENVIRONMENTAL PLANNING POLICY (TRANSPORT AND INFRASTRUCTURE) 2021

Division 4 of *State Environmental Planning Policy (Transport and Infrastructure) 2021* (The Infrastructure SEPP) provides that development for the purposes of electricity generating works is permitted with consent in a prescribed non-residential zone. The RU4 zone applying to the site is a prescribed zone under Section 2.35 of Division 4.

The Infrastructure SEPP prevails over the LEP to the extent of an inconsistency pursuant to Part 2.1 Section 2.7, permitting the proposed development of electricity generating works to be undertaken with development consent on land within the RU4 zone. The proposed activity therefore is permissible with development consent on the basis that it is development permitted with consent via an EPI, the Infrastructure SEPP.

Other provisions of the Infrastructure SEPP are discussed in **Table 3**.

Table 3 – Infrastructure SEPP

Relevant Infrastructure SEPP provisions		**Assessment**
Section 2.36	Development for the purpose of electricity generating works permitted with consent.	The project is for the purpose of electricity generating works. Development for the purpose of electricity generating works may be carried out by any person with consent on land in a prescribed non-residential zone via Section 2.36(1)(b). The subject site is zoned RU4 land, which is a prescribed non-residential zone. As such the project is permitted with consent.
Section 2.118 and Section 2.119	Development on a proposed classified road and development with a frontage to a classified road	The proposed project does not include development on a proposed classified road such that Section 2.119 does not apply. The site of the development is situated adjacent to the Turton Place which is a local road managed by Yass Valley Council. No frontage or direct connection from the site to the road reserve of a classified road is proposed and therefore Section 2.119 does not apply.

Relevant Infrastructure SEPP provisions		Assessment
		Notwithstanding the above an approval under Section 138 of the *Roads Act 1993* is required for road works associated with the project including the connection to Turton Place. An assessment of potential traffic related impacts is provided in **Section 5.9.**
Section 2.122	Traffic generating development	The project is not identified as traffic generating development under Schedule 3 of the Infrastructure SEPP. An assessment of potential traffic related impacts is provided in **Section 5.9.**

4.5.5 DRAFT ENVIRONMENTAL PLANNING INSTRUMENTS

A review of the NSW Government LEP planning proposal tracking website did not identify any draft planning instrument currently under assessment in the Yass Valley Council LGA relevant to the proposed development. The only current assessment is provided with respect to amendments to include 9 cabins located in Wee Jasper heritage items within Schedule 5 of the LEP (PP-2024-419).

4.5.6 DEVELOPMENT CONTROL PLAN

A previous review of the council's website, during the original lodgment of the development, did not identify a development control plan in effect which impacted the proposed development site. The plans in effect at the time of lodgement were restricted to *Yass Valley Council Development Control Plan, Fairley Commercial Centre, Murrumbateman* (YVC 2015) and the *Yass Shire Development Control Plan - Multi-unit Residential Development*. (YVC (2003).

The Yass Valley Council Development Control Plan 2024 (DCP) was adopted by Yass Valley Council on 25 July 2024 and came into operation on 1 August 2024. Whilst this was after the original lodgement of this development application, Council have identified that the draft DCP has been considered during councils' assessment of other development applications prior to its formal commencement. This section of the SEE has therefore been amended to provide a consideration of the current DCP.

The DCP, available via the YVC website, contains several development controls including specific parts applying to development applications for Subdivision, Residential, Rural, Large Lot and Environmental Zone Development Industrial and Commercial Development, Area specific Controls and development in hazard affected areas together with other generalised controls associated with the design of a development including with respect , area specific controls, development in hazard affected areas, carparking and access, heritage, natural resources and miscellaneous land uses.

Part A of the DCP notably provides a general outline on the purpose and aims of the plan and includes a Land Use Matrix to detail the applicability of each part to different types of development. Development applications for the purposes of electricity generating works as detailed in the DCP should be considered with respect to the following parts:

- Part A – Introduction
- Part B – Principles For All Development
- Part H – Development in Hazard Affected Areas (if necessary)
- Part I – Car Parking and Access
- Part K – Natural Resources (if necessary)
- Part L – Miscellaneous Land Uses (if necessary)

The land use matrix within the DCP does not assign electricity generating works for consideration under Part E – Rural, Large Lot and Environmental Zone Development. This part of the DCP however, states that it applies to development within land zoned R5 Large Lot Residential, RU1 Primary Production, RU2 Rural Landscape, RU4 Primary Production Small Lots, C3 Environmental Management, C4 Environmental Living. RU4 Primary Production Small Lots. The proposed development is situated within the RU4 land zone and a consideration of provisions under Part E of the DCP is therefore provided.

Compliance with the relevant requirements of the DCP is demonstrated via the detailed assessment provided in **Appendix B.**

One (1) non-compliance was identified and is associated with minimum setbacks to properties containing intensive plant agriculture The DCP provides a control to ensure that development is setback 250 m from the boundary of a property which is used for intensive plant agriculture. The footprint BESS is setback approximately 140 m from the northern boundary which adjoins a property that undertakes intensive plant agriculture. Notwithstanding this the non-compliance is considered capable of being addressed through mitigation measures to achieve the objective of this part of the DCP.

On the basis of the assessment in **Appendix B**, it is considered that the proposed development is consistent and capable of achieving the relevant objectives of the DCP.

4.5.7 DEVELOPMENT CONTRIBUTIONS PLAN

The *Yass Valley Development Contributions Plan 2018* (YVC, 2019) applies to the project site. The contribution plan outlines the application of levies to applications for development consent and applications for complying development certificates under Part 4 of the EP&A Act.

Development that is exempt from paying a contribution under the plan includes:

- Development that has been the subject of a condition under a former section 94 plan under a previous development consent relating to the subdivision of the land on which the development is to be carried out,
- Development for the sole purpose of the adaptive reuse of an item of environmental heritage (listed in Schedule 5 of Yass Valley LEP),
- Places of public worship and centre based child care facilities by or on behalf of a charity or not-for-profit organisation,
- Emergency services facilities,
- Affordable housing or social housing by a social or a not-for-profit affordable housing provider,
- Development of facilities on behalf of a public authority,

- Development undertaken by or on behalf of Council,
- Community facilities or infrastructure,
- Any development excluded from paying a contribution by a Ministerial direction under Section 7.17 – 'Directions by Minister' of the EP&A Act.

The proposed development comprises the installation of a DBESS consistent with a battery storage facility and does not satisfy any of the exemption conditions listed above. Contributions will therefore apply to the proposed development (subject to confirmation from YVC). A cost summary report prepared by M/s Denary Quantity Surveying estimates costs associated with the project in accordance with Section 208 of the EP&A Regulations and has been provided with the application.

5. LIKELY IMPACTS OF THE DEVELOPMENT

The impacts have been identified through an assessment of the proposed development against the provisions of section 4.15(1)(b). This section also addresses the consideration at Section 4.15(c) and Section 4.15(e) of the Act that relate to the suitability of the site for the development and the public interest.

The assessment is constrained to the proposed development, i.e. that which is described in Section 3 of this report. Impacts associated with the approved development are not required to be considered as part of this report.

5.1 Context and Setting

The site is located in an area zoned for the purpose of primary production and is characterised by agricultural land uses.

The proposed DBESS is permissible within the RU4 zone via the Infrastructure SEPP and has minimal ongoing impacts associated with its operation. The proposed electricity storage works would be generally low scale and are capable of being designed with minimal impact to the existing character of the locality.

A review of the site via the NSW Historical Imagery Viewer has been undertaken to assess the sites context and previous land uses. Historical imagery between 1985 and 1997, shows that the site and surrounding locality have historically been used for agricultural production including cropping. Tree plantings throughout the site have notably been introduced between 1985 and 1997, most noticeably in the row of trees surrounding the sites access road and surrounding the existing residential property within the same landholding to the east. Based on this review, and coupled with discussions with the landowner, no significant contamination is anticipated to have resulted from the previous agricultural land use of the site.

5.2 Soils

The development site impact area is mapped via the Land and Soil Capability Mapping for NSW (DPIE 2021) as having a land capability of Class 4 (moderate to severe Limitations) – Refer to **Figure 4.**

The site of the proposed activity is not mapped as containing Biophysical Strategic Agricultural Land (BSAL) and does not include any land mapped on the draft State Significant Agricultural (SSA) Land Map.

The site is located within the Boorowa soil landscape area (SI5512bw) which is identified with several soil hazards including moderate topsoil erodibility, low to moderate subsoil erodibility a low to moderate erosion hazard, a moderate structural degradation hazards and low to moderate shrink-swell potential. As noted via the soil landscape sheet soil erosion is associated to minor gullying of drainage lines with sheet and wind erosion occurring during dry times and following cultivation. The existing use of the Boorowa soil landscape is characteristic of agricultural land uses including extensive cultivation of winter cereals (mainly wheat) as well as sheep and cattle grazing.

Minor excavation and trenching is required to prepare the site for installation of the DBESS, with the potential for minor changes to access treatments and internal roads/driveways.

Soil impacts are anticipated to be limited to the construction phase of the project with no significant impact anticipated to result from the DBESS operation. Potential impacts on soil resulting from the proposed development include:

- Soil erosion and sedimentation.
- Soil contamination via spills from vehicles and vehicles during the construction phase.
- Potential disturbance of unknown contaminated soil.
- Encountering rock units with the capacity to accommodate naturally occurring asbestos.

Subject to the implementation of appropriate mitigation measures, including standard erosion and sediment controls during construction, the proposed development is not expected to result in significant impacts.

5.3 Contamination

A review of contamination records on 21 November 2024 did not identify any contaminated land within or in vicinity of the project site (refer **Section 4.5.3.2**).

The site is substantially separated from recorded contaminated sites such that no significant impacts from previous contamination are anticipated. In the unlikely event that contaminated soils are located within the site, these are unlikely to be substantially disturbed due to the extent of works proposed. No substantial soil movement or sub-surface works are expected to form part of the proposed DBESS development.

A review of historical imagery has determined that the site has historically been used for agricultural land use (refer **Section 5.1**). No significant contamination is anticipated to have resulted from the previous agricultural use of the site.

5.4 Heritage

5.4.1 ABORIGINAL HERITAGE

A basic search of the Aboriginal Heritage Information Management System (AHIMS) online database was undertaken on 21 November 2024 to determine the potential for adverse impacts to aboriginal heritage. The search did not identify any known Aboriginal sites or places of heritage significance occurring at or near the project site (refer to **Appendix B**).

A review of Native Title Vision mapping was undertaken on 21 November 2024 and did not identify any Native Title Determination Areas located at or near the project site.

Given the existing use of the project site and the absence of known sites or places of Aboriginal heritage significance heritage, the proposed activity is considered unlikely to result in significant impacts to Aboriginal heritage.

Notwithstanding the above there is potential for unknown archaeological remains to be discovered and encountered during the construction of the proposed activity. While the potential to discover items of heritage significance is considered low, a precautionary principle applies. Appropriate mitigation measures would be implemented during the construction phase of the project to minimise the potential for adverse impacts.

5.4.2 NON-INDIGENOUS HERITAGE

A review of the State Heritage Inventory (SHI) online database for the LGA and Schedule 5 of the LEP was undertaken on 21 November 2024. No items of local or state heritage significance were identified at or within the immediate vicinity of the subject site. The closest listed heritage item, Winstonwood Church (I114) is of local heritage significance and is located approximately 4 km northeast of the site.

Given the separation distance the proposed development is considered unlikely to result in any adverse impact to these heritage items.

Notwithstanding the above there is potential for unknown archaeological remains to be discovered and encountered during the construction of the proposed activity. While the potential to discover items of heritage significance is considered low, a precautionary principle applies. Appropriate mitigation measures would be implemented during the construction phase of the project to minimise the potential for adverse impacts.

5.5 Other Land Resources

The construction of the proposed development may result in some temporary disturbance to the existing agricultural use of the site, including through impacts associated with traffic, air and microclimate, waste and noise and vibration during the construction phase.

As detailed in **Section 5.2**, the proposed development is to occur with land mapped as Class 4 on the Land and Soil Capability Mapping for NSW (DPIE 2021). Class 4 land is described by the Land and Soil Capability Assessment Scheme (OEH, 2012) as:

> ***Moderate capability land:*** *Land has moderate to high limitations for high-impact land uses. Will restrict land management options for regular high-impact land uses such as cropping, high-intensity grazing and horticulture. These limitations can only be managed by specialised management practices with a high level of knowledge, expertise, inputs, investment and technology.*

Accordingly, and noting the small disturbance area, the proposed development is considered unlikely to result in any significant impacts to agricultural land resources. Mitigation measures implemented

throughout the construction, operation and decommissioning phases of the proposed development would be designed to minimise the potential for adverse impacts to the land and soil capability. During decommissioning the site would be returned (as far as reasonably practical) to its existing state, ensuring that the land remains suitable for future agricultural activities.

A review of the Minview mapping has identified that a mining exploration licence EL9120, owned by AURUM Metals Pty Ltd currently applies to the site. This exploration licence was granted on 30 March 2021 and has an expiry date of 30 March 2027.

The site is not located within a Mine Subsidence District and no mining or drilling approvals are known to have been granted in relation to the site. Given the proximity of the site to the town of Murrumbateman and limited extent of works it is considered unlikely that the footprint of the DBESS project would be utilised for future mining activities. It is also noted that the project is of a limited duration (approximately 40 years) and thus the future use of the land for mining purposes is not precluded.

Consultation between the applicant and AURUM Metals Pty Ltd would occur prior to commencement of construction to identify any potential conflicts and intentions to drill or explore in the area of the proposed DBESS. No disruption to other land resources is considered likely to result from the proposed development.

5.6 Water

5.6.1 SURFACE WATER

There are no surface water features located within the footprint of the DBESS.

Water sources in proximity to the DBESS are limited to two (2) farm dams located within the host lot and a 2nd order drainage line transecting the northern portion of the host lot. Several other farm dams and drainage lines are situated on surrounding land to the west and east of the host lot.

The closest water source to the DBESS is a farm dam situated approximately 45 m north of the DBESS, within the northwestern corner of the host lot. An additional farm dam is situated within the southwestern extent of the host lot, located approximately 215 m south of the DBESS and approximately 60 m west of the proposed access arrangement.

The drainage line within the northern extent of the host lot is located within the proposed electrical connection route, approximately 70 m north of the DBESS footprint at its closest point. The drainage line extends in a general east to west alignment, connecting the dam in the northwestern corner of the host lot to drainage features situated on adjacent land to the west and along the eastern boundary of the host lot. The drainage line is mapped via hydroline spatial data and consists of a second order stream draining in a westward direction, downstream of two (2) first order streams. The first order streams are connected to two (2) farm dams situated along the host lot's eastern boundary. It is likely that the stream flows only during times of heavy rain or when there is spill from the farm dams.

The proposed electrical connection route transects the second order stream to connect to existing transmission lines located within the eastern extent of the host lot. A Controlled Activity Approval is

anticipated as a requirement for the proposed development subject to confirmation from DPIE Water (refer to **Section 4.4**.

Notwithstanding the above, the proposed development is considered unlikely to result in any significant impact to surrounding watercourses. Subject to the implementation of appropriate mitigation measures the proposed project is not anticipated to result in any significant adverse impacts.

The implementation of a soil and erosion management plan and other standard construction measures would limit the potential for the proposed development to result in adverse impacts to the surrounding water environment during the construction phase. The following mitigation measures are recommended to minimise the potential for adverse impacts:

- Minimise the extent of ground disturbance and associated loss of groundcover as far as practical to reduce the potential sediment movement.
- Implement rehabilitation with a capacity to best utilise seasonally opportunities and needs;
- Activities with the potential for spills (refuelling) would not be undertaken within 50 m of any watercourse and a suitable spill response and containment kit available on site whenever and wherever these type of higher risk activities are undertaken.
- Ensure that the DBESS is appropriately designed and maintained during operation to minimise the potential for spills and soil contamination.

5.6.2 GROUNDWATER

The site is not mapped as containing groundwater vulnerability via the ePlanning spatial viewer or LEP.

A review of the WaterNSW All Groundwater Map did not identify any registered groundwater bores within the boundaries of the site. The closest registered bore GW047516 is situated approximately 200 m west of the DBESS footprint and is recorded with a total depth of 38.1 metres. The next closest groundwater bore, GW047293, is situated within the southwestern corner of the host lot, approximately 300 m south of the DBESS footprint. GW047293 is listed with a total drill depth of 45.7 m and a standing water level of 3 m below ground level.

A review of the Groundwater Dependent Ecosystems Atlas (BoM, 2024) and NSW SEED Portal (2024) did not identify any aquatic, terrestrial or subterranean Groundwater Dependent Ecosystems (GDE) occurring within the site or host lot.

A Flood and Groundwater Assessment prepared by Water Technology forms part of this application and provides further assessment of groundwater impacts (refer to **Appendix G**). The groundwater assessment was prepared to consider the likelihood of groundwater contamination impacts on GDEs, cumulative impacts on the groundwater system including nearby extraction and appropriate measure to avoid, minimise and mitigate the potential impacts of the development. The assessment concludes the following with respect to groundwater impacts.

> *Based on the understanding of the local hydrogeological regime and site operations during construction and operation, it is considered that there is negligible risk to groundwater or GDEs*

This conclusion was supported and derived from the following:

- *No significant volumes of potential contaminants will be stored on the subject site during construction and operation phases and the small volumes that are shall be appropriately bunded and infrastructure maintained.*
- *The battery units are self-contained and will control any potential leaks. There is no opportunity for leaching of metals due to the battery make up and containment and lack of water in the battery units.*
- *Excavations will be shallow, <1 m deep and groundwater is unlikely to be encountered and no dewatering or abstraction will occur. Summer or Autumn Excavations will further reduce the potential for intersecting groundwater during excavations.*
- *Depth to groundwater, based on available data, is generally >3 m (at bores located within 400 m of the Subject Site) and is beneath a thick clay layer, reducing the risk of infiltration to groundwater. However, recent water level data is not available and may change the risk assessment if it were found to be shallower on the Subject Site or the expected clay layer was not present.*
- *Mapped GDEs are all >2 km or more away and are unlikely to be impacted in the unlikely occurrence of groundwater contamination. As there will be no groundwater abstraction at the Subject Site the GDEs will not be impacted by changes in groundwater levels due to onsite activities.*
- *Site management plans will provide details on the clean-up of small spills via spill kits and soil removal.*
- *A shallow bore on the Subject Site to confirm site conditions is recommended.*

The following recommendation is provided in the conclusion of the Flood and Groundwater assessment with respect to groundwater monitoring:

> *…groundwater monitoring is not considered necessary at the Subject Site unless there is a major fire where fire-fighting water or chemicals are used, or another unforeseen leak occurs outside the expected small volumes of stored fuel. Should a major fire or other event occur, then groundwater monitoring wells should be located up and down-gradient of the site and down-gradient to determine any impacts to groundwater.*

The proposed development is therefore considered unlikely to result in any significant impact to surrounding groundwater resources. The implementation of surface water management measures, as detailed in **Section 7.4.6.1**, including a soil and erosion management plan, would assist to further minimise the potential for adverse impacts to groundwater.

5.7 Flora and Fauna

The site of the development is mapped as containing terrestrial biodiversity via the LEP. The site, however, does not contain any land mapped with biodiversity value via the Biodiversity Values Map.

A Flora and Fauna Assessment Report (FFAR) prepared by Waratah Ecology (2024) forms part of this application and is provided in **Appendix D.**

The FFAR included a desktop assessment of existing flora and fauna together with the completion of a site visit to assess the condition and extent of vegetation in April 2024. The FFAR details that most of the vegetation present is consistent with non-native agricultural cropland with several large, grassed paddocks.

Native vegetation, however, has been identified by the FFAR as bordering the southern extent of the host lot near the proposed driveway and along the boundaries of several paddocks throughout the site. The following native Plant Community Type (PCT) has been identified within the Study Area of the FFAR:

- PCT 3376 - Southern Tableland Grassy Box Woodland

The FFAR concludes that direct impacts arising from the proposed development will include the clearing approximately 0.72 ha of vegetation for the electrical equipment area, asset protection zone, access road and electrical connection route & easement. Vegetation within this area is comprised of agricultural grasslands which have been historically cleared for livestock grazing and predominantly consists of exotic grass species considered to be of low ecological values

The proposal is also noted to likely require the removal of several smaller trees along the property's southern boundary to enable access via Turton Place. These trees, however, have been identified as eucalypt species, young and not hollow bearing, and are considered to be of low to moderate retention value. The FFAR details that the proposed native vegetation clearing is below the clearing threshold that triggers the Biodiversity Offset Scheme. No vegetation clearing is proposed in areas identified as containing high biodiversity and no significant impact to a species under the BC Act is anticipated.

With respect to fauna, it is determined in the FFAR that the site does not represent important habitat for locally occurring species and that the development is unlikely to result in any impact to habitat utilised by threatened fauna species. An assessment of significance, pursuant to Section 7.3 of the BC Act was considered unnecessary by the FFAR and no Test of Significance was therefore undertaken. The FFAR has determined that the site is unlikely to contain suitable habitat for threatened species, primarily due to historical clearing and a large area of the site being dominated by exotic grasses/pasture. No significant impacts to threatened biota are therefore anticipated to result from the proposed development.

The FFAR has concluded that the Biodiversity Offset Scheme is not triggered by the proposed development and no BDAR is therefore required.

Overall, the development is considered unlikely to cause a significant impact to any threatened species, populations, or ecological communities listed under the NSW BC Act or the EPBC Act.

Subject to compliance with mitigation measures, the proposed development is considered unlikely to generate any significant adverse impacts on the life cycle or habitat of any of threatened species or threatened ecological communities.

5.8 Visual Amenity

The visual landscape of the locality is characterised by a range of rural land uses, consisting of large agricultural lots with pastures and scattered rural residential dwellings.

Construction activities would involve the operation of plant and equipment in visible locations. These works, however, would be temporary and short lived, unlikely to result in any significant visual impacts.

The proposed development would represent a degree of change in the appearance of the land compared to the current visual landscapes. Given the limited extent of works no significant adverse impacts to visual amenity are anticipated.

A conceptual design has been prepared to review the extent of necessary earthworks required to facilitate the proposed development. Two options have been considered with respect to the design of the BESS compound including the establishment of a generally flat finished level across the BESS compound and an alternative option to arrange electrical components on pylons following the existing contours of the site.

To avoid excessive fill requirements and potential visual impacts resulting from providing a generally flat but elevated BESS compound, the adopted option is for electrical components of the development including the MVPS and Battery units to be situated on platforms with variable length pylons. The pylons would elevate the electrical components from the existing ground surface and result in electrical components stepping down the slope of the BESS compound.

A site visit was completed on 19 November to further review the potential for visual impacts and to respond to a request for additional information issued by Council on 25 October 2024. Photographs were collected during completion of the site visit to provide an indication on perspectives of the development from six (6) surrounding non associated receivers and two (2) roadways, Murrumbateman Road and Patemans Lane. Consultation with receivers was undertaken for the site visit to confirm access arrangements to surrounding properties. Where access to surrounding properties could not be secured, photographs were collected at the next best accessible location within the boundary of the proposed development site.

It is noted that Council's RFI has requested the preparation of photomontages where appropriate to assist with evaluating potential visual impacts. Panoramic photographs have been produced as a result of the site visit and are provided within **Appendix J**. The photographs demonstrate that existing vegetation and topography already significantly obscure views of the proposed development site from surrounding receivers and roadways.

Notwithstanding this, a landscaping plan is provided in **Appendix F** and details the inclusion of a landscaping area exterior to the fenced area of the DBESS. The provision of vegetation buffers surrounding the fenced area of the DBESS, consisting of a total 356 individual plant species will further minimise the potential for adverse visual impacts.

Given the views demonstrated by the panoramic photographs and the conservative approach to include landscaping around the BESS, no significant visual impacts are anticipated.

5.9 Access, Transport and Traffic

The proposed site is located within a rural agricultural setting with vehicular access to be provided to the site via a new driveway along Turton Place. Turton Place is a local road managed by Yass Valley Council.

The proposed access arrangement is situated approximately 610 m west of an existing connection between Turton Place and Patemans Lane. Patemans Lane extends southwards providing access to surrounding rural properties and Euroka Avenue, prior to terminating approximately 2.6 km to south of the connection with Turton Place. Patemans Lane extends approximately 530 m northwards of the connection with Turton Place

prior to providing a connection with Murrumbateman Road. Murrumbateman Road is a regional road (Regional Road No. 0007609) which extends in a general east to west alignment between Sutton Road another regional road situated approximately 19.8 km to the east (Regional Road No. 0000052) and the Barton Highway a state classified road situated approximately 3.3 km to the west (State Classified Road No. 0000015).

The access arrangement satisfies the minimum entering sight distance for the operating speed of 70 km/hr specified in AS/NZS 2890.1 and features a security gate setback greater than 300 m from the edge of Turton Place, capable of accommodating the storage of a 19 metre semi-trailer clear of the traffic lane.

The proposed development has the potential to generate minimal traffic impacts during the construction phase associated with staff and equipment coming to and from the site consisting of a mix of light and heavy vehicles, as well as construction waste being removed from site via heavy vehicles. Impacts of additional movements would be predominantly restricted to the construction phase, including:

- Short term delays for travelling public; and
- Reduced road safety.

Potential impacts associated with changes to existing traffic conditions would be managed through a construction management plan, to be provided prior to construction commencing. The construction management plan would minimise the potential for adverse traffic impacts and is expected to include the implementation of a traffic management plan during construction to control access to the site, provide appropriate traffic controls, and to ensure all construction vehicles and materials are contained within the site at all times.

Following the completion of construction works and installation of the DBESS, no significant traffic impacts are anticipated. No significant change to existing traffic conditions during operation, in comparison to what is already experienced in the locality, is expected to occur as a result of the proposed development. Traffic during the operational phase would be limited to occasional maintenance activities.

A Traffic Impact Assessment (TIA) prepared by Traffic Works (2024) forms part of this application and is provided in **Appendix E.** The TIA concludes that there are no traffic engineering reasons that would prevent the development from proceeding. The following conclusions are provided in respect of potential traffic impacts associated with the proposed development:

- *the peak hour traffic generation will occur during the construction phase of the development, where the peak hour volumes are expected to be:*
  - *3 light vehicles*
  - *1 heavy vehicle.*
- *the construction phase is expected to take 4 weeks.*
- *the subject site will generate a peak car parking demand of 3 spaces during the construction period and 2 spaces post-opening.*
- *the development plan includes a designated parking area that will satisfy the parking demand.*
- *adequate sight distance is available at the intersection of Patemans Lane and Murrumbateman Road; no further treatment is required.*

- *the proposed site access driveway along Turton Place satisfies the minimum entering sight distance, as specified in AS/NZS 2890.1.*
- *the setback of the proposed security gate from the edge of Turton Place will accommodate the storage of a 19 m semi-trailer clear of the traffic lane.*
- *no additional turn lane treatments are required due to the traffic generated by the proposed development.*

The following recommendations are provided as a conclusion to the TIA:

- ***Recommendation 1:** trim or remove the tree restricting sightlines to the north (as shown in Figure 17)*
- ***Recommendation 2:** the subject site access driveway should be constructed according to Figure 7.4 in Austroads Guide to Road Design Part 4 requirements and to the council's satisfaction.*

Subject to compliance with mitigation measures provided in the TIA, the proposed development is considered unlikely to generate any significant adverse impacts to existing access and traffic conditions.

5.10 Noise and Vibration

As shown in project drawings provided in **Appendix A,** the closest dwelling to the subject site is the associated receiver, identified as RO1. The associated receiver is located within the same landholding approximately 233 metres southeast of the proposed DBESS. The closest non-associated receivers R03 and R04 are situated approximately 355 m to the southeast and 369 m to the northwest of the DBESS footprint.

The proposed development will generate minimal noise and vibration impacts during the construction and operational phase. Construction impacts are expected to be limited to site development works and traffic movements and will be managed through a construction management plan, to be provided following DA approval.

Following the completion of construction works, no significant noise and vibration impacts are anticipated. Noise during operation would be limited to that generated by the battery infrastructure and maintenance traffic movements. Surrounding receivers are substantially separated from the extent of the battery such that no significant noise and vibration impacts during the operation of the development are anticipated. Accordingly, the proposed development is considered unlikely to significantly affect surrounding receivers through noise and vibration impacts.

An Acoustic Report (AR) prepared by Watson Moss Growcott Acoustics (2024) forms part of this application and is provided in **Appendix I**. Acoustic modelling of the development has indicated that in the absence of noise control, and without consideration of any NPfI modifying factors, the predicted noise levels for the operation of the project at all non-associated receivers is compliant with the adopted project trigger noise levels.

Notwithstanding this, the acoustic report has provided a conservative assessment with consideration of modifying factors nominated in the NPfi related to tonal noise and low frequency noise. Updated modelling results with the inclusion of tonal adjustments has indicated that residual noise impacts at R01 and R03 have the potential to exceed the project trigger levels.

To reduce operational noise emissions from the subject site and ensure compliance with project trigger levels at surrounding receivers the AR provides a provisional measure to construct an acoustic barrier to the southeast of the BESS.

The following conclusions are provided in respect of noise generated by construction activities and road traffic associated with the proposed development:

- *Noise due to construction vehicle movements is predicted to be below noise level criteria nominated within the Road Noise Policy.*
- *Noise emissions due to some construction activities have been predicted to exceed NMLs at receptors. In these instances, WMG has provided noise mitigation strategies to minimise the potential for adverse impacts on the relevant sensitive receptors.*
- The project construction and operational phase will not include any vibration intense activities such as piling and ramming and hence, have not been considered further.

Subject to compliance with mitigation measures provided in the AR, the proposed development is considered unlikely to generate any significant adverse noise and vibration impacts.

5.11 Air and Microclimate

The proposed development would result in minimal impacts to the air and/or microclimate during the construction of the DBESS. These impacts would be managed through a construction environmental management plan (CEMP), to be provided following DA approval. The CEMP is expected to include the following measures to minimise the potential for adverse impacts to air quality:

- Stockpiled topsoil and other materials that exhibit significant dust lift off would be wet down routinely and as appropriate.
- Stabilising techniques and/or environmentally acceptable dust palliatives will be utilised if the wetting down of surfaces prove to be ineffective.
- All equipment is maintained accordance with the manufacturers specifications.

Once the DBESS is operational, no adverse impacts to the air or microclimate is anticipated.

5.12 Servicing

All in-ground and above-ground services that are to be retained on site would be identified prior to works commencing. Subject to the identification of all in-ground and above-ground services for retention prior to works commencing and carrying out works in accordance with relevant standards and safe work practices, the proposed DBESS is not anticipated to generate any significant risks to existing services.

Servicing arrangements for the proposed DBESS would be refined during detailed design and confirmed in consultation with Council and relevant regulatory authorities prior to construction. The following is noted with respect to servicing requirements:

- Electrical services associated with installing the DBESS would be limited to the augmentation and provision of sufficient electrical connections to connect the development with the local electrical network.
- Water use for the construction of the DBESS would be minimal and likely limited to that required for dust suppression during the construction phase. Water for construction activities is expected to be sourced and transported to the site via water trucks.
- It is anticipated that chemical port-a-loo's, as temporary portable ablution facilities, will be provided at strategic locations around the site for use by personnel during the construction and decommissioning phases of the project. Where possible these port-a-loo's will be located on a trailer to allow for easy redistribution. Waste from port-a-loo's will be disposed of offsite at an appropriately licensed treatment facility. No ablution facilities are proposed for the operational phase of the project. During Operation visitors to the site would be limited to occasional maintenance staff.

5.13 Waste

The proposed development will generate waste during the construction phase. The following waste types are likely to be generated by construction activities.

- Packaging materials
- Excess building materials
- Cabling
- Metal off-cuts
- Plastic and masonry products
- General refuse and other non-putrescible general solid wastes.

Waste generated through the construction phase would be stored temporarily on-site in skips prior to removal and delivery to an approved waste facility in accordance with a construction management plan, to be provided following DA approval. Following the completion of construction works, no significant waste impacts are anticipated.

During the operational phase of the DBESS, waste generation would be limited to maintenance activities. This has the potential to include the replacement of site infrastructure and components of the DBESS. Waste if generated during the operational phase of the development, would be removed from the site and either recycled or disposed of at an appropriate waste disposal facility.

5.14 Hazards

5.14.1 FLOODING

The proposed development is not considered likely to be significantly impacted by flooding hazards.

A Flood and Groundwater Assessment Report prepared by Water Technology (2024) forms part of this application and is provided in **Appendix G .** The assessment concludes that there are no significant overland flow paths across the site. Modelling for the 1% Annual Exceedance Probability (AEP) flood event identified that the maximum flood depth within the footprint of the DBESS is approximately 0.02-0.05 m. The flood

modelling identified peak flood depths below 80 mm with maximum flood velocities between 0.05- 0.55 m/s. On this basis the site of the BESS is classified as flood hazard H1, generally safe for people, vehicles and buildings.

The following recommendation is provided in the conclusion of the Flood and Groundwater assessment with respect to surface water and flooding hazards:

> *Based on the findings of the flood modelling it is recommended to set critical infrastructure to be a minimum of 150 mm above the existing ground level to reduce the risk associated with stormwater runoff impacting infrastructure. Importing fill to raise the areas where infrastructure is to be located is not likely to increase flood levels on neighbouring properties, however, should be tested within the hydraulic model at a further design stage once the final layout is available.*

As previously detailed, electrical components of the development including the MVPS and Battery units are currently proposed to be situated on elevated platforms with variable length pylons. The pylons would elevate the electrical components from the existing ground surface and result in electrical components stepping down the slope of the BESS compound. The elevation provided from the pylons would be designed to achieve the recommendation of the FGAR, elevating critical infrastructure to a minimum of 150 mm above the existing ground surface.

The design of the project nevertheless remains subject to the finalisation of detailed design following the assessment of the development application.

Subject to the implementation of appropriate mitigation measures, including standard erosion and sediment controls during construction and compliance with the recommendations of the flood and groundwater assessment report, the proposed project is considered unlikely to result in any significant adverse impacts to surrounding watercourses or flooding behaviour.

5.14.2 BUSHFIRE

A review of bushfire mapping provided via the ePlanning Spatial Viewer and SEED Portal has identified that the entire site is mapped as containing Vegetation Category 3 bush fire prone land (BFPL).

A Bush Fire Management & Emergency Response Plan (BFMERP) prepared by Harris Environmental Consulting (2024) forms part of this application and is provided in **Appendix H.**

The BFMERP has been prepared in accordance with the requirements of *Planning for Bushfire Protection 2019* (PBP 2019). To determine the planning and construction requirements for the development the BFMERP has undertaken a review of vegetation, slope and other relevant bushfire characteristics within and surrounding the development site. To ensure compliance with the requirements of PBP 2019 the BFMERP includes mitigation measures to ensure bushfire risks are appropriately managed. The proposed development will be managed in accordance with recommendations and measures identified in the BFMERP including measures to:

- Prevent or mitigate fire ignition, including maintenance of the DBESS and an Asset Protection Zone to create a buffer from bush fire prone vegetation and a defendable space for firefighting operations.

- Ensure that landscaping of the DBESS is implemented and managed in a manner that minimises bushfire risks.
- Ensure that the DBESS is designed and built in accordance with relevant construction standards including the implementation of non-combustible materials and requirements for support equipment.
- Ensure that appropriate access is provided for the DBESS including within the 10 m internal APZ to accommodate bushfire fighting activities.
- Ensure the availability of fire-suppression equipment, access and water, including the provision of a static water supply with a minimum capacity of 20,000-litres. The water supply should be constructed of suitable materials and to appropriate standards, ensuring water is accessible for firefighting activities as per the requirements of the BFMERP.
- Prioritise the placement of electrical connections underground where practical and ensure compliance with appropriate vegetation management standards where overhead power supply is implemented.
- Ensure the appropriate storage and maintenance of fuels and other flammable materials.
- Ensure notification is provided to the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation or that are proposed to be carried out during a bush-fire fire danger period in order to ensure weather conditions are appropriate.
- Ensure appropriate bush fire emergency management planning and responses.

It should be noted that development for the purposes of electricity generating works (BESS) is not categorised as "special fire protection purposes" and therefore the development does not require a 100B Certificate under the Rural Fires Act 1997 (refer to **Section 4.3**).

Subject to implementation of recommended mitigation measures, the proposed development is considered unlikely to generate any significant adverse impacts associated with bush fire risks.

5.14.3 TECHNOLOGICAL HAZARDS

The proposed development is not anticipated to generate any technological hazards, subject to:

- The identification of all in-ground and above-ground services for retention prior to works commencing,
- The completion of any removal, relocation and or replacement of existing services where required within impacted areas,
- The capping of any adjacent services, where required and
- The carrying out of works in accordance with relevant standards and safe work practices.

The portion of the site on which the DBESS is proposed to be installed is considered unlikely to be contaminated (refer to **Section 5.3**).

Electric and magnetic fields (EMF) are produced naturally as well as by human activity. The earth has both a magnetic field, produced in the earth's core, and an electric field, produced by electrical activity like storms in the atmosphere. Electrical equipment of all sizes and voltages produces EMF. Both fields drop away rapidly with distance from the source, or due to shielding by insulation or earth (in the case of buried installations).

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has issued Guidelines for Limiting Exposure to Time-Varying Electric and Magnetic Fields. The relevant authority in Australia is the Australian Radiation Protection and Nuclear Safety Agency (ARPNSA) and they refer to the ICNIRP guidelines. These supersede earlier guidelines published by National Health and Medical Research Council (NHMRC).

The ICNIRP EMF guidelines provide relevant limits for the general public for 50 Hz sources as follows:

- Electrical Field Strength (E): 5 kilo Volts per metre (kV/m)
- Magnetic Flux Density (B): 200 micro Teslas (μT)

EMF increases with voltage and proximity to the apparatus producing, transmitting or consuming electricity. EMF varies according to specific design and construction parameters such as conductor height, electrical load and phasing, and most importantly, whether the conductors are overhead or buried.

The DBESS is located within a secure site and will not be open to the general public. The closest dwelling is located in excess of 150 metres from the DBESS, and at that distance EMF emission levels are not anticipated to be any higher than what currently exists. No significant impacts associated with technological hazards are therefore anticipated.

5.15 Safety, Security and Crime Prevention

The guidelines prepared by the NSW Department of Urban Affairs and Planning (DUAP 2001) identify four (4) Crime Prevention Through Environmental Design (CPTED) principles to be considered in a Development Application to ensure developments do not create or exacerbate crime risk. The four key principles of the guidelines include surveillance, access control, territorial reinforcement, and space management.

The proposed development has been designed with consideration of safety, security and crime prevention. Fencing of the DBESS site and periodic maintenance activities are anticipated to have a positive impact on surveillance, access control, territorial reinforcement and space management, enabling the continued use of the site for electrical storage alongside surrounding agricultural activities.

5.16 Public Domain

The proposed development will generate minimal impacts on the public domain during the construction phase predominately associated with the increased of traffic to the site (refer to **Section 7.4.8**).

Any necessary approvals for works within the public domain would be secured following DA approval. The impacts of these activities would be managed through a construction management plan, also to be provided following DA approval.

Following the completion of construction works, no significant impacts to the public domain are anticipated.

5.17 Social Impact

As defined by the NSW Government Office on Social Policy, social impacts are significant events experienced by people as changes in one or more of the following are experienced:

- peoples' way of life (how they live, work or play and interact with one another on a day-to-day basis);
- their culture (shared beliefs, customs and values); or
- their community (its cohesion, stability, character, services and facilities).

The proposed development will have a minimal social impact predominantly through minor increases in traffic, air and microclimate impacts, waste generation and an increase in noise and vibration during the construction phase. These impacts are capable of being managed through a construction management plan, to be provided following DA approval. The impacts are also overcome by the benefits of the works, providing greater flexibility for the electrical network.

5.18 Economic Impact

The proposed development would have minimal economic impact associated with impacts to surrounding businesses during the construction phase. These impacts are capable of being managed through a construction management plan, to be provided following DA approval.

The potential for adverse impacts is offset by the creation of economic benefits as a result of the development. Short term economic benefits are expected during the construction phase of the project with expenditure on local goods accommodation and materials together with the generation of employment opportunities for local contractors. The operation of the project will continue to enable ongoing employment opportunities for operation and maintenance activities together with follow on economic benefits associated with improving the reliability and flexibility of the electrical network.

5.19 Construction Impacts

Construction impacts would be short-lived and manageable. The following standard construction management measures would be implemented to ensure impacts to the locality are minimised:

- Standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday and at no times on Public holidays) would be implemented;
- Avoiding dust generating activities during windy and dry conditions; and
- Maintaining all equipment in good working condition such that the construction contractor and site manager ensure the prevention of the release of smoke by construction equipment, which would be in contravention of Section 124 of the *Protection of the Environment Operations Act 1997* and Clause 16 of the *Protection of the Environment Operations (Clean Air) Regulation 2010*.

5.20 Cumulative Impacts

It is not anticipated that the development would result in any cumulative impacts including:

- individual impacts so close in time that the effects of one are not dissipated before the next (time crowded effects);
- individual impacts so close in space that the effects overlap (space crowded effects);
- repetitive, often minor impacts eroding environmental conditions (nibbling effects); or

- different types of disturbances interacting to produce an effect which is greater or different than the sum of the separate effects (synergistic effects).

5.21 Suitability of the Site for Development

The site is considered suitable for the proposed development based on the following:

- It is generally level and located within an environment historically disturbed by agricultural activities.
- It is unlikely to be contaminated given existing records from the NSW EPA list of Notified Sites and the EPA Contaminated Land Record.
- It is unlikely to contain Aboriginal sites or places and is not mapped as being within a heritage conservation area under the LEP.
- It is considered unlikely to significantly impact surface and groundwater resources subject to the implementation of appropriate measures.
- A FFAR has determined that the proposed development is unlikely to result in any to threatened biota including any significant impacts on the life cycle or habitat of any of threatened species or threatened ecological communities.
- The development is capable of implementing appropriate measures to minimise potential risks associated with bushfire and flood hazards, surface and ground water, soil and traffic impacts.
- It is not anticipated to significantly increase the demand for essential services and is located in close proximity to existing electrical transmission infrastructure minimising the disturbance for providing appropriate electrical connections.

5.22 The Public Interest

The proposed development is in the public interest on the following grounds:

- It is permitted with consent via the Infrastructure SEPP and is not inconsistent with the objectives of the RU4 zone as per the LEP.
- Will have minimal impacts limited to short term traffic, public domain, air and microclimate, waste and noise and vibration impacts during the construction phase. These impacts are capable of being managed through the implementation of standard management measures as outlined throughout this report and summarise in **Section 5.19.**
- Is within a suitable site for the proposed works, which is generally level, located within a rural environment and unconstrained in terms of significant soils, heritage, watercourses, vegetation or hazards such as bushfires or flood events.

6. CONCLUSION

This SEE has been prepared by Premise to describe the proposed development of electricity generating works (DBESS) in a site located near Turton Place, Murrumbateman and considers the development in the context of Section 4.15(1) of the EP&A Act. This includes a consideration of the relevant environmental

planning instruments, the likely impacts of the development, the suitability of the site and the public interest.

In terms of environmental planning instruments, the proposed development is permitted with consent on the RU4 land use zone via Section 2.36 of the Transport and Infrastructure SEPP and is compliant with all other relevant provisions under the LEP. While the no DCP currently applies to the proposed development, the development has been assessed against the provisions under the LEP and is anticipated to be consistent with future controls issued under the planned updated Yass Valley Council DCP.

With respect to impacts, the assessment in this SEE and supporting documentation has determined that the proposed development will have minimal or acceptable impacts on the environment and public. This includes the local context, soils, heritage, other land resources (i.e. agriculture and mining), water, flora and fauna, visual amenity, access, transport and traffic, noise and vibration, air and microclimate, servicing, wastes, hazards, social and economic impacts.

The site is suitable for the development as it is unlikely to be contaminated or contain Aboriginal sites or places in the vicinity of the proposed development. It is not mapped under the LEP as being or adjoining an item of heritage significance, within a heritage conservation area or within an area identified with wetlands. The site is mapped as having moderate to severe limitations for agricultural uses, is considered unlikely to contain significant native vegetation and is capable of implementing appropriate controls to address existing flood and bush fire hazards. Finally, the site is considered suitable for the proposed development by facilitating an opportunity for electrical storage in close proximity to existing electrical distribution and generating infrastructure, with accessible transportation routes supporting the transport of staff and equipment and local population centres for sourcing labour.

The proposed development will provide a benefit to the public, improving the reliability and flexibility of the electrical network by facilitating the storage of electricity. For the reasons set out above, the proposed development is considered to be within the public interest and is recommended for approval.

Table 4 – Development Control Plan Matters and Assessment

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
PART A – PLAN INTRODUCTION			
Part A.3 – Aims and Objectives			
This Plan aims to: • *provide guidance on acceptable and appropriate development control standards for new development within the Yass Valley Local Government Area;* • *increase public awareness of hazards and to ensure that essential services and land uses are planned in recognition of the potential hazards;* • *ensure that only appropriate development occurs in areas affected currently impacted by, and likely to be impacted by future, hazards to ensure that risk to life and property is minimised by providing early, safe evacuation routes, buildings that are designed to withstand the hazard impacts*	N/A	The development is not antipathetic to the aims of the DCP. The assessment of the proposed development contained in this SEE has identified that it is unlikely to have any significant detrimental impact.	✓
The Objectives of this Plan are to: • *ensure that development occurs in a manner that is consistent and sustainable;* • *encourage sustainable development that is designed for a changing climate including extreme weather events;* • *support development that minimise waste and resource consumption;* • *provide for a variety of adaptable housing types to meet the changing demographics of Yass Valley;* • *promote high standards of development that provide positive planning outcomes on individual sites to the benefit of the wider community by encouraging new development that is responsive to the site characteristics, streetscape and neighbourhood character in which it is located;* • *encourage innovative design that achieves a high level of sustainability and is adaptable to changing climate conditions*	N/A	The development is not antipathetic to the objectives of the DCP. The assessment of the proposed development contained in this SEE has identified that it is unlikely to have any significant detrimental impact.	✓
Part A.4 – Where does this Plan apply?			
The plan applies to all land in the Yass Valley Local Government Area, except to that land to which the Parkwood Local Environmental Plan 2020 applies.	N/A	The site is within the Yass Valley Local Government Area such that the DCP applies.	Refer below.
Part A.12 – Land Use Matrix			

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
The land use matrix identifies the parts of the DCP to be considered according to the type of land use and development proposed.	N/A	The following Parts have been considered with respect to the land use matrix provided in Part A of the DCP and the proposed development of electricity generating works. Part E of the DCP has been considered in the context that the development is situated within the RU4 Land Use Zone.	Refer below.
PART B – PRINCIPLES FOR ALL DEVELOPMENT			
Part B1 – Sustainability			
In designing for sustainability the following principles, as outlined in Council's Sustainability Policy, are to be considered: *a. The precautionary principle, wherein if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:* *i. Careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment* *ii. An assessment of the risk-weighted consequences of various options* *b. Intergenerational equity, – namely, that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.* *c. Conservation of biological diversity and ecological integrity, where conservation of biological diversity and ecological integrity should be a fundamental consideration.* *d. Improved valuation, pricing and incentive mechanisms, environmental factors should be included in the valuation of assets and services, such as:* *i. Polluter pays – that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,* *ii. The users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.* *iii. Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their*	N/A	The assessment of the proposed development contained in this SEE has evaluated the potential impacts of the proposed development and detailed that it is unlikely to have any significant detrimental impact. The proposed development through providing grid flexibility services will support the efficiency of the electrical network, charging during periods of low demand and discharging during periods of higher demand. The ability of the BESS to support the efficiency of the electrical network aligns with the principles of sustainability, minimising the waste of generated energy. Through providing firming capacity the proposed development additionally supports the NSW electricity strategy including the transition to renewable forms of energy generation and associated benefits for sustainability.	✓

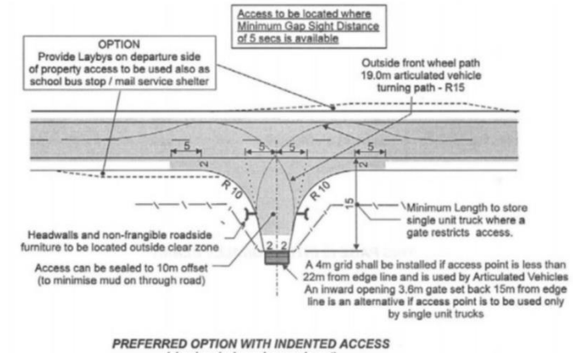
Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
own solutions and responses to environmental problems			
To this end, this Plan aims to: a. Increase tree retention and provision at development stage to increase and enhance tree cover, for visual, social, environmental, economic and ecological values, b. Discourage the use of heat producing surfaces in prefer of natural materials, surfaces and finishes; c. Encourage the use of sustainable building materials; d. Avoid excessive resource consumption and minimise waste.	N/A	The retention and provision of trees has been considered in the design of the proposed development and through the assessment of impacts. Trees removal is limited to facilitating access to the development site and has been assessed by the Flora and Fauna Assessment in **Appendix D**. Landscaping for the proposed development will increase tree cover within the development site while further assisting to minimise visual impacts. The remaining aims of this Section of the DCP to discourage the use of heat producing surfaces, encourage the use of sustainable building materials and to avoid excessive resource consumption and minimise waste, are considered capable of being achieved through the finalisation of detailed design.	✓
Part B2 Site Suitability			
In determining whether a site is suitable for the proposed development the following need to be considered: *a. Physical constraints such as topography, flooding, heritage, bushfire and biodiversity;* *b. Adjoining land uses, this is particularly important for intensive agricultural and industrial uses which may require physical separation from residential areas and existing dwellings;* *c. The availability and location of all-weather access, electricity, reticulated water and sewer or other means of obtaining water and disposing of sewage;* *d. Zoning restrictions, easements and covenants;* *e. Site aspect, lot configuration to enable setbacks and restrict overshadowing.*	N/A	The suitability of the site and development has been considered in the context of physical constraints, topography and drainage, adjoining land uses, access arrangements, servicing, restrictions on land use and setbacks. As detailed within **Section 5.21** and the assessment of impacts provided throughout **Section 5** the site, subject to the implementation of appropriate mitigation measures, is suitable for the proposed development.	✓
Part B3 Site Analysis Plan			
All applications must be accompanied by a site analysis plan. A site analysis plan shall display, where relevant: *a. Site topography;* *b. Bushfire hazard of the site, including across roads, waterways, etc;* *c. Existing vegetation and mature trees, including hollow bearing trees;* *d. Heritage items in the vicinity;* *e. Views to and from the site;*	N/A	Figures of the development site and relevant constraints are provided within **Section 2.2** of this SEE and throughout the various appended specialist assessments. The figures provided via the SEE and appended specialist assessments are considered suitable for addressing the objective of this section.	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
f. Impact of vegetation and buildings on adjoining land including privacy, shading, lighting and visual amenity; *g. Location of access points relative to pedestrian facilities and roadway structures;* *h. Solar access and predominant breeze;* *i. Flooding, including overland, riverine and on-site drainage;* *j. Proximity to community and social facilities.*			
Part B4 Crime Prevention and Safety			
Objective: *To ensure that development considers the principles of crime prevention and safety in the design phase and opportunities for crime occurrences are not increased by the development but opportunities for passive surveillance are improved*	**Controls:** All development shall consider the crime prevention measures contained in this part in the design phase of development	A consideration of CPTED principles is provided within **Section 5.15** of the SEE. The proposed development has been designed with consideration of safety, security and crime prevention. Fencing and periodic maintenance are anticipated to produce positive impacts with respect to crime prevention and safety.	✓
B4.1 Passive surveillance			
N/A	*a. Windows should be located to allow surveillance of internal driveway and carparking areas for commercial, industrial and multi dwelling development;* *b. Sensor or solar lighting should be provided adjacent to entries for commercial, industrial and multi dwelling development;* *c. Windows, balconies, fencing and the like should be designed and constructed to allow views and passive surveillance of any adjacent public reserve; or recreational area. Where necessary, fencing may be required to be transparent, rather than of solid construction;* *d. Security fittings, shutters and doors, where fitted should be at least 50% transparent at street level to allow passive surveillance in commercial, industrial and multi dwelling development;* *e. Mature heights and widths of vegetation plantings should be considered so as not to visually obscure entries/exits signage, lighting or present a security risk;* *f. Pedestrian areas should be visible from nearby dwellings, buildings, parking areas or the street, and sufficiently lit to facilitate safe pedestrian movement if used after dark;* *g. For commercial and industrial development toilets should be integrated into a development with their entries highly visible and well lit, and not be in an isolated location;* *h. Landscaping should minimise spaces where intruders can hide;* *i. Security lighting is to be provided to public accessways and parking areas and conform to AS1158.1 'Vehicular Traffic Lighting' in commercial and industrial developments,*	As above. The project has been designed in consideration of crime prevention and safety.	✓
B4.2 Access and space management			
N/A	*a. Buildings should provide clear and direct lines of sight between the street and building entrances;*	As above.	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	b. Pedestrian laneways should have more than one entrance to avoid "dead-ends" and entrapment spots; *c. The main entry and building number should be clearly visible from the street for pedestrians, motorists and emergency services;* *d. In commercial and industrial development staff and customer entries should be identified appropriately by signage and lighting;* *e. The building and site layout should ensure there are no entrapment spots - small, confined areas that may be used for hiding or to trap potential victims;* *f. Where buildings are set back from the street, the area should be designed to minimise hiding and entrapment spots;* *g. For uses which will operate after dark, clear sightlines should be provided from the building entrance to parking areas and/or public streets;* *h. Sharp corners or deep recesses in the length of walls or fences that reduce visibility should be avoided;* *i. Machinery and plant, down pipes, bin storage, balconies and fences should be located in such a way that they prevent access to windows;* *j. Landscaping (e.g. creepers, low hedges) should be incorporated to limit the opportunity for graffiti on solid fences and walls which face parks, streets or laneways;* *k. Building materials and finishes which have abuttal to parks, streets or laneways, should reduce opportunities for graffiti and vandalism and allow for ease of cleaning.*	The project has been designed in consideration of crime prevention and safety.	
Part B5 Neighbourhood Character			
Objective: *To encourage development which responds to and contributes positively to the character and topography of the existing streetscape.* *Ensure that new subdivisions establish a high quality of neighbourhood character and amenity*	**Controls:** a. Development should respect the scale, patterns and predominant building characteristics within a streetscape. b. The design should consider how the building/s will respond to the predominant characteristics of the neighbourhood such as dominant land uses, construction types and materials, roof pitch, setbacks, location and proportion of windows and doors, verandahs, vehicle parking/garaging, landscaping of public and private areas. c. New development should not dominate the streetscape. d. Building materials and finishes should reinforce or complement the dominant pattern within the streetscape. e. Buildings, driveways, fencing and landscaping should be designed to respond to the topography of the site by following contours or stepping down steeper sites f. Trees should be retained, both in the road reserve and private allotments. g. Facades should incorporate building elements that assist with thermal comfort controls and the use of sustainable building materials.	As detailed via the assessment of impacts provided throughout **Section 5** the proposed development, subject to the implementation of appropriate mitigation measures, is unlikely to have any significant detrimental impact, including with respect to considerations of context, scale, patterns and built form. The proposed BESS is not anticipated to dominate the streetscape or to result in significant visual impacts. Potential visual impacts of the BESS would be further considered during detailed design including measures to implement sustainable building materials and finishes that minimise impacts to the existing character of the landscape.	✓
PART E - RURAL, LARGE LOT AND ENVIRONMENTAL ZONE DEVELOPMENT			

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
This part applies to development within the R5 Large Lot Residential, RU1 Primary Production, RU2 Rural Landscape, RU4 Primary Production Small Lots, C3 Environmental Management, C4 Environmental Living.	N/A	The development is within the RU4 Primary Production Small Lots zone such that this part of the DCP applies.	Refer below.
This part seeks to ensure that: *• the siting of new development in the following zones maintain the low density, dispersed character, rural amenity and vistas of the Yass Valley;* *• ridgelines and scenic vistas are protected where buildings respect topography, use neutral non reflective materials and do not dominate the landscape;* *• separation distances are to be provided to ensure rural amenity and right to farm is maintained by limiting the potential for land use conflict. The right to farm, as described by NSW Department of Primary Industries, means a desire by farmers to undertake lawful agricultural practices without conflict or interference arising from complaints from neighbours and other land users.*	N/A	The development has been considered in the context of physical constraints, topography and drainage, adjoining land uses, access arrangements, servicing, restrictions on land use and setbacks. The proposed development is not considered likely to result in any significant impacts to rural amenity or to the right to farm.	✓
Part E.1 Siting of Buildings			
Objective: *To ensure that developments are sited in a manner to not dominant the rural landscape and minimise landuse conflict potential*	**Controls:** a. All buildings shall be located at least 40metres from the bank of any water course; b. All buildings must be located at clear of electricity transmission lines, structures or supporting ropes, wires, etc in accordance with the provisions of the energy provider such as the document "Developments near Essential Energy's infrastructure" or successive documents; c. All buildings shall have a setback of no less than 250 metres from the boundary of a property where the following activities exist: • forestry; • intensive plant agriculture (including vineyards and orchards); • mines and extractive industries; • railway lines. • A reduced setback will be permitted where measures are implemented to mitigate noise, light intrusion, dust and spray drift. d. The highest point of a building must be at least 5 metres below the highest ridgeline of any hill within 100 metres; e. Development on sloping sites should be designed to minimize cut and fill, allowing the building to respond to the slope of the land via use of split levels, or detached portions stepped down the slope.	As detailed in **Section 4.4** of the SEE, consultation with DPIE Water has confirmed that the development is not situated within 40 m of waterfront land. No Controlled activity approval is therefore required. The development has been situated in proximity to existing transmission lines to facilitate an electrical connection. Ongoing consultation is to be provided throughout project approval and construction to ensure the design of the project meets the requirements of service operators, including essential energy. Reviews of surrounding land uses have identified intensive plant agriculture on adjacent lots to the north and east of the proposed development. The footprint of the BESS is situated approximately 140 m south of the northern boundary and 260 m from the eastern boundary. The setback to the east achieves the setback provision of the DCP. The northern setback, however, is the below the threshold of the DCP provision and is therefore non-compliant. Notwithstanding it should be recognised that: • The location of the BESS has been considered in the context of physical constraints, topography and drainage, adjoining land uses, access arrangements, servicing, restrictions on land use and setbacks. The proposed location therefore is not solely	Non-compliant. The non-compliance is considered capable of being addressed through the implementation of mitigation measures to achieve the DCP's objective.

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
		informed by the setbacks of the DCP and represents a broader set of constraints to minimise the potential for adverse impacts. • Section 4.15 (3A) of the EP&A Act provides that if a development application does not comply with the standard of a DCP, the consent authority is to be flexible in applying provisions and allow reasonable alternative solutions that achieve the objects of those standards for dealing with that aspect of the development. • A review of satellite imagery for the adjacent intensive agricultural activities to the north indicates that these activities are predominantly contained within the northeastern extent of Lot 22 DP248413. The extent of vineyards is situated approximately 270 m further northwest from the northern boundary of the host lot where it is closest to the BESS footprint. • The proposed development is accompanied by a suite of mitigation measures, including landscaping maintained for the duration of the project lifespan and noise walls. The implementation of mitigation measures responds to the objective of the DCP control, ensuring the development does not dominant the rural landscape while further minimising the potential for land use conflicts. A conceptual design has been prepared to review cut and fill arrangements for the proposed development. To avoid excessive fill requirements and potential visual impacts the electrical components of the development including the MVPS and Battery units are currently proposed to be situated on elevated platforms with variable length pylons. The pylons would elevate the electrical components from the existing ground surface and result in electrical components stepping down the slope of the BESS compound. The final design of the project is subject to DA approval and the subsequent finalisation of detailed design.	
E.2 Access			

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
Objective: *To ensure that all developments are provided with safe and legal access that does not impede traffic movement*	**Controls:** a. Lots created upon which a dwelling is able to be situated must have legal direct frontage or right of carriageway to a public road; b. All property access shall be constructed to a rural property access as in figure 8 below; c. Where access is from a sealed road, the entrance shall be constructed of two coat bitumen seal from the edge of the road formation to the gate; d. Where access if from an unsealed road, the entrance shall be constructed of a minimum thickness 100mm approved compacted gravel from the edge of the road formation to the gate;  *Figure 18 - Access Treatment* e. Reinforced minimum diameter 300mm concrete pipes and headwalls are to be installed in table drains and setback a minimum of 2 metres from the edge of the road formation and provided with permanent erosion protection; f. Where topography does not permit the installation of pipes, a reinforced concrete dish drain may be constructed in the table drain; g. The finished surface of any earthworks required for driveway construction shall be graded to a maximum 1:4 cut and 1:2 fill; h. Entrances are to be located so that a Safe Intersection Sight Distance is achieved relative to the prevailing speed conditions as follows: ***Table 12 - Safe Intersection Sight Distance*** **Road Type/Location** | **Sight Distance Category** | **Normal Posted Speed** | **Sight Distance Required** Rural - Residential | ASD* | 70km/h | 92 metres Local Rural Roads | ASD* | 100km/h | 165 metres Regional Roads | SISD# | 100km/h | 262 metres State Roads/ Highways | SISD# | 100/110km/h | 262/300 metres or as specified by Transport for NSW * *Approach Site Distance* # *Safe Intersection Sight Distance* i. Consideration may be given to Approach Site Distance on difficult sites, subject to the provision of additional treatment to ensure traffic safety. j. Accesses onto Regional Roads and State Highways may require additional treatment, subject to the requirements of Transport for NSW as specified in their concurrence documents;	A Traffic Impact Assessment (TIA) forms part of this application and is provided in **Appendix E.** The TIA assesses impacts of the proposed development on traffic movements and details the provision of a suitably designed, safe and legal access arrangement. Subject to compliance with the measures within the TIA no significant traffic impacts are anticipated. As detailed via the recommendations of the TIA "the subject site access driveway should be constructed according to figure 7.4 in Austroads Guide to Road Design Part 4 requirements and to the council's satisfaction." The final design of the access arrangement is subject to DA approval and the subsequent finalisation of detailed design. Further consideration of the controls of the DCP associated with the access arrangement would therefore be provided during the detailed design stage.	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	k. All property accesses must ensure the roadside water can continue to flow downstream without ponding or forcing water onto the road or into adjacent lands		
E1 Dwellings			
This section applies to new dwellings, ancillary development, as well as alterations and additions to existing dwellings.	N/A	The development does not consist of a rural building for the purpose of Part E1 of the DCP.	N/A
E2 Farm Buildings and Outbuildings			
Farm buildings may be undertaken as exempt development in land zoned RU1 Primary Production, RU2 Rural Landscape, RU3 Forestry, RU$ Primary Production Small Lots	N/A	The development does not consist of a farm building or outbuilding for the purpose of Part E2 of the DCP.	N/A
E3 Rural Based Activities			
This section applies to common rural based activities likely to occur in the applicable zones and provides on acceptable development design, siting and operation.	N/A	The development does not consist of a rural based land-use activity for the purpose of Part E3 of the DCP.	N/A
PART H – DEVELOPMENT IN HAZARD AFFECTED AREAS			
The objectives of this Part are to: *a. Require developments with high sensitivity to flood risk to be designed so that they are subject to minimal risk;* *b. Allow development with a lower sensitivity to the flood hazard to be located within the floodplain, provided the risk of harm and damage to property is minimized;* *c. Minimise the intensification of the high flood risk areas, and if possible, allow for their conversion to natural waterway corridors;* *d. Ensure design and siting controls required to address the flood hazard do not result in unreasonable social, economic or environmental impacts;* *e. Minimise the risk to life by ensuring the provision of reliable access from areas affected by flooding;* *f. Ensure that the subdivision of land on which a dwelling is able to be erected is suitable for such development;* *g. Minimise the damage to property arising from flooding;* *h. Ensure the proposed development does not expose existing development to increased risks associated with flooding;* *i. Ensure that fencing does not result in the undesirable obstruction of free flow of floodwater;* *j. Ensure that fencing does not become unsafe during floods so as to threaten the integrity of structures or the safety of people;* *k. Ensure that fencing is constructed in a manner which does not significantly increase flood damage or risk on surrounding land;*	N/A	A Flood and Groundwater Assessment Report (FGAR) forms part of this application and is provided in **Appendix G.** The FGAR included modelling to evaluate flooding impacts and classifies the development site as flood hazard H1 which is generally safe for people vehicles and buildings. The FGAR recommends that critical infrastructure is set to be a minimum of 150mm above the existing ground level to reduce the risk associated with stormwater runoff impacting infrastructure. As previously detailed, electrical components of the development including the MVPS and Battery units are currently proposed to be situated on elevated platforms with variable length pylons. The pylons would elevate the electrical components from the existing ground surface and result in electrical components stepping down the slope of the BESS compound. The elevation provided from the pylons would be designed to achieved the recommendation of the FGAR elevating critical infrastructure to a minimum of 150mm above the existing ground surface. The FGAR, nevertheless concludes that importing fill to raise the areas where infrastructure is to be located is not likely to increase flood levels on neighbouring properties, however, should be tested within hydraulic models once the final layout is available.	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
l. Protect life and property in the event of an emergency; *m. Ensure that buildings are suitable designed and located for the hazard applicable to the site;* *n. Ensure that any potentially contaminated land is suitably remediated for its intended purpose.*		The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	
H1 Flooding			
Objective: *To ensure that development is appropriately located and constructed having account of the risk of flood impact*	**Controls** are contained within Tables 21-24.	As above. Refer to FGAR provided in **Appendix G**. The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	✓
H1.1 Specific fencing controls			
Objective: *To provide specific guidance for fencing on flood impacted land*	**Controls:** a. An applicant will need to demonstrate that the fence (new or replacement fence) would create no impediment to the flow of floodwater. Appropriate fences must satisfy the following: • An open collapsible hinged fence structure or pool type fence, or louvre fencing; • Must be constructed of non-permeable materials; or • Must allow floodwaters to equalized on both sides and minimum entrapment of flood debris.	As above. Refer to FGAR provided in **Appendix G**. The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	✓
H2 Bushfire Prone			
The objectives of this part are to *a. Prevent the loss of life and property by providing development that is compatible with the identified bushfire hazard;* *b. Ensure that the risks associated with bushfire are appropriately and effectively managed;* *c. Ensure that bushfire risk is managed in conjunction with the ecological values of the site and neighbouring lands.*	N/A	A Bush Fire Management & Emergency Response Plan (BFMERP) forms part of this application and is provided in **Appendix H**. The BFMERP has been prepared in accordance with the requirements of Planning for Bushfire Protection 2019 (PBP 2019) and identifies appropriate measures to address bushfire risks and the objective of this part of the DCP. The Flora and Fauna Assessment Report (FFAR) provided in **Appendix D** further concludes that, the proposed development is unlikely to generate any significant adverse impacts on the life cycle or habitat of any of threatened species or threatened ecological communities.	✓
H2.1 Water storage facilities			
Objective: *To ensure that adequate firefighting water is available in an accessible manner to emergency services*	**Controls:** a. In addition to any water requirements of BASIX a minimum 15,000 litre tanked water storage, or an amount required in accordance with the NSW Rural Fire Service document 'Planning for Bushfire Protection, 2019', whichever is the greater, should be dedicated for firefighting purposes;	The BFMERP details that a static water supply with a minimum capacity of 20,000L will be provided for the proposed development and designed in accordance with the requirements of Planning for Bushfire Protection 2019.	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	b. The water storage for bushfire fighting purposes shall be i. Easily identifiable from the street frontage appropriately directing emergency services to the storage facility; and ii. Located with a hard stand area which allow easy access for fighting vehicles. To this end consideration must be given to turning areas, building locations and storz fitting access. NOTE: Where the storage facility is underground it should have a 200mm access hole. Where the facility is via above ground tanks, they should be metal or concrete and have any stands protected. Bores and creeks should not be used for substitute firefighting water storage facilities.	The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	
H2.2 Location of buildings			
Objective: *To ensure that buildings are located in areas on site less susceptible to a running bushfire*	**Controls:** a. Buildings on Bushfire Prone Land should be located away from ridge tops and steep slopes- particularly up slopes, avoiding saddles and narrow ridge crests; b. Outbuildings are to be located at least 6 metres away from the existing dwelling. Where outbuildings are within 6 metres of an existing building the must comply with the provisions of the National Construction Code for bushfire prone areas.	As above. Refer to BFMERP provided in **Appendix H.** The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	✓
H2.3 Landscaping for Bushfire			
Objective: *To guidance on residential vegetation to assist in bushfire management*	**Controls:** a. Creepers over structures adjacent to a house add fuel and should be avoided; b. Low fuel areas, such as lawn, should be provided between the dwelling and the bushfire hazard. c. Trees with loose, stringy or ribbon bark should not be located near houses.	As above. Refer to BFMERP provided in **Appendix H.** The requirements of the DCP are considered capable of being achieved through the finalisation of detailed design.	✓
H2.4 Bushfire report			
Objective: *To ensure that development on bushfire prone land is designed and supported by the appropriate reports having regard to the hazard posed*	**Controls:** A Bushfire Risk Assessment Report is to be lodged with the Statement of Environmental Effects in support of the Development Application. The Bushfire Risk Assessment Report is to address the proposed development's consistency with Planning for Bushfire Protection 2019.	As above. Refer to BFMERP provided in **Appendix H.**	✓
H2.5 Asset protection areas			
Objective: *To ensure that development on bushfire prone land has adequate asset protection areas provided and measures in place to manage these areas*	**Controls:** a. Measures to control the placement of combustible materials in Inner Protection Areas are to be included as part of the development application; b. Asset Protection Areas are to be contained wholly within the property boundary and must not rely on adjacent land as part of the APZ, apart from roadways and road reserves.	The BFMERP provided in **Appendix H** details the provision of bushfire protection measures. This includes an APZ that is wholly within the property boundary and surrounds the electrical components of the proposed development. The requirements of the DCP with respect to the placement of combustible materials in the IPA of the APZ are considered capable of being achieved through the finalisation of detailed design. This would include a consideration on the requirement	✓

<table>
<tr><th>Objective/ principle /requirement</th><th>Standard / Control</th><th>Assessment</th><th>Compliance?</th></tr>
<tr><td></td><td></td><td>and materials utilised for acoustic barriers and any other components of the development within the provided APZ.</td><td></td></tr>
<tr><td>H3 Contaminated Land</td><td></td><td></td><td></td></tr>
<tr><td>Objective: To ensure that potentially contaminated land is suitable for the proposed development</td><td>Controls:
a. A landowner should undertake a search of the existing property file held by Council to assist in determining whether a potentially contaminating use has ever been approved or undertaken on the subject land;
b. Applicants should refer to Council’s adopted Contaminated Land Management Policy;
c. Land which was formerly used or suspected of being used for any of the following uses shown in Table 27 below, should be investigated for potential contamination. It may require remediation in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 and the Contaminated Land Management Act 1997.
Table 26 - Potentially Contaminating Activities<table><tr><td>acid/alkali plant and formulation</td><td>metal treatment</td></tr><tr><td>agricultural/horticultural activities</td><td>mining and extractive industries</td></tr><tr><td>airports</td><td>oil production and storage</td></tr><tr><td>asbestos production and disposal</td><td>paint formulation and manufacture</td></tr><tr><td>chemicals manufacture and formulation</td><td>pesticide manufacture and formulation</td></tr><tr><td>defence works</td><td>power stations</td></tr><tr><td>drum re-conditioning works</td><td>railway yards</td></tr><tr><td>dry cleaning establishments</td><td>scrap yards</td></tr><tr><td>electrical manufacturing (transformers)</td><td>service stations</td></tr><tr><td>electroplating and heat treatment premises</td><td>sheep and cattle dips</td></tr><tr><td>engine works</td><td>smelting and refining</td></tr><tr><td>explosives industry</td><td>tanning and associated trades</td></tr><tr><td>gas works</td><td>waste storage and treatment</td></tr><tr><td>iron and steel works</td><td>wood preservation</td></tr><tr><td>landfill sites</td><td></td></tr></table></td><td>A consideration of contamination risks is provided within the body of the SEE. This has included a review of the NSW EPA Contaminated Land Record and the EPA’s list of notified sites on the 21 November 2024.
Whilst the site is located on a site historically used for agricultural production, discussions with the landowner and reviews of historical aerial photography have not identified any significant contamination risks.
Whilst no known contamination risks have been identified, appropriate safeguards and mitigation measures, are recommended for implementation during the completion of site works and operation of the proposed activity to minimise the potential risks associated with encountering contamination.</td><td>✓</td></tr>
<tr><td>PART I -CAR PARKING AND ACCESS.</td><td></td><td></td><td></td></tr>
<tr><td>This part ensures that development provides carparking that is consistent with the demands of that development. It provides guidance to ensure that carparking requirements are considered in a consistent and transparent manner. This part also provides guidance on all types of vehicular access to ensure that access construction, placement and design are adequate for the development and the vehicles likely to visit and service that development. It ensures that accesses are safe and accessible for all users.
The objectives of the part are to:
a. provide off street parking that is consistent with the demands of the development;</td><td>N/A</td><td>A Traffic Impact Assessment (TIA) forms part of this application and is provided in Appendix E.
The TIA details the inclusion of a designated and accessible parking area suitable for the proposed development.</td><td>✓</td></tr>
</table>

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
b. provide landscaping and quality materials in the construction of parking areas to improve amenity; *c. ensure that parking and accessways for all modes of transport are safe, convenient and functional to meet anticipated needs;* *d. ensure access for people with disabilities is equitable, functional and safe;* *e. protect the occupational health and safety of employees and visitors to the site;* *f. ensure areas are set aside for onsite loading and maneuvering service vehicles;* *g. provide accesses are designed, placed and constructed safely to meet the needs of the public and the development*			
I1 Carpark Design			
Objective: *To ensure that carpark design facilitates the safe and efficient movement of pedestrian and vehicles*	**Controls:** a. Off street parking should be provided on the same site as the development, parking on adjoining land may be considered where there are legal mechanisms in place to ensure the use for carparking associated with the development; b. All parking areas must be designed to avoid concentration of water run off; c. Carpark design shall be in accordance with AS/NZS 2890.1 Parking facilities – Off Street Carparking and consider the location of pedestrian and vehicle entry points, load areas and the like, to minimise conflict between users; d. Pedestrians should be physically separated from vehicle traffic, through the use of pathways and landscaping e. Heavy vehicles should not conflict with passenger vehicle maneuvering in carparks, where heavy vehicles need to access loading docks and the like via carparks additional aisle width of carparks may be required; f. Carpark design should take account of the size, type and frequency of vehicles (including service and delivery vehicles) likely to enter and use the site; g. Tandem car parking arrangements should be avoided except in very low turnover uses, such as vehicle sales or repairs; h. Vehicle turning areas must be provided in carparks to allow vehicles to enter and leave the site safely in a forward direction; i. Loading docks are not to be used for parking, nor relied upon for vehicle turning or maneuvering; j. For every twenty (20) car parking spaces, one bicycle parking rack should be provided located next closest the access point of the development, after the required disabled parking space(s); k. Parking for disabled persons must maintain a clear height of 2.5 metres and shall be the closest parking space to the access point of the development;	As above. Refer to TIA provided in **Appendix E.**	✓

<table>
<tr><th>Objective/ principle /requirement</th><th>Standard / Control</th><th>Assessment</th><th>Compliance?</th></tr>
<tr><td></td><td>l. Off street carparking is to be provided for staff and customers;
m. Security lighting is to be provided to public accessways and parking areas and conform to AS1158.1 ‘Vehicular Traffic Lighting’ in commercial and industrial developments;
n. Where developments incorporate night time operations illumination must be in accordance with Australian Standard 4282, control of obtrusive effects of outdoor lighting;
o. Any lighting provided must be directional internal the site and not cause nuisance to road users or nearby dwellings;
p. Shade trees are to be provided in carparks at a rate of 1 per 6 spaces or part thereof;
q. Carparking spaces are to have the flowing dimensions (AS2890.1 Off Street Parking):</td><td></td><td></td></tr>
<tr><td>I2 Loading Docks</td><td></td><td></td><td></td></tr>
<tr><td>Objective: To ensure that loading docks are located and designed in a manner that facilities ease of truck usage and does not increase crime opportunities</td><td>Controls:
a. All vehicles shall enter and leave the site in a forward direction;
b. Loading dock area should be located toward the rear of the development and provided with surveillance equipment for safety;
c. Loading docks shall not be used for parking or as part of vehicle turning/maneuvering areas, nor for the storage of waste;
d. The maximum grade for a loading ramp is 1 in 12.5 to allow for truck reversing.</td><td>As above.
Refer to TIA provided in Appendix E.</td><td>✓</td></tr>
<tr><td>I3 Carpark Construction</td><td></td><td></td><td></td></tr>
<tr><td>Objective: To ensure that carpark construction is suitable for the type and number of vehicles likely to visit the site</td><td>Controls:
a. Carparking for commercial and industrial developments is to be constructed in accordance with AusSpec specifications and the design as approved by Council;
b. All commercial and industrial carparking areas are to be graded and drained to Council’s stormwater system or alternative as approved by Council;
c. Pavements are required to be designed and constructed in accordance with the Austroads Pavement Design Guide to the following standards:
Table 28 - Carparking Construction Details
<table>
<tr><th>Use</th><th>Minimum Gravel Thickness</th><th>Surface Treatment</th></tr>
<tr><td>Urban/Village – Commercial
Recreation – Tourist and Visitor Accommodation - Light passenger vehicles only</td><td>150mm</td><td>Two coat bitumen seal</td></tr>
<tr><td>Commercial Premises
Light vehicle use
Heavy vehicle Use</td><td>150mm</td><td>Two coat bitumen seal
or
Asphalt or concrete</td></tr>
<tr><td>Industry</td><td>150mm</td><td>Asphalt or concrete</td></tr>
<tr><td>All other areas (e.g. Rural)</td><td>100mm</td><td>Gravel</td></tr>
</table>
d. Commercial carparks or other uses which are limited to light vehicle traffic areas and internal driveways should be sealed with a minimum of a 2 coat 14mm/7mm bitumen seal;</td><td>As above.
Refer to TIA provided in Appendix E.</td><td>✓</td></tr>
</table>

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	e. Large developments where significant heavy vehicle and/or passenger vehicle movements are expected, may be required to provide a higher standard of wearing surface such as concrete or asphalt as determined by Council; f. Temporary 'overflow' parking areas will only be considered to address parking demands for a nominated event or only expected to occur rarely, where such parking can be provided without compromising public safety or amenity, site functionality and accessibility. g. Parking areas shall be sign posted and linemarked with directional, informative and regulatory or warning signs in accordance with Transport for NSW and Australian Standards AS2890.1. h. Exits and entries and direction for vehicular traffic shall be clearly sign posted. i. Individual parking spaces, including those for specific uses (disabled, visitors, employees etc) should be clearly delineated with line marking and sign posting as required.		
I7 Property Access Crossings			
Objective: *To ensure that access to site is provided in a location and manner that facilitates safety, efficient traffic movement and minimise negative environmental impact*	**Controls:** a. Accesses shall be located clear of power poles, any existing services, the dripline of existing street trees, and maximise the available area for on street footpaths and parking; b. Accesses must be located to provide safe site distances in both directions for the prevailing speed limit of the area; c. Accesses shall be cross the footpath at right angles to the centerline of the road; d. Industrial development shall not be granted direct vehicle access to lots from Yass Valley Way or Black Range Road; e. Where an access is located over Council's water, sewer or stormwater infrastructure a minimum of 450mm cover is required; f. Accesses should be designed to avoid headlight glare into habitable rooms of adjacent dwellings; g. No more than one third of the width of the frontage of a property should be used for access; h. Accesses should be located at least 6 metres from the kerb tangent point of any intersection; i. Access to a development should be limited to a single driveway; j. The grade of the driveway from the kerb or edge of seal to the lot boundary shall be +2.5% (i.e. 2.5% sloping upwards from the kerb to the property boundary); k. The maximum allowable longitudinal change in grade is 12%.; l. Cut and fill batters within the road verge shall be graded to a maximum of 1 in 8; m. All areas of common vehicle access, parking and associated landscaping should be well defined to facilitate easy maintenance;	As above. Refer to TIA provided in **Appendix E.**	✓

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	n. Driveways should comprise an all-weather pavement, such as a minimum 50mm thick gravel base with 100mm thick concrete layer (25 MPA with SL72 mesh), or similar.		
PART K - NATURAL RESOURCES (if necessary)			
This Part applies to development on land that is mapped as being subject to 'Dryland Salinity', 'High Soil Erodibility', 'Biodiversity', 'Watercourse' and 'Groundwater Vulnerability' on the Natural Resource Maps of the Yass Valley Local Environmental Plan 2013. It may also apply if, after a site inspection, land is identified as having any of these attributes. If works are proposed within an affected area, justification will be required to demonstrate that there is no other areas on the property that are more suitable for the proposed development. The proposal must detail all measures to avoid, minimize or mitigate likely impacts on the land. *The objectives of this part are to:* *a. Minimise acceleration or exacerbation on salinity, sedimentation and erosion;* *b. Avoid salt damage to buildings, infrastructure, vegetation and land capability;* *c. Minimize the disturbance of natural landforms to reduce erosion and runoff;* *d. Maintain and improve the biological diversity within the landscape;* *e. Encourage the conservation and recovery of threatened species, communities and their habitats;* *f. Prescribe the vegetation to which Section 9, Chapter 2, Vegetation in Non Rural Areas of State Environmental Planning (Biodiversity and Conservation) 2021 applies;* *g. Maintain and improve the vegetation and urban canopy cover;* *h. Protect and conserve vegetation and minimize unnecessary removal of trees or vegetation;* *i. Minimize potential for the contamination and depletion of vulnerable aquifers;* *j. Protect groundwater sources which supply towns or villages;* *k. Protect the quality and supply of water for downstream users;* *l. Protect waterways that have habitat values for fish, waterbirds, aquatic fauna and flora and encourage the recovery of any threatened species.*	N/A	The development is mapped as containing 'Biodiversity' via the LEP and this part therefore applies. For the avoidance of doubt, the site does not contain any land mapped as 'Dryland Salinity', 'High Soil Erodibility', 'Watercourse' or 'Groundwater Vulnerability' or via the LEP. As detailed via the assessment provided in **Section 5** of the SEE and the appended specialist assessments the development has been considered with respects to potential impacts associated with soils, water and biodiversity. Subject to the implementation of mitigation measures no significant impacts to natural resources are anticipated.	✓
K2.1 Mapped biodiversity			

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
Objective: *To ensure that any development does not negatively impact upon the biodiversity of the site or the regional overall*	**Controls:** a. Development should avoid impacting on the biodiversity attributes of the site, including those attributes that contribute to local and regional connectivity; b. If the removal of native vegetation (or other impacts to biodiversity) cannot be avoided, the amount of vegetation removal is to be minimised through careful consideration in planning processes and expert input to project design or management; c. Applications must include evidence that their proposed development does not trigger the Biodiversity Offset Scheme.	A Flora and Fauna Assessment Report (FFAR) forms part of this application and is provided in **Appendix D.** The FFAR concludes that the development is unlikely to cause a significant impact to any threatened species, populations, or ecological communities listed under the NSW BC Act or the EPBC Act. No significant impacts to biodiversity are anticipated to result from the proposed development. For the avoidance of doubt the FFAR details that the proposed native vegetation clearing is below the clearing threshold that triggers the Biodiversity Offset Scheme.	✓
PART L – MISCELLANEOUS LAND USES (IF NECESSARY)			
This part applies to development not covered elsewhere in this document that has the potential, if not provided with adequate guidelines and controls, to negatively impact upon the scenic, environmental and/or social values of the Yass Valley Local Government Area. *The objectives of this part are to:* *a. Ensure that development does not detract from the visual amenity of the surrounding environment;* *b. To ensure that the reuse of items and structures do not present any safety risk or structural hazard;* *c. Minimize landuse conflicts.*	N/A	As detailed via the assessment provided throughout **Section 5** the proposed development has been designed with consideration of potential visual impacts, hazards and safety risks and the potential for land use conflicts. Subject to the implementation of appropriate mitigation measures, the proposed development is considered unlikely to result in any significant adverse impacts.	✓
L4 Security Lighting			
Objective: *To ensure that security lighting does not result in negative offsite impacts*	**Controls:** a. Wherever possible security lighting should be sensor active with a limited time that the light is on; b. For pedestrian areas, lighting should be directed downward to the footpath area and adequately spaced to prevent dark areas on the path and immediate surrounds; c. Bollard lighting should be used at the front of commercial and industrial buildings for night time illumination; d. Flashing lights or illuminated signage should not be used in residential areas; e. Lighting should not spill outside of the property boundary and cause nuisance to neighbours and drivers	Requirements for security lighting are subject to the finalisation of detailed design. The requirements of the DCP associated with security lighting are considered capable of being achieved through the finalisation of detailed design.	✓
L6 Renewable Energy Development Projects			
Objective*: To provide guidance to developers of renewable energy projects on the local matters to be taken into consideration in addition to those in any state or national guidelines*	**Controls:** a. The location of any renewable energy development project shall be consistent with the Yass Valley Settlement Strategy (or subsequent document);	For the avoidance of doubt the project is not considered to represent a renewable energy development project as no generation of electricity	N/A

Objective/ principle /requirement	Standard / Control	Assessment	Compliance?
	b. The 5km buffer area along the NSW/ACT border identified in the Yass Valley Settlement Strategy is designed to protect and retain the existing environmental values and rural character of the area and is not suitable for renewable energy infrastructure; c. The infrastructure (e.g. turbines, panels, substations) not being within view lines of villages and towns or clusters of rural dwellings; d. The infrastructure not having an adverse impact on the amenity of any dwellings; e. The impact of infrastructure (e.g. turbines, panels) on the rural landscape and tourism values of the Yass Valley is to be minimized; f. A sharing the benefits scheme(s) with the host landowners, immediate neighbours and a Community Enhancement Fund (as per Council policy) shall be identified in any development application; g. Noise impacts at adjoining dwellings is to not exceed with the applicable standards; h. The project to commence within 5 years of a Consent being issued and completed within 5 years of commencement; i. The proposal and associated infrastructure (e.g. panels, turbines) shall not have a negative impact on the heritage values of the site and Yass Valley; j. The economic and social impacts on local communities and Yass Valley shall be clearly articulated in the proposal; k. Any community and Rural Fire Service concerns in relation to the bushfire risks and any impediments to firefighting operations shall be examined, minimized and achievable mitigation measures clearly explained; l. An assessment is to be included of any impacts in regards to potential land contamination as a consequence of a grass or bushfire and appropriate mitigation and rehabilitation measures outlines; m. The project to include the development of housing solutions for their workforce.	from renewable sources (solar wind tide etc.) is proposed. The battery components of the development are capable of storing energy, irrespective of the method of electrical generation.	

Flood and Groundwater Assessment Report

ACEnergy BESS – 3 Turton Place, Murrumbateman, NSW

ACEnergy Pty Ltd

26 April 2024

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1 INTRODUCTION

1.1 Overview

ACEnergy Pty Ltd are proposing to construct a Battery Energy Storage System (BESS) at 3 Turton Place, Murrumbateman, NSW (the Subject Site). The study objective is to better understand the flooding mechanisms, groundwater conditions and potential development risks within and surrounding the proposed BESS, particularly across the location where the BESS infrastructure is proposed to be constructed. This site is referred to as 'the Subject Site' within this report. The report presents the flood modelling assumptions and results together with a groundwater investigation of the Subject Site.

1.2 Objectives

To provide ACEnergy Pty Ltd with a better understanding of the Subject Site's inundation risk and the developments potential to impact groundwater availability and quality, the following tasks were completed:

- Review of existing flood and groundwater information.
- Development of a 2D (Two-Dimensional) hydraulic flood model (using TUFLOW) Rain-on-Grid (RoG) methodology to assess flood risk from stormwater runoff.
- Preliminary hydrogeological assessment to determine groundwater level and any potential groundwater and surface water interactions at the Subject Site.
- Provision of high-level recommendations for any mitigation or design alterations which may be required to reduce potential risks associated with flooding, drainage and groundwater.

Existing groundwater studies applied to the broader region and specific no studies were available for the Subject Site. An existing flood study is available for the study area and is discussed in Section 2.1.

1.3 Site

The Subject Site is located approximately 3 km east of the Murrumbateman Township in Eastern NSW, located at 3 Turton Place, Murrumbateman, NSW (Figure 1-1).

The site facility is proposed to be installed on gradually sloping terrain. The topography varies from 605.2 m AHD in the southeast to 602.1 m AHD in the northwest of the Subject Site (Figure 1-3). The terrain slopes towards the northwest with a slope of approximately 1.5%. The site is bounded by surrounding farmland and agricultural properties.

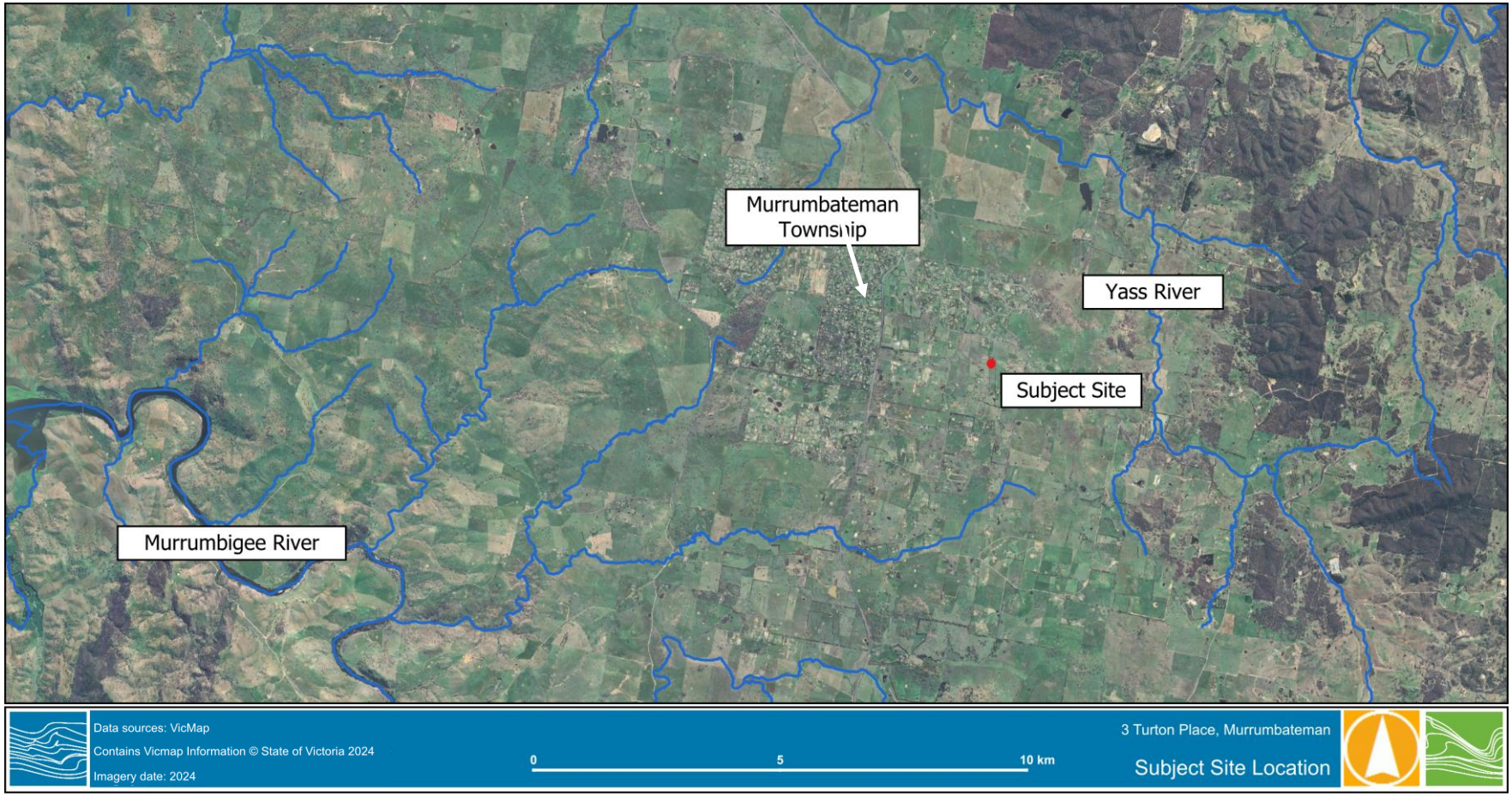

FIGURE 1-1 SUBJECT SITE LOCATION

FIGURE 1-2 SUBJECT SITE – ZOOMED IN

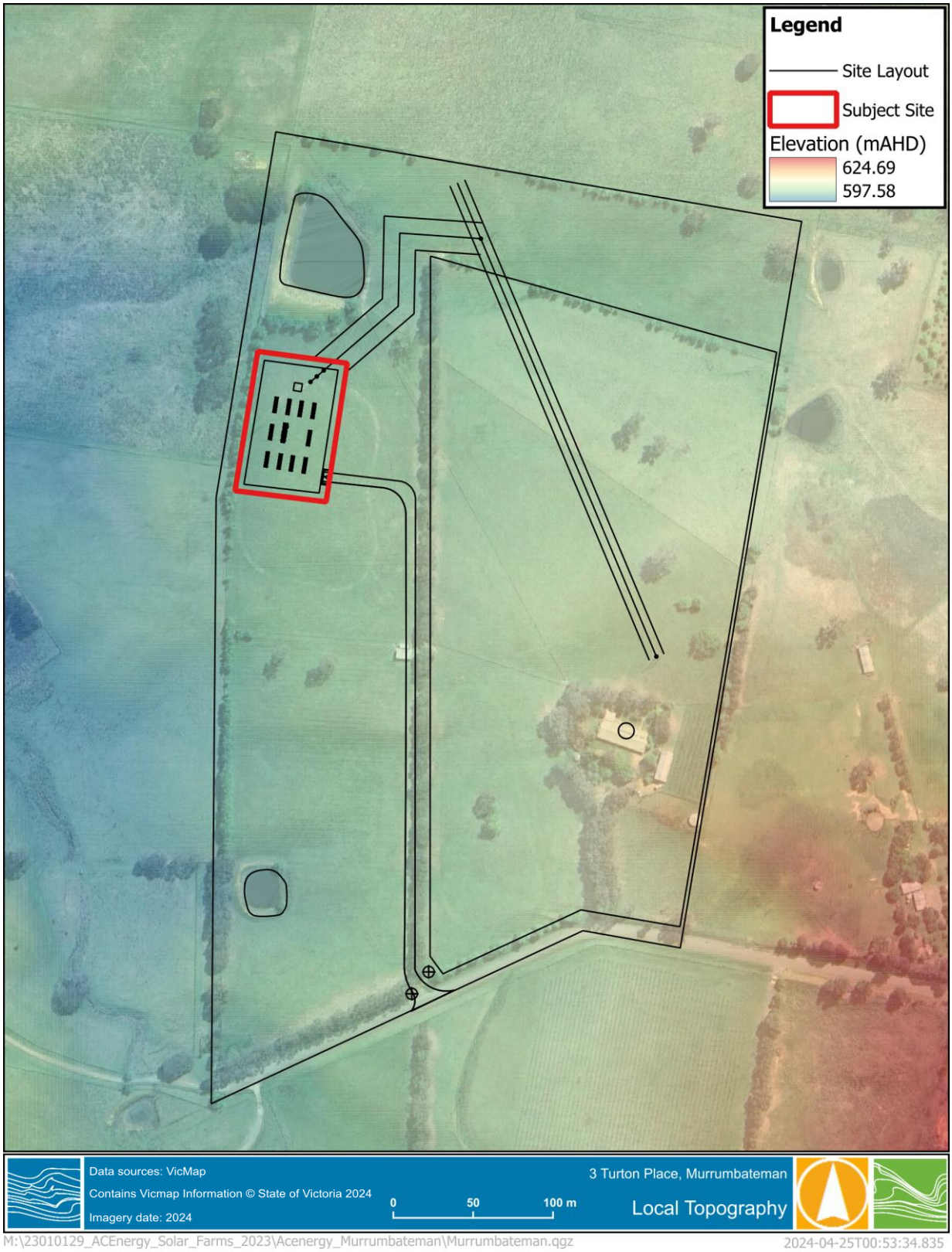

FIGURE 1-3 SUBJECT SITE TOPOGRAPHY

2 FLOODING

2.1 Previous Flood Study

The Murrumbateman, Bowning, Bookham and Binalong Flood Study – Addendum Report[1] was conducted for Yass Valley Council in 2020. The 1% AEP flood depth mapping which covers the Subject Site is presented in Figure 2-1. Based on the Addendum Report, the site is located adjacent to overland flow during a 1% AEP event from the Unnamed Tributary catchment which flows through the existing dam in the north of the site. This flow path is consistent with the flood mapping discussed in Section 2.

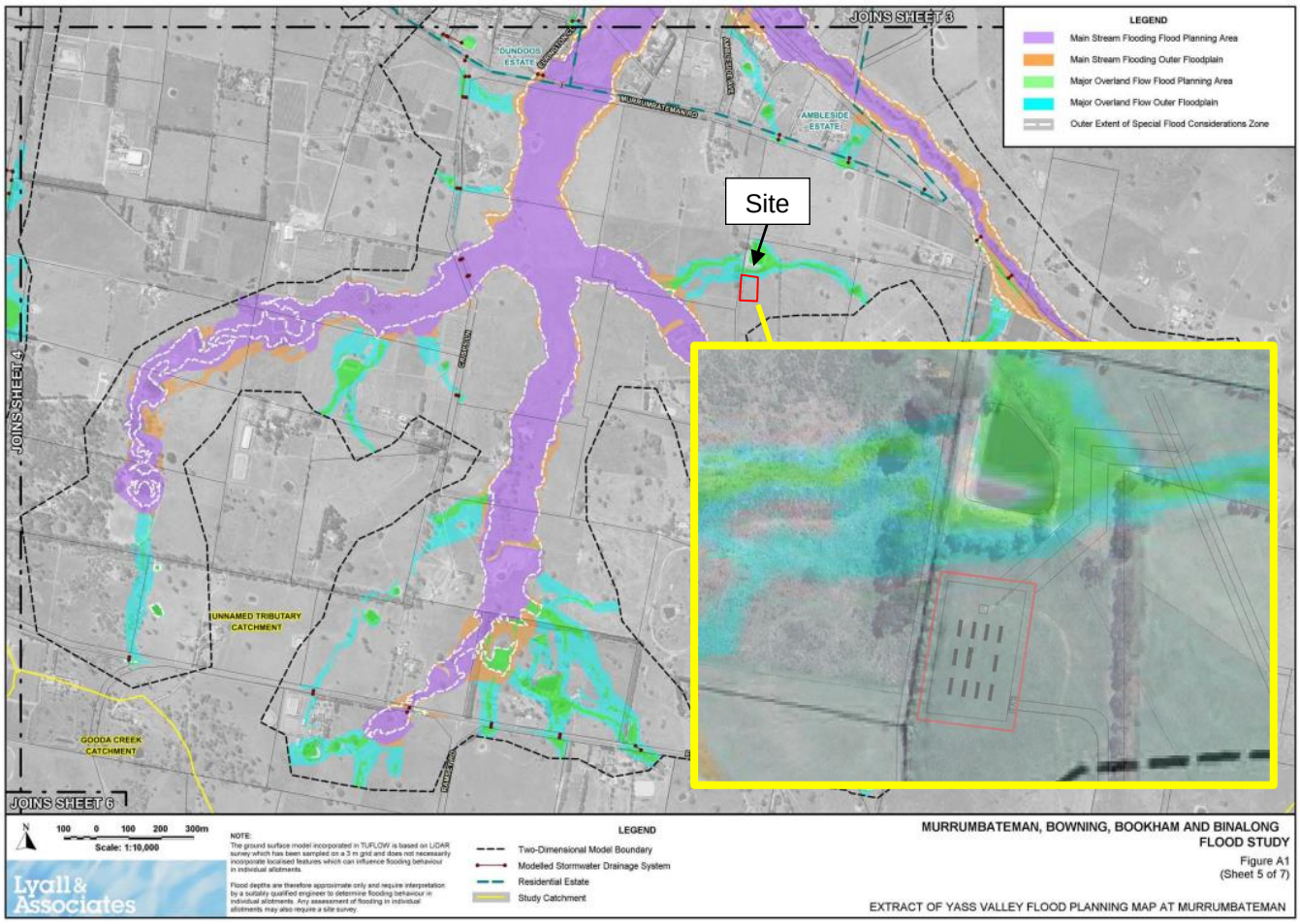

FIGURE 2-1 MURRUMBATEMAN, BOWNING, BOOKHAM AND BINALONG FLOOD STUDY 1% DEPTH (SOURCE: YASS VALLEY COUNCIL)

[1] Retrieved from https://flooddata.ses.nsw.gov.au/flood-projects/murrumbateman-bowning-bookham-and-binalong-flood-study-addendum-report

2.2 Methodology

A two-dimensional Rain on Grid (RoG) hydraulic modelling approach was employed for the hydraulic modelling component of this investigation. The model has generally been developed inline with Australian Rainfall and Runoff (ARR) 2019 guidelines[2] and simulated using TUFLOW hydraulic flood modelling software. Simulations were completed using TUFLOW Build 2023-03-AB Single Precision with HPC (Highly Parallelised Computations) solution scheme on a GPU solver.

The RoG methodology is extensively used for flood mapping of urban and rural areas. It allows for a comprehensive flood risk assessment by identifying overland flow paths based on the topography dataset as illustrated in the flow chart in Figure 2-2.

- The rainfall layer, which consists of one single rainfall polygon over the model extent was produced in a GIS package.
- Hyetographs (rainfall depth timeseries) were created for a range of design rainfall AEP (Annual Exceedance Probability) events and durations using QGIS TUFLOW plugin and the 2016 Bureau of Meteorology Intensity Frequency Duration (IFD) at the centroid of the catchment. These were applied to the TUFLOW model to represent catchment rainfall under various durations for the 1% AEP design storm.

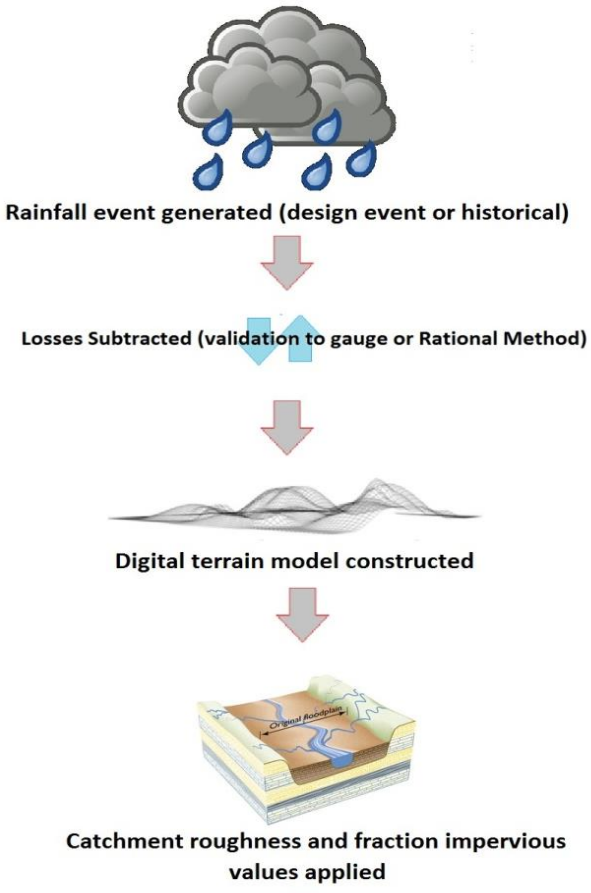

FIGURE 2-2 RAINFALL ON GRID MODELLING APPROACH

[2] Retrieved from http://book.arr.org.au.s3-website-ap-southeast-2.amazonaws.com/

A new hydraulic model was constructed using land use, cadastral, topography and aerial photography datasets to identify different land uses which are represented from a hydrologic and hydraulic perspective as surface roughness and initial and continuing loss values.

The upstream catchment and wider area were modelled to ensure all runoff from the upstream catchment was captured. The TUFLOW model set-up and model extent is presented in Figure 2-3.

FIGURE 2-3 TUFLOW MODEL SETUP

2.2.1 Rainfall

Understanding historical rainfall seasonality and long-term trends is critical to surface water and groundwater investigations. Historical rainfall data was taken from the SILO database[4] for the grid point nearest to the study area (latitude -35.00 and longitude 149.05). The dataset covers a 67-year period from 1957 to 2024, which is adequate to identify longer-term rainfall trends.

The mean annual rainfall is 702.1 mm/yr, with monthly average rainfall ranging between 47.0 mm in April and 71.3 mm in October (Figure 2-4). Annual rainfall is highly variable and Figure 2-5 shows periods of both above and below-average rainfall over the nearly 67-year period. The above-average rainfall is interpreted from the cumulative deviation from the mean monthly rainfall (CDMMR) (Figure 2-3), which identifies when rainfall has trended above average (inclining line) or below average (declining line). Above-average rainfall periods were noted between approximately 1958-1965, 1970-1980, 1985-2000 and from 2020-2024. Several below-average rainfall periods are noted between approximately 1965-1970, 1980-1985 and 2000-2010.

[4] https://www.longpaddock.qld.gov.au/silo/

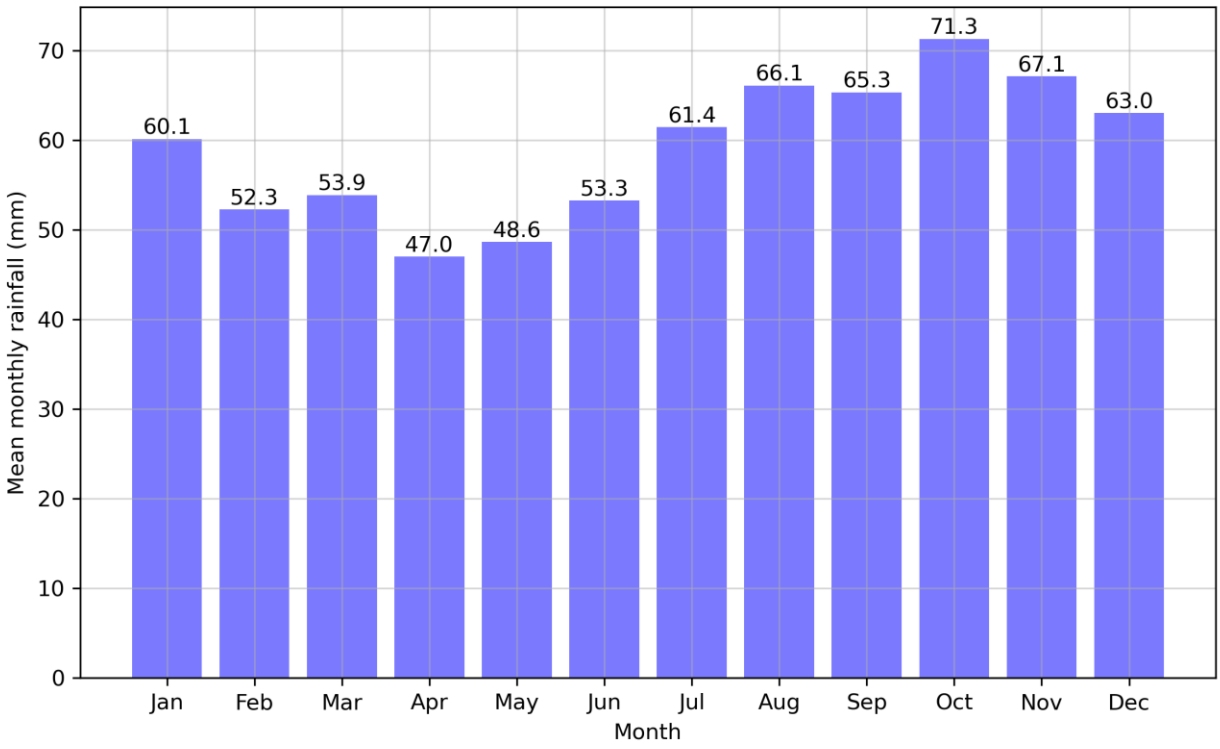

FIGURE 2-4 MONTHLY AVERAGE RAINFALL FROM 1957-2024

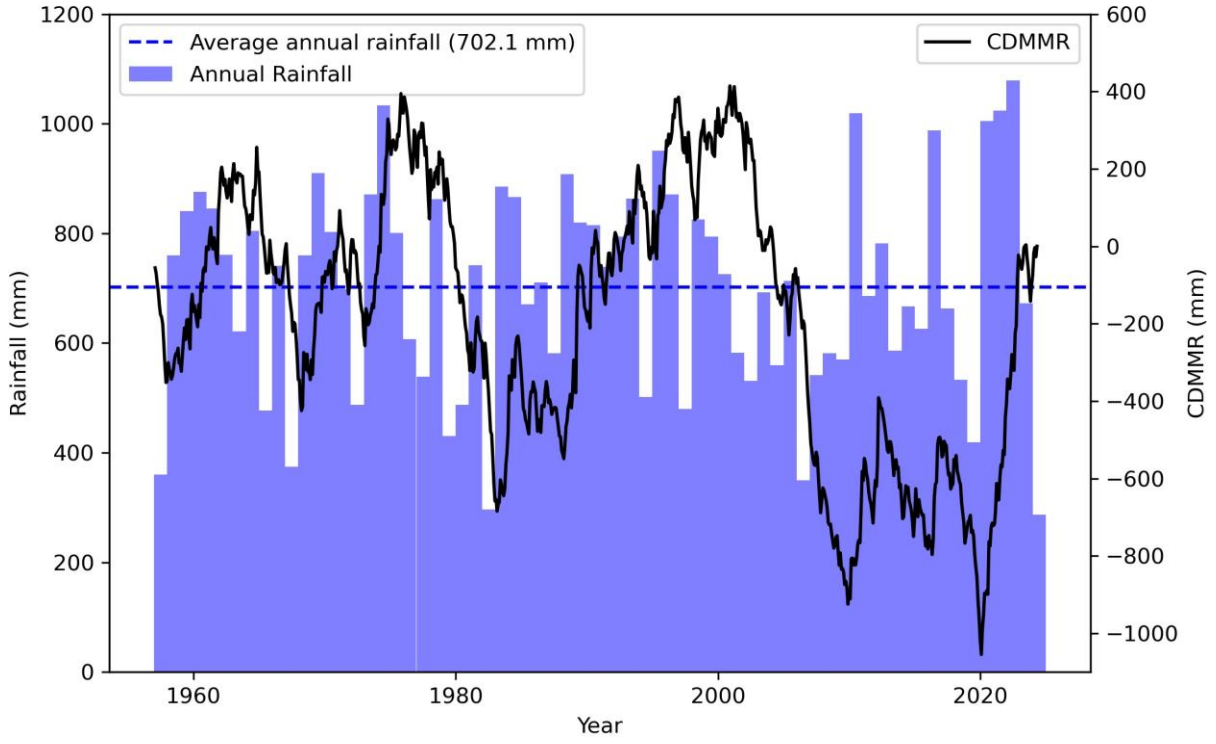

FIGURE 2-5 AVERAGE ANNUAL RAINFALL AND THE CUMULATIVE DEVIATION FROM MEAN MONTHLY RAINFALL (CDMMR) BASED ON DATA AVAILABLE FROM 1957-2024

2.2.2 Digital Elevation Model, Losses and Hydraulic Roughness

A Digital Elevation Model (DEM) was generated from 1 m resolution LiDAR, supplied by NSW Spatial Services via Geoscience Australia's Elevation Information System (ELVIS)[5].

Table 2-1 summarises the rainfall losses and hydraulic roughness used for the hydraulic modelling as per the land use types within the model. These values were adopted based on Water Technology's experience with RoG models in the surrounding area. Figure 2-6 shows the TUFLOW materials layer.

A check was also undertaken to test the sensitivity of continuing loss values adopted. It was found that reducing the losses by 50% for the critical duration (1% AEP, 360 minutes, TP06) had negligible impacts on the flood extent and maximum flood depths (<2cm) around the Subject Site.

TABLE 2-1 MODEL PARAMETERS

Land use types	Material Code	Manning's 'n' (roughness)	Initial loss (mm)	Continuing loss (mm/hr)
Residential – Rural	102	0.150	14	2
Open Pervious Area	108	0.040	14	2
Paved Roads/Carparks	114	0.025	1	0.5

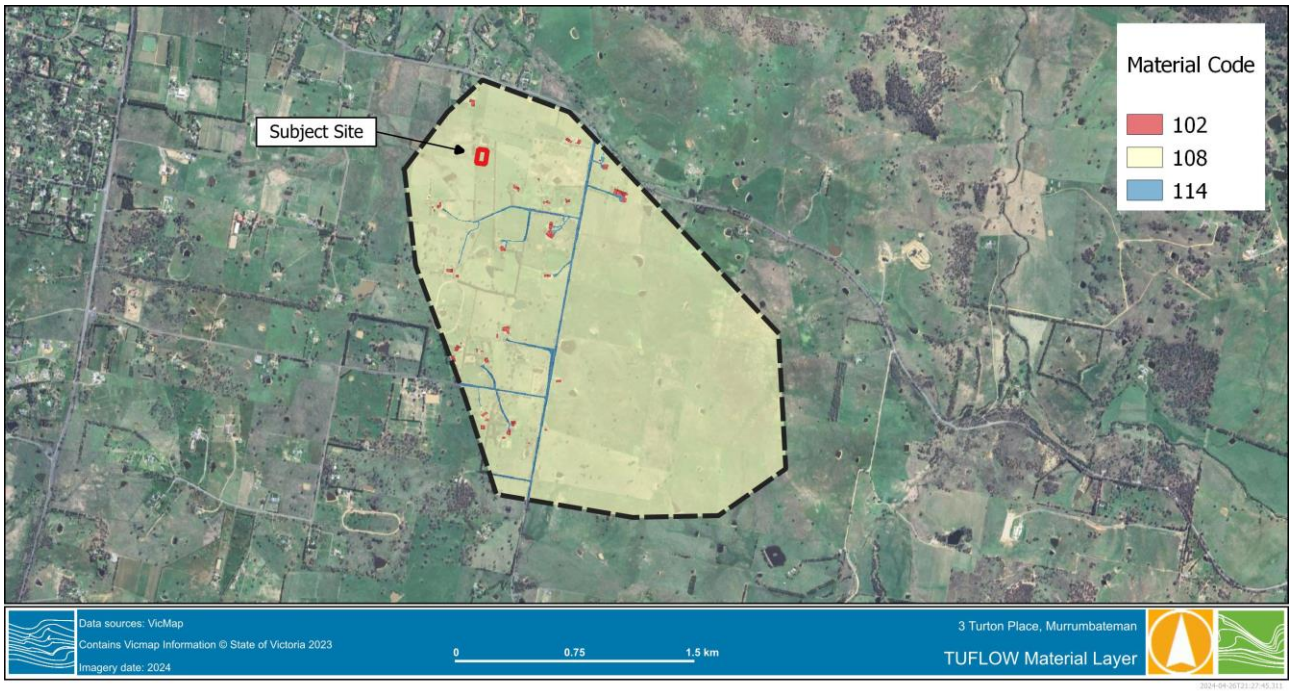

FIGURE 2-6 TUFLOW MODEL MATERIALS LAYER

2.2.3 Boundaries

A tailwater (2D TUFLOW 'HQ') boundary was set and extended around the downstream model extent to allow overland flow to freely drain out of the model, with a constant slope of 0.5%.

[5] https://elevation.fsdf.org.au/

2.2.4 TUFLOW Model Checks

- The following checks were undertaken on the TUFLOW model parameters and outputs:
  - 2D timestep: The adaptive 2D timestep drops to a minimum of 0.5 seconds. A 'Classic' TUFLOW model would be expected to have a timestep no less than ¼ of the grid size (3 m), i.e. 1.25 seconds, with a healthy HPC model no lower than a tenth of this figure. Hence, the adopted timestep is within the recommended range.
  - Model mass errors: The mass errors for all models were less than 1% and within the recommended range.
  - Errors and warning messages: No errors were found within the model and all warnings were reviewed and either acceptable or fixed, if required.

2.2.5 Critical Duration and Temporal Pattern Assessment

The model was simulated for the following 1% AEP design storm durations; 3, 6, 12, & 24 hours, using three ARR 2019 temporal patterns representative of front, mid and back loaded storm events.

Results were processed to select the combination of durations and temporal patterns resulting in the maximum flood depths throughout the catchment and covering the site. This is a conservative method of identifying areas prone to flooding in a 1% AEP event. The modelled durations and temporal patterns are shown in Table 2-2.

TABLE 2-2 MODELLED DURATION AND TEMPORAL PATTERN

AEP Event	1%
Durations	3, 6, 12, & 24 hours
Temporal Pattern	TP02, TP04, TP06

2.3 Flood Hazard Classification

Floods can be hazardous, producing harm to people, damage to infrastructure and potentially loss of life. In examining potential flood hazard there are several factors to be considered, as outlined in ARR 2019 (Book 6 Chapter 7)[6]. An assessment of flood hazard should consider:

- Velocity of floodwater.
- Depth of floodwater.
- Combination of velocity and depth of floodwater.
- Isolation during a flood.
- Effective warning time.
- Rate of rise of floodwater.

The flood hazard at the site was assessed in accordance with ARR2019, which defines six hazard categories. The combined flood hazard curves are presented in and vulnerability thresholds classifications are tabulated in Table 2-3.

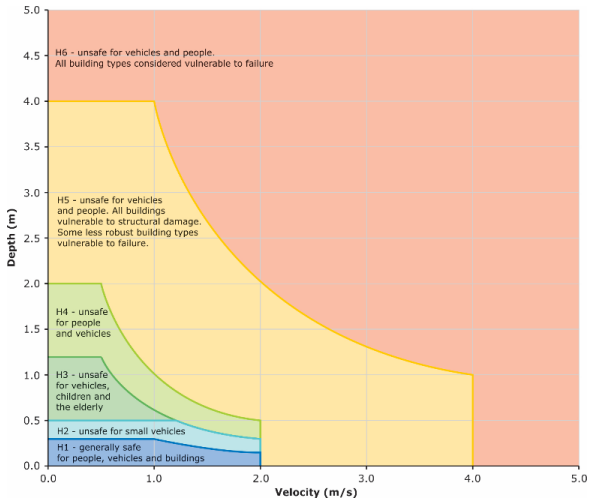

FIGURE 2-7 FLOOD HAZARD CURVES

[6] http://book.arr.org.au.s3-website-ap-southeast-2.amazonaws.com/

TABLE 2-3 HAZARD CLASSIFICATION (ARR, 2016)

Hazard Vulnerability Classification	Classification Limit (D and V in combination)	Limiting Still Water Depth (D)	Limiting Velocity (V)	Description
H1	D*V ≤ 0.3	0.3	2.0	Generally safe for vehicles, people and buildings.
H2	D*V ≤ 0.6	0.5	2.0	Unsafe for small vehicles.
H3	D*V ≤ 0.6	1.2	2.0	Unsafe for vehicles. Children and the elderly.
H4	D*V ≤ 1.0	2.0	2.0	Unsafe for vehicles and people.
H5	D*V ≤ 4.0	4.0	4.0	Unsafe for vehicles and people. All buildings vulnerable to structural damage. Some less robust buildings subject to failure.
H6	D*V > 4.0	-	-	Unsafe for vehicles and people. All building types considered vulnerable to failure.

2.4 Results

The existing conditions 1% AEP depth, velocity and flood hazard results are shown from Figure 2-8 to Figure 2-10. The flood depth map was filtered for small depths (below 0.02 m) and puddles less than 100m^2 removed.

The following observations can be made for the 1% AEP storm event:

- The maximum depth within the Subject site is approximately 80 mm. The main flow path is shallow sheet flow, from the east of the site. Water ponds around the dam to the north of the Subject Site with a small flow path through the northeast corner of the site.
- Modelled peak velocities within the proposed facilities extent are generally less than 0.2 m/s with some small areas between 0.50 – 0.55 m/s in the northeast corner of the site.
- A flood hazard map was created from the product of both depth and velocity as described in the previous section. The Subject Site and proposed location of the facilities is all classified as H1 ‘Generally safe for vehicles, people, and buildings’. This is to be expected of shallow water, ponding across the site rather than traversing it. To the north of the site, the dam has flood hazard up to H3 due to the greater depths within the dam.

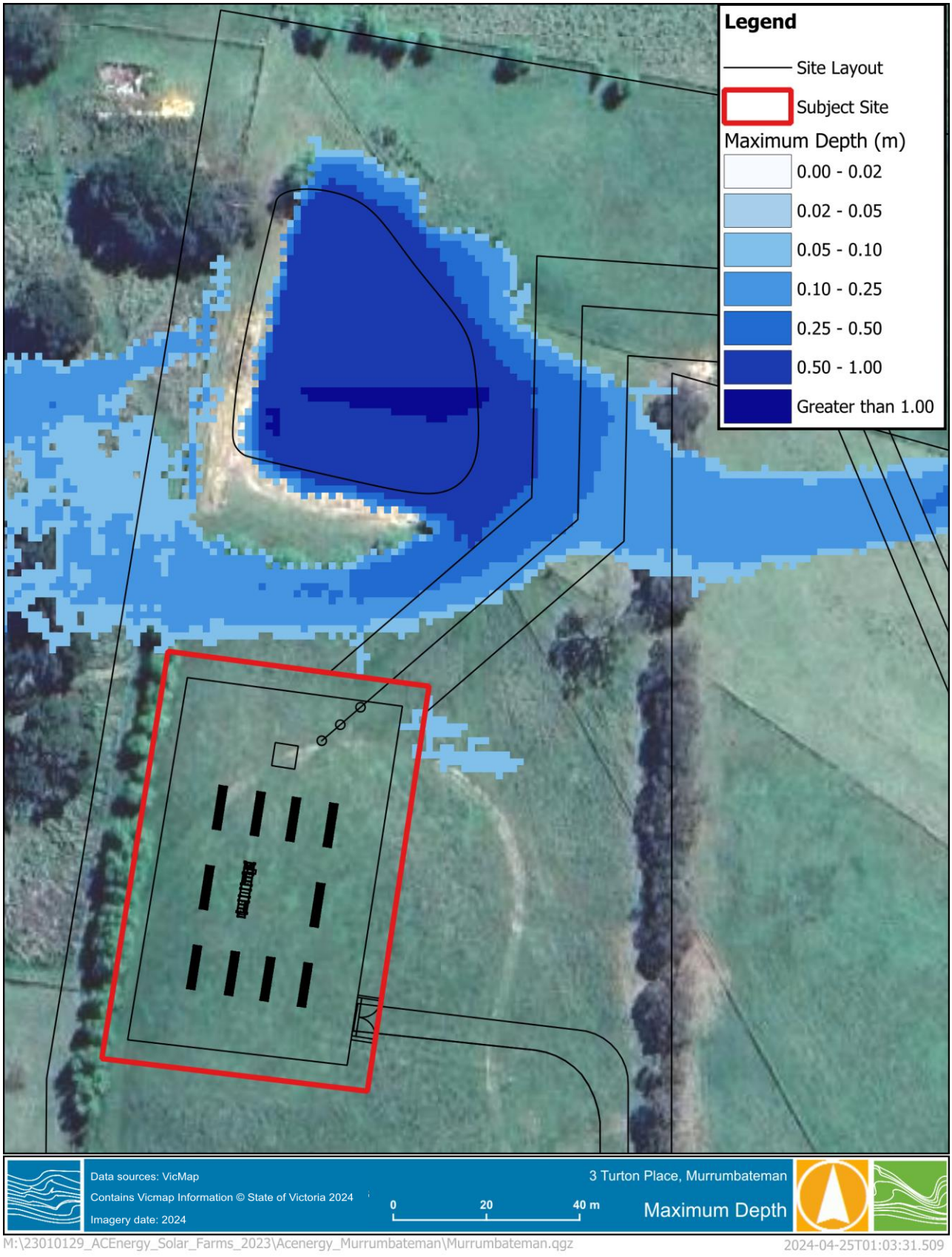

FIGURE 2-8 1% AEP MAXIMUM FLOOD DEPTH (DEPTHS BELOW 0.02M NOT SHOWN)

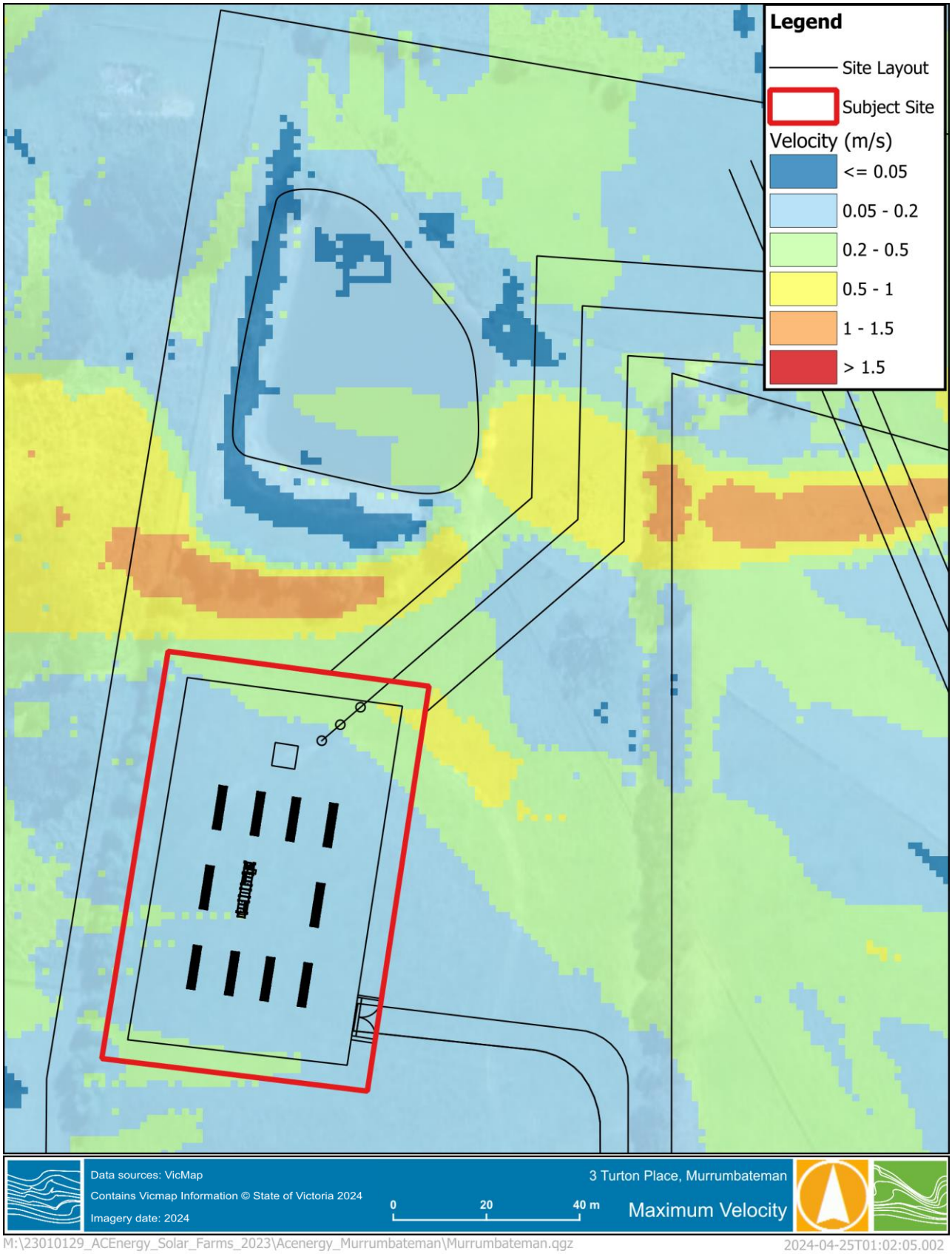

FIGURE 2-9 1% AEP MAXIMUM FLOOD VELOCITY

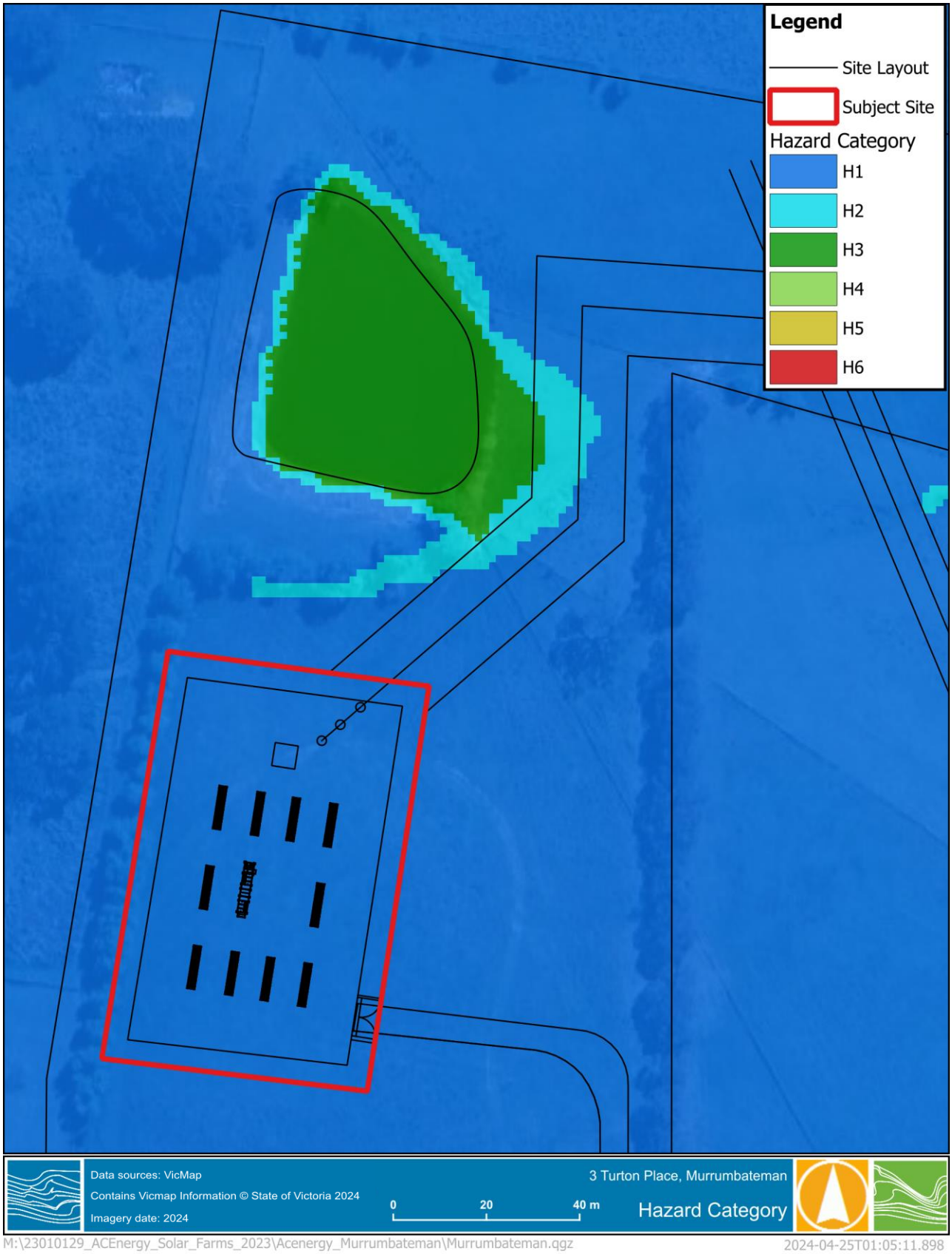

FIGURE 2-10 1% AEP MAXIMUM FLOOD HAZARD

3 GROUNDWATER

The Subject Site is not located within a “groundwater vulnerable” area according to the NSW Department of Planning and Environment’s (DPEs) Groundwater Vulnerability mapping[7]. The Yass Valley Local Environmental Plan 2013 requires an assessment of groundwater vulnerability to maintain hydrological function of key groundwater systems and protect vulnerable resources from depletion and/or contamination due to the proposed development. Although the Subject Site is not located within a groundwater vulnerable area, a groundwater vulnerable area is mapped approximately 2 km south of the Subject Site, and therefore this assessment will assess potential impacts to that identified area. This preliminary hydrogeological assessment considers key components of the groundwater system to develop a hydrogeological conceptual model (Section 3.1) that was used to inform a groundwater vulnerability assessment (Section 3.2).

The following factors were considered as part of this groundwater vulnerability assessment:

- The likelihood of groundwater contamination.
- Impacts on groundwater-dependent ecosystems.
- The cumulative impact on the groundwater system (including impacts on nearby groundwater extraction for a potable water supply or stock water supply.
- Any appropriate measures proposed to avoid, minimise or mitigate the impacts of the development.
- Groundwater abstraction

3.1 Hydrogeological Conceptualisation

Geology of the Subject Site was determined from the NSW Geoscience website MinView[8], with the whole site underlain by quaternary age alluvial and residual deposits, including saprolite, developed by the weathering of older underlying formations. The deeper geology of the area is associated with the Douro Group within the Lachlan Fold Belt. Immediately underlying the Subject Site are the Hawkins Volcanics, which may comprise porphyritic, limestone, mudstone and breccia units[6]. While to the east and north of the Subject Site are Mount Ainslie Volcanics, which comprise porphyry and shale units.

Groundwater information (i.e. bore information, geology, water levels, yields and salinity) were collated from the Bureau of Meteorology (BoM) Groundwater Explorer[9] and from the WaterNSW Realtime Data web portal[10] within a 1 km radius of the Subject Site (Table 3-1 and Figure 3-2). The geological log from the bore GW047516, which is the closest bore to the Subject Site at approximately 200 m west-southwest (Figure 3-2), indicates a thin (0.3 m) layer of topsoil over 6.4 m of clay, over 31.4 m of granite to the termination depth of 38.1 m below ground level (mbgl). Bores GW047293 (300m south) and GW417023 (350m north) also reported over 6m of clay at the surface, suggesting that the Subject Site is underlain by a thick layer of clay.

The remainder of the identified bores within 1 km of the Subject Site all indicate a similar geology of a thin topsoil over several metres of clay over bedrock. The local geological descriptions conform with the broader geological descriptions of superficial deposits and clay derived from weathering over granites of the Douro Group.

[7] https://datasets.seed.nsw.gov.au/dataset/epi-groundwater-vulnerability
[8] MinView | Regional NSW | Mining, Exploration and Geoscience
[9] http://www.bom.gov.au/water/groundwater/explorer/map.shtml
[10] https://realtimedata.waternsw.com.au/water.stm

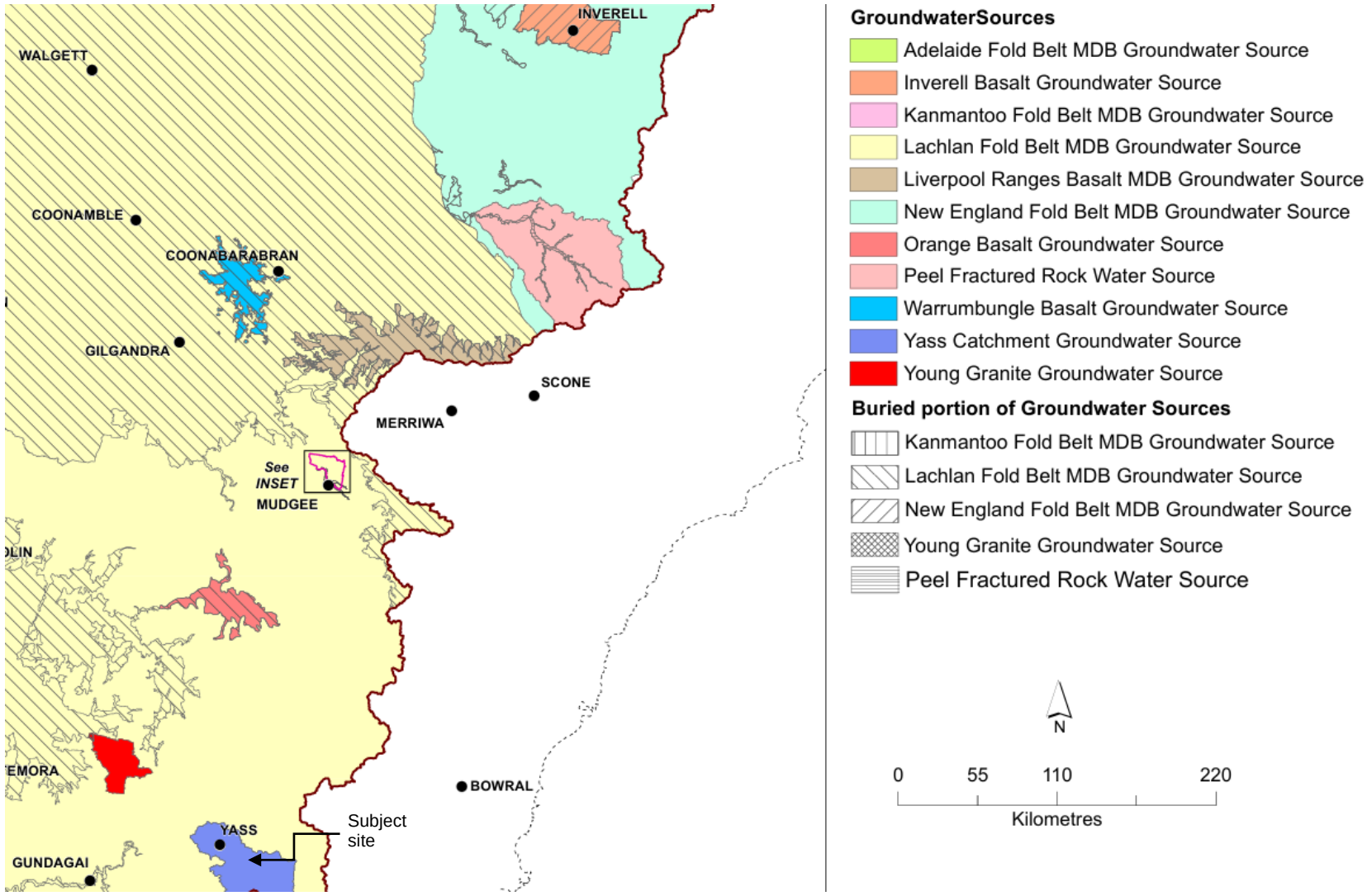

FIGURE 3-1 MURRAY-DARLING BASIN FRACTURED ROCK WATER RESOURCE PLAN GROUNDWATER RESOURCE UNITS (2022)

TABLE 3-1 COLLATED BORE INFORMATION FOR BORES IN CLOSE PROXIMITY (APPROXIMATELY 1 KM) OF THE SUBJECT SITE.

Bore ID Use Location (Purpose)	Total depth (m)	Screen interval(s) (m)	Lithology description	Standing water level (mBGL)	Yield (L/s)	TDS (mg/L)
GW047516 Irrigation 200m west	38.1	NA	0.0-0.3m Topsoil 0.3-6.7m Clay 6.7-38.1m Granite	NA	NA	NA
GW047293 Irrigation 300m south	45.7	9.1-19.8 26.8-28.9	0.0-0.3m Topsoil 0.6-6.9m Clay 6.9-19.8m Granite decomposed water supply 19.8-45.7m Granite porphyry water supply	3.0	0.91 3.64	Good
GW046695 Domestic/stock 600m east	79.90	36.6-37.2 68.0-69.2	0.0-1.5m Topsoil/subsoil 1.5-7.9m Clay sandy 7.9-10.3m Porphyry decomposed 19.8-45.7m Porphyry water supply	36.6 13.7	0.01 0.05	1,001-3,000
GW020873 Stock 800m northwest	28.7	9.4-9.4 23.8-23.8 28.7-28.7	0..0-7.92m Clay some sand 7.92-28.65m Granite water supply	NA NA 7.9	NA 0.42 0.48	
GW417023 Domestic/stock 350m north	120	90.0-91.0	0.0-9.0m Clay 9.0-120.0m Shale	24.0	0.44	NA
GW400709 Domestic/stock 750m northwest	36.0	18.00-2.0 32.0-34.0	0.0-3.0m Topsoil, clay 3.0-1.0m Soft decomposed granite 10.0-36.0m Granite, highly fractured	6.0	0.51 7.6	NA
GW401759 Test bore 750m northwest	60.0	14.0-18.0 20.0-24.0 24.0-30.0 46.0-48.0 56.0-59.0	0.0-3.0m Clay 3.0-60.0m Weathered dense, volcanic	0.85	0.5 1.6 0.7 1.5 2.5	1,000

Bore ID Use Location (Purpose)	Total depth (m)	Screen interval(s) (m)	Lithology description	Standing water level (mBGL)	Yield (L/s)	TDS (mg/L)
GW058339 Test bore 750m northwest	61.0	19.8-25.9	NA	NA	NA	NA
GW400773 Domestic/stock 900m northwest	30.0	17.0-19.0 23.0-23.2	0.0-1.0m Topsoil 1.0-6.0m Clay 6.0-19.0m Decomposed granite 19.0-30.0m Granite	1.0	1.01 0.25	NA
GW009136 NA 750m west	39.0	NA	0.0-4.88m Clay 4.88-39.0m Porphyry	NA	NA	NA
GW416988 Domestic/stock 650m west	25.0	NA	NA	20.0	20.0	NA
GW417529 400m east	No records					
GW401258 400m east	No records					
GW402406 Domestic/stock 400m east	NA	NA	NA	NA	2.1	NA
GW067430 Domestic/stock /irrigation 650m east	No records					
GW056823 Domestic/stock /irrigation 750m east	23.0	20.0-23.0	0.0-23.0m Granite decomposed water supply	1.0	1.0	NA
GW400739 Domestic/stock /irrigation 800m east	76.0	14.0-14.5 59.0-59.3 67.0-67.2	0.0-3.0m Clay 3.0-16.0m Sandy clay 16.0-23.0m decomposed basalt 23.0-76.0m Hard basalt	3.0	0.44 2.27 0.07	Good

Bore ID Use Location (Purpose)	Total depth (m)	Screen interval(s) (m)	Lithology description	Standing water level (mBGL)	Yield (L/s)	TDS (mg/L)
GW064561 Domestic/stock 900m east	24.0	18.0-18.5	0.0-1.0m Topsoil 1.0-3.0m Decomposed granite 3.0-24.0m Granite	NA	4.4	NA

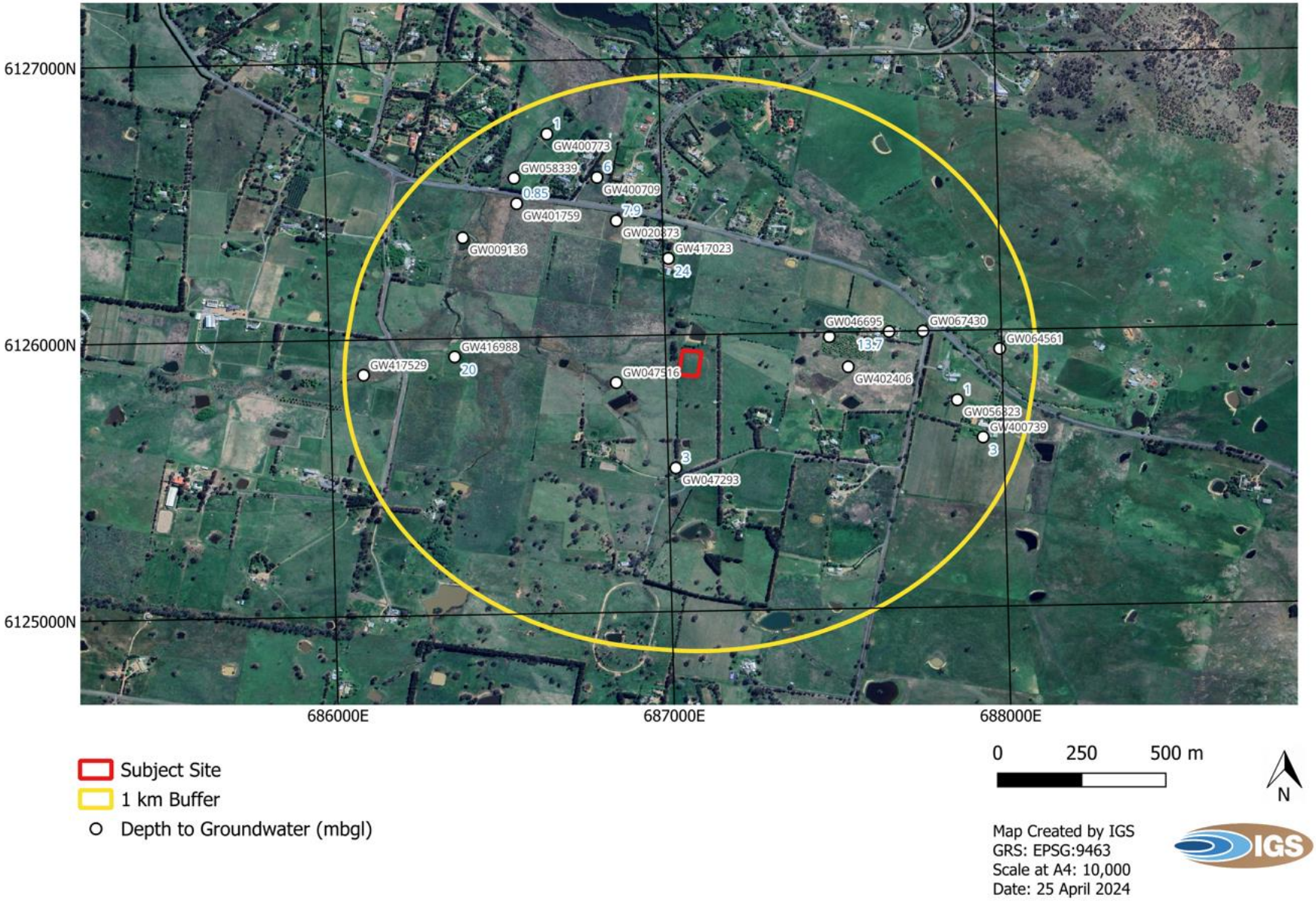

FIGURE 3-2 AVAILABLE GROUNDWATER BORES WITH GROUNDWATER LEVELS IN BLUE

3.1.1 Groundwater Quality and Use

There are limited water quality datasets available in the area around the Subject Site with only two reported qualitative salinity results and two quantitative salinity results. Bores GW046695 and GW401759 reported salinities of 1,000 mg/L to 3,000 mg/L, indicating water is suitable for stock and irrigation uses. Bores GW047293 and GW400739 reported salinity of 'good'; however, it was not reported if the 'good' definition related to stock water use or potable water use.

Based on the available data it is considered that the local groundwater quality at the site is brackish and only suitable for irrigation or stock water uses.

3.1.2 Groundwater levels

As shown in Table 3-1, water levels have been recorded from <1.0-36.0 mBGL within 1 km of the Subject Site, however, the closest (300m south) bore location generally reported water levels of 3 mbgl. The shallowest water levels were reported in bores a minimum of 750m from the Subject Site. Most of the bores identified within 1 km of the Subject Site have screened sections at depths greater than 9 mbgl, indicating that groundwater generally occurs in the Douro Group volcanics beneath the shallow clay layers that are present. There are no telemetered monitoring bores within 10 km of the site which does not allow for any groundwater levels timeseries to be investigated. However, it is expected that groundwater levels will fluctuate over the course of a year with the highest groundwater levels expected in late spring and the lowest in late autumn.

3.1.3 Acid Sulfate Soils

The Subject Site is not located in an area identified as having acid sulfate soils according to the NSW Planning, Industry and Environment (DPIE) webapp, eSpade[11].

3.1.4 Groundwater Management

Groundwater use at the Subject Site is managed under the Water Sharing Plan for the NSW Murray Darling Basin (MDB) Fractured Rock Groundwater Sources 2020 (reference)[12], and specifically provisions for Yass Catchment Groundwater Source (Figure 3-1). It is understood that there will be no groundwater abstraction or dewatering occurring at the Subject Site during any phase and therefore no groundwater licence will be required.

3.1.5 Groundwater-Surface water interactions and Groundwater Dependent Ecosystems

Groundwater-surface water interactions are expected to be limited, given that few natural surface water bodies are near the Subject Site and reported water levels close to the site i.e. within 750m, were reported at a minimum depth of 3 mbgl and are beneath a thick layer of clay. It is noted, however, that tree's may have root systems that would extend deeper than 3 mbgl and draw water from beneath the clay layer. The GDE atlas[13] was queried to locate terrestrial, aquatic or subterranean GDEs near the Subject Site (Figure 3-3). The closest terrestrial GDEs are located 2 km to the west and 3 km to the east with both described as having a 'Low potential for groundwater interaction' and therefore due to the distance and low interaction potential they are not considered a risk.The GDE Atlas identified that the closest aquatic GDEs are located approximately between 2.5 km south and 3.5 km eastand are associated with Gooda Creek,Murrumbateman Creek and Broken Dam. The aquatic GDEs are reported as having a "High or moderate potential for groundwater interaction", with Broken Dam identified as the GDE with the Moderate ranking.

[11] eSPADE v2.2 (nsw.gov.au)
[12] sl-2020-0348 (nsw.gov.au)
[13] http://www.bom.gov.au/water/groundwater/gde/

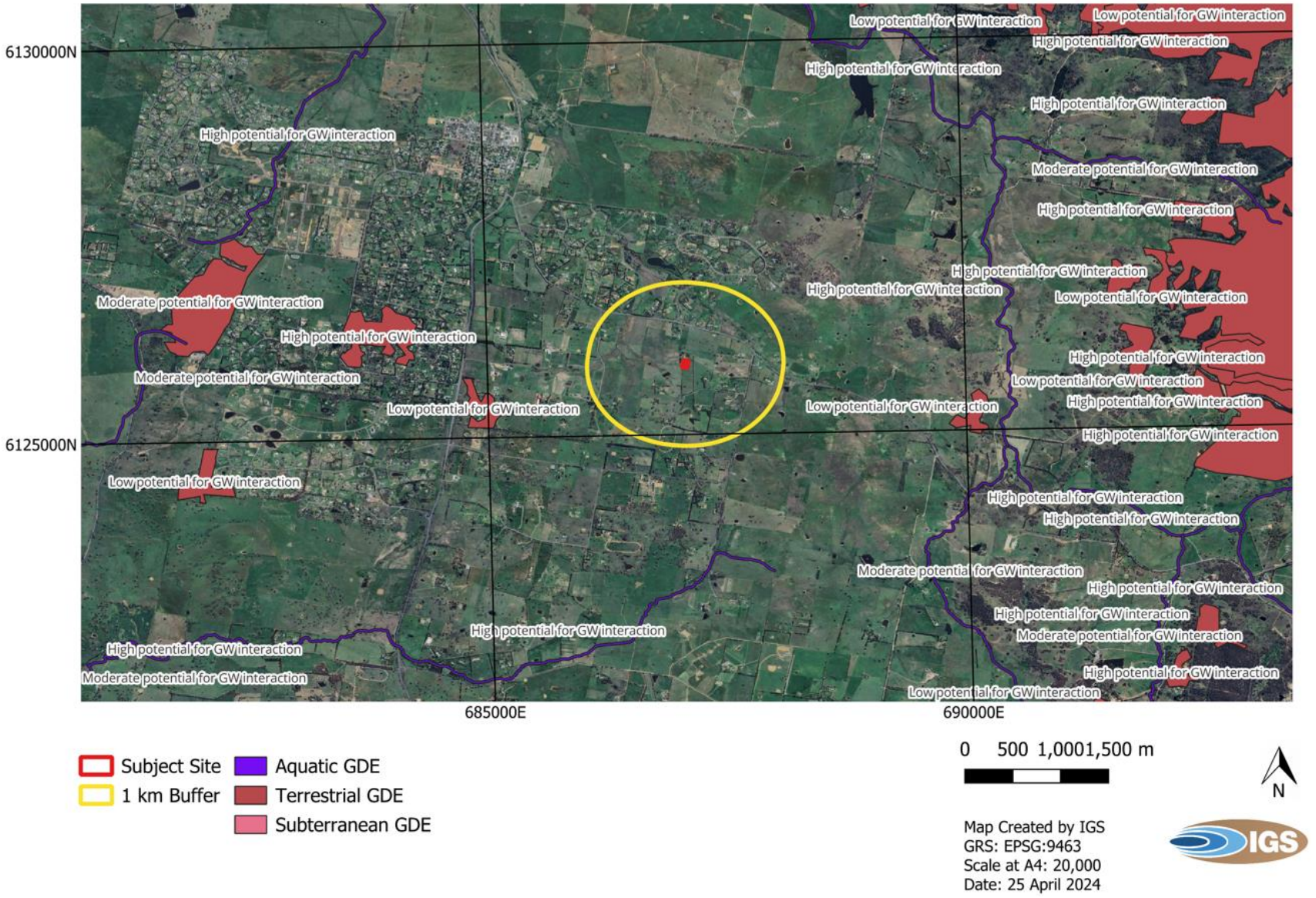

FIGURE 3-3 GROUNDWATER-DEPENDENT ECOSYSTEMS NEAR THE SUBJECT SITE FROM THE GDE ATLAS LABELLED WITH THE POTENTIAL FOR GROUNDWATER INTERACTION

3.2 Groundwater Vulnerability Assessment

3.2.1 Likelihood of contamination

It is understood that during construction, there will be no significant stored volumes of chemicals or fuels and no refuelling or washing of vehicles. Therefore, the potential risks of contamination would be from minor fuel or hydraulic hose leaks, which are expected to be less than 100 L. These leaks would be managed via spill kits and mechanical removal of impacted soils until clean/non-odorous soils are observed. Therefore, due to the small volumes of potential sources and the reported thickness (>5 m) of clay in the bores logs located within 300 m of the Subject Site which is assumed to be consistent with the Subject Site, acting as a barrier to vertical migration of contaminants, the Subject Site is considered to have a negligible risk of contaminating and reducing groundwater quality for any local users or GDEs associated with the local groundwater.

Once operational, potential contaminant sources include leakage of chemicals from batteries; however, the batteries will be lithium-ion phosphate, which does not contain heavy metals and is considered to be the safest batteries in the industry. In the unlikely event of battery failure, the units are self-contained, with anti-leak connections, limiting any potential for contamination release. Further, as the batteries are in IP54 rated self-contained units, the opportunity for external water to interact with the internal battery and therefore the batteries are not considered a significant source of contamination. This is also demonstrated in Section 2.4, with limited surface water flow paths determined by the surface water modelling.

Potential battery fires are expected to be contained within the individual units, as each unit has internal fire-suppression systems, including flammable gas, smoke and thermal sensors, pressure release systems and aerosol fire extinguishing systems. Therefore, the risk from small individual fires is not considered significant. However, should a larger fire occur necessitating the use of large volumes of external water and fire-fighting chemicals, then there would be a low risk to groundwater from the infiltration of fire-fighting liquids to the shallow aquifer. However, as discussed, the thick clay layer beneath the Subject Site would reduce any downward migration to the underlying groundwater system and therefore, even in this scenario, the risk of contamination to groundwater is considered minimal.

Up to 100 L of fuel will be stored onsite, which is a potential source of contamination. However, standard management practices are in place to ensure that the fuel is stored in a bunded enclosure with a minimum of 110% of the stored volume to ensure the bund can contain the entire volume of the stored fuel. Therefore, it is expected that the risk of fuel leak will be minimal.

A 900 mm deep oil bund will be constructed, which could be a source of contamination. However, with the bund constructed to the current standards with regular inspection and maintenance, it is not considered to be a significant source of contamination.

IGS have been informed that no chemicals, other than what has been discussed above, will be stored on the Subject Site that would be considered a source of contamination. No dangerous goods will be stored onsite.

The risk of aquifer contamination associated with the proposed development during construction and operation is considered low due to the Subject Site only storing a small volume of bunded fuel and no other sources of contamination during operation and no stored materials or refuelling/maintenance or washdowns etc. occurring during construction and therefore having no sources onsite. Further, the locally thick clay layer will retard vertical migration through the unsaturated zone allowing time for removal of any spills to occur and be made good before contact with the groundwater at approximately 3 mbgl.

The water table/aquifer is unlikely to be encountered, based on the water levels from the closest bores to the Subject Site. Shallow groundwater < 1mbgl has been reported in bore over 700 m from the site, and therefore, there is a potential for groundwater in the local area to be shallower. It is anticipated that during construction, due to the thick clay layer and shallow trench depths of <1 m, groundwater is unlikely to be

encountered, eliminating the potential for the creation of a pathway for contamination through the thick clay layer.

It is recommended, however, that a shallow bore be sunk on the Subject Site to approximately 5 mbgl to determine the exact geology and water level at the site and water level measurements be taken at the end of winter to determine the highest water levels likely to be encountered.

3.2.2 Potential adverse impacts on groundwater dependent ecosystems and groundwater abstraction

The development is not expected to have any adverse impacts on GDEs. No mapped GDEs are within the Subject Site, therefore no GDEs will be directly damaged during construction. Terrestrial GDEs are located 2 km west and 3 km east of the development and are described as having “Low potential for groundwater interaction”. Therefore, due to the distance from Subject Site and low potential for groundwater interaction the terrestrial GDEs are not considered to be at risk from the development, as there is negligible risk to groundwater quality and no risk to groundwater levels, due to no groundwater abstraction, from the development.

The identified aquatic GDEs are located between 2.5 km south and 3.5 km east from the Subject Site and are described as having either “high or moderate potential for groundwater interaction”. However, The GDE Atlas describes aquatic GDEs as “ecosystems that rely on surface expression of groundwater”. As there will be no groundwater abstraction at the Subject Site during any phase, there will be no change to groundwater levels related to the Subject Site. Therefore, groundwater-surface expression will not be impacted and therefore no risk is expected to the aquatic GDEs.

As discussed, the local trees, which are not explicitly identified as GDEs may have root systems that will penetrate the thick clays to the water table. Therefore, there is a potential for local tress to be impacted should groundwater contamination occur. However, as discussed it is considered unlikely that groundwater contamination would occur due to the low volumes of source chemicals and the expected thick layer of clay at the Subject Site.

There are no subterranean GDEs reported within 10 km of the Subject Site and, therefore, no risk.

Locations of groundwater abstraction points are not released for public access in NSW, and therefore, no comment can be made on potential impacts to groundwater quality in local abstraction bores. However, as there is considered negligible risk of contamination to groundwater during construction and general operation of the BESS, and there will be no groundwater abstraction during any point of construction or operation, the risk to groundwater abstraction bores near the Subject Site is considered negligible.

3.2.3 Cumulative impact on the development on groundwater

The development is not extracting water from groundwater systems during operations and is therefore will not impact the quantity of water in the local groundwater system.

3.2.4 Mitigation measures

Mitigation measures are focused primarily on preventing chemical spills from reaching the groundwater system in the unlikely event of leakage. Mitigation measures include:

- Drilling of a soil bore to 5 mbgl on the Subject Site to understand the exact geology and water levels during winter at the.
- Self-bunded battery storage units.
- Self-bunded fuel storage areas.

- Regular maintenance and inspection of fuel bund, oil bund and battery storage units.
- Development of site management plans detail responses to leaks such as spill kits, removal and appropriate testing and disposal of impacted soils and options for installing groundwater monitoring bores in the case of a significant fire or unexpected leak.
- If possible, excavating during summer or autumn will further reduce the already low likelihood of intersecting groundwater during the shallow excavations.

An onsite soil bore should be drilled to ensure that the information available during this desktop study is accurate and to confirm or otherwise that the site is underlain by thick clays and to further understand the local water table and if there is any fluctuation of the water table after winter rains.

Currently, based on the understanding that groundwater near the site is at least 3 mbgl and the clays extend over the site, then groundwater monitoring is not required during the construction and operation of the facility as groundwater is unlikely to be encountered; however, should the onsite soil bore identify shallow groundwater or an absence of clay at the Subject Site then groundwater monitoring bores may be required.

In the future if a significant release or major fire occurred, then bores should be installed to determine the local groundwater flow direction and then up- and downgradient bores of the Subject Site should be constructed to determine if any impacts have migrated to the locally groundwater.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 Surface Water

The flood investigation provided within this report provides flood mapping for the proposed BESS facility at 3 Turton Place, Murrumbateman, NSW. A 2D hydraulic flood model was developed in line with the latest flood modelling software; industry standards (i.e. BoM IFD and ARR 2019 guidelines) and the latest available 1 metre LiDAR dataset (NSW Spatial Services) for the 1% AEP design storm event.

The flood modelling and mapping undertaken as part of this investigation confirmed that there are no significant overland flow paths across the site with peak flood depths below 80 mm across the area of interest. Maximum flood velocities are all low, between 0.05 – 0.55 m/s, resulting in the site being classified as flood hazard H1 (generally safe for people, vehicles and buildings).

The Murrumbateman, Bowning, Bookham and Binalong Flood Study – Addendum Report was conducted for Yass Valley Council in 2020. The 1% AEP flood depth mapping covers the Subject Site. Based on the Addendum Report, the site is located adjacent to overland flow during a 1% AEP event from the Unnamed Tributary catchment which flows through the existing dam in the north of the site. This flow path is consistent with the flood mapping discussed in Section 2.

Based on the findings of the flood modelling it is recommended to set critical infrastructure to be a minimum of 150 mm above the existing ground level to reduce the risk associated with stormwater runoff impacting infrastructure. Importing fill to raise the areas where infrastructure is to be located is not likely to increase flood levels on neighbouring properties, however, should be tested within the hydraulic model at a further design stage once the final layout is available.

4.2 Groundwater

Based on the understanding of the local hydrogeological regime and site operations during construction and operation, it is considered that there is negligible risk to groundwater or GDEs. This conclusion is derived from:

- No significant volumes of potential contaminants will be stored on the Subject Site during construction and operation phases and the small volumes that will be stored shall be appropriately bunded and infrastructure maintained.
- The battery units are self-contained and will control any potential leaks. There is no opportunity for leaching of metals due to the containment and lack of water in the battery units.
- Excavations will be shallow, <1 m deep and groundwater is unlikely to be encountered and no dewatering or abstraction will occur. Summer or autumn excavations will further reduce the potential for intersecting groundwater during excavations.
- Depth to groundwater, based on available data, is generally >3 m (at bores located within 400 m of the Subject Site) and is beneath a thick clay layer, reducing the risk of infiltration to groundwater. However, recent water level data is not available and may change the risk assessment if it were found to be shallower on the Subject Site or the expected clay layer was not present.
- Mapped GDEs are all >2 km or more away and are unlikely to be impacted in the unlikely occurrence of groundwater contamination. As there will be no groundwater abstraction at the Subject Site the GDEs will not be impacted by changes in groundwater levels due to onsite activities.
- Site management plans will provide details on the clean-up of small spills via spill kits and soil removal.
- A shallow bore on the Subject Site to confirm site conditions is recommended.

Therefore, groundwater monitoring is not considered necessary at the Subject Site unless there is a major fire where fire-fighting water or chemicals are used, or another unforeseen leak occurs outside the expected small volumes of stored fuel. Should a major fire or other event occur, then groundwater monitoring wells should be located up and down-gradient of the site and down-gradient to determine any impacts to groundwater.

REFERENCES

New South Wales Department of Planning and Environment (2020). Water Sharing Plan for the NSW Murray-Darling Basin Fractured Rock Groundwater Sources (report sl-2020-0348)

New South Wales Government (2013). Yass Valley Local Environmental Plan.

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Acoustic Report – Environmental Noise Emission Assessment

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Project	Proposed Distribution BESS – 3 Turton Place, Murrumbateman, NSW
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Date	Wednesday, April 16, 2025
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Disclaimer

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The information contained within this report and adopted as the basis for any assessment has been provided by the Client.

The findings of any assessment and/or recommendations provided within this document are based on noise and vibration factors only. Any proposal/recommendation nominated within this document must be reviewed and approved by Relevant Authorities, and third-party consultants, as necessary. This may include but is not limited to structural engineers, mechanical services engineers etc.

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Summary of Responses to Rob Bullen Consulting Peer Review

A response to the requirements of the Rob Bullen Consulting Peer Review report is included below.

Noise Criteria

WMG notes the comments made in relation to the assessment criteria, and confirms that the opinions will not impact on the criteria adopted as the basis for the assessment.

WMG has reviewed the commentary provided and has introduced **R07** as a sensitive residential receptor within the updated noise assessment contained within this report.

Calculation Procedures

No additional comment.

Additional Residence

WMG has reviewed the commentary provided and has introduced **R08** as a sensitive residential receptor within the updated noise assessment contained within this report.

Assessment and Proposed Mitigation

Noise monitoring has been conducted at the subject site confirming low levels of ambient background 'masking' noise, and hence a tonal adjustment has been applied at receptors where predicted values indicate it may be present.

In consideration of the above, and in accordance with the recommendations within the peer review report, the WMG report has recommended that an acoustic barrier form part of the proposal.

1. Introduction

The proposal includes the construction and operation of a new 4.95MW battery energy storage system (BESS) facility at the site described as 3 Turton Place, Murrumbateman, New South Wales.

The subject site is currently occupied by farmland, a residential dwelling and rural infrastructure including fencing, roadways and outbuildings. The area designated for the proposed BESS is currently used for agricultural activities.

The new facility will include electrical infrastructure which will generate noise emissions with the potential to impact on the acoustic amenity of the surrounding environment including at residential receptors.

In consideration of the above, Watson Moss Growcott Acoustics (WMG) was previously engaged to undertake a review of the proposal, and assess potential noise emissions to consider the following:

- Noise and vibration associated with electrical infrastructure and vehicle activity at the subject site during general operations associated with the proposed facility.
- Noise and vibration emissions associated with the construction phase of the proposal.

WMG prepared acoustic report *13137-1.3jg*, dated Monday 18th November 2024 which provided an assessment of the above potential noise emissions from the proposed site operations.

The findings of the assessment identified the potential for operational noise emissions from the subject site to exceed relevant noise criteria at off-site sensitive receptors and hence provided recommendations to reduce noise emissions.

The recommendations included the construction of a 3.0m acoustic barrier to the south and east of the equipment.

The assessed exceedances were determined to be substantially due to the tonal character of the noise expected to be emitted by the electrical equipment forming part of the proposal. In the absence of the tonal character adjustment, it was determined that compliance could be achieved at all receptors except for the dwelling which is located within the subject site boundaries and is associated with the proposal.

In consideration of the above, WMG suggested that it may be appropriate for the subject site to be commissioned and for a 'real world' assessment to be undertaken at the nearby sensitive receptors to determine whether an adjustment is necessary to address tonal noise emissions from the new equipment.

This would allow the client to determine the specific noise control requirements, if necessary.

The Yass Valley Council has since reviewed the proposal, and the WMG report, and has issued a request for Additional Information under Development Application No. DA240159. The Council request makes mention of an acoustic peer review report that was prepared by Rob Bullen Consulting, and includes item 1 and item 2 which relate to preparation of an amended acoustic report, and additional commentary in relation to the proposed acoustic barrier.

This report is therefore generally consistent with *13137-1.3jg* previously prepared by WMG but has been amended to reflect the specific requirements of the Council request.

2. Noise Assessment Terminology

Noise assessment terminology used within this report is defined within Table 1 below.

Table 1: Noise Assessment Terminology

Terminology	Definition
dB(A)	Decibels recorded on a sound level meter, which has had its frequency response modified electronically to an international standard, to quantify the average human loudness response to sounds of different character
L_{eq} / L_{Aeq}	The equivalent continuous level that would have the same total acoustic energy over the measurement period as the actual varying noise level under consideration. It is the noise measure defined by the EPA as the measure of the noise to use in assessing compliance with noise limits.
L_{90} / L_{A90}	The level exceeded for 90% of the measurement period, which is representative of the typical lower levels in a varying noise environment. It is the noise measure defined by the EPA as the measure of the background noise level to use in determining noise limits.
Sound Power Level (Lw)	The sound power level of a source is a measure of the amount of energy in the form of sound emitted from the source. The sound power level of a source is an inherent characteristic of that source and does not vary with distance from the source or with a different acoustic environment. The sound power level equals the sound pressure level at a distance from the source plus 10 times the logarithm (to base 10) of the measurement surface area (m^2), and is relative to a reference sound power of 1pW, (10-12 Watts).
Sound Pressure Level (Lp)	Sound that we can hear with our ears or measure with a sound level meter is actually small variations in the pressure of the air around us. The magnitude of the pressure fluctuations vary over a very wide range from the very lowest levels we can just hear to the very high levels we need to be protected from, and for that reason sound is measured on a logarithmic scale. The sound pressure level equals 10 times the logarithm (to base 10) of the sound pressure divided by a reference pressure, which is 20 µPa. The sound pressure level reduces with increasing distance from a source and is influenced by the surroundings.

3. Yass Valley Council Additional Information Request

The acoustic items included within the Council Additional Information Request are included below.

(1) Acoustic Report

A revised acoustic report was submitted as part of the additional information package. Following the Planning Panel preliminary briefing, Council engaged the services of another appropriately qualified acoustic expert to conduct a peer review. A copy of the peer review report is attached for your reference.

- *A response to the acoustic report peer review is to be provided, specifically addressing the recommendations made.*
- *The revised acoustic report has Receptor R07 as commercial premises only. The subject land also contains a dwelling house. The project trigger level for Receptor R07 is to be updated to state the more conservative residential to avoid doubt.*
- *A submission received indicates future intention to make a Development Application for a residential dwelling house at Lot 2 DP 787995, 4 Crisps Lane, Murrumbateman. Whilst there is no dwelling house currently on the site and a Development Application has not been made, to respond to these concerns it would be recommended that the noise model is re-run to consider a potential future receptor. Noting comments received in the peer review, this should also include consideration of reflect of sound from the acoustic consideration of reflect of sound from the acoustic barrier back towards the potential receptor.*

(2) Acoustic Barrier

The response to additional information request indicates that the revised acoustic report provides an indication of the general specifications for the proposed acoustic barrier, including minimum height of 3000mm and the general surface density.

It is considered that there remains insufficient clarity and detail of the acoustic barrier to enable full assessment of this in accordance with s4.15 Environmental Planning and Assessment Act 1979. In this regard, the following information is to be provided:

- *Separate, dimensioned, elevation drawings of the acoustic barrier, including the maximum height and details of construction type, material, and colours/finishes are to be provided.*
- *Site plan with clear dimensions for lengths and relative setbacks.*

4. Site and Surrounding Environment

The land under consideration is located at 3 Turton Place, Murrumbateman, New South Wales.

The subject site boundary adjoins Turton Place to the south and is adjacent to RU4 zoned land to the east, west and north. The area of land under consideration is located in the northwest corner of the subject site and is rectangular in shape.

The land in immediate proximity of the proposal is generally vacant and would not be expected to be noise sensitive in accordance with legislative or guideline criteria.

The closest and therefore most critical sensitive uses located within proximity of the site will include:

- **R01** – 3 Turton Place, Murrumbateman.
- **R02** – 4 Turton Place, Murrumbateman.
- **R03** – 5 Turton Place, Murrumbateman.
- **R04** – 270 Murrumbateman Road, Murrumbateman.
- **R05** – 1A Turton Place, Murrumbateman.
- **R06** – 1 Turton Place, Murrumbateman.
- **R07** – Dwelling at 1 Patemans Lane, Murrumbateman.
- **R07A –** 'Dionysus Winery and Woo Chocolate' premises located at 1 Patemans Lane, Murrumbateman
- **R08 –** Potential future residential dwelling at Lot 2 DP 787995, 4 Crisps Lane, Murrumbateman.

Information regarding the location and the use at the sensitive receptors has been provided by the client.

Figure 1 below provides an aerial photo of the subject site and surrounds including the sensitive receptors which have been considered as part of the noise emission assessment.

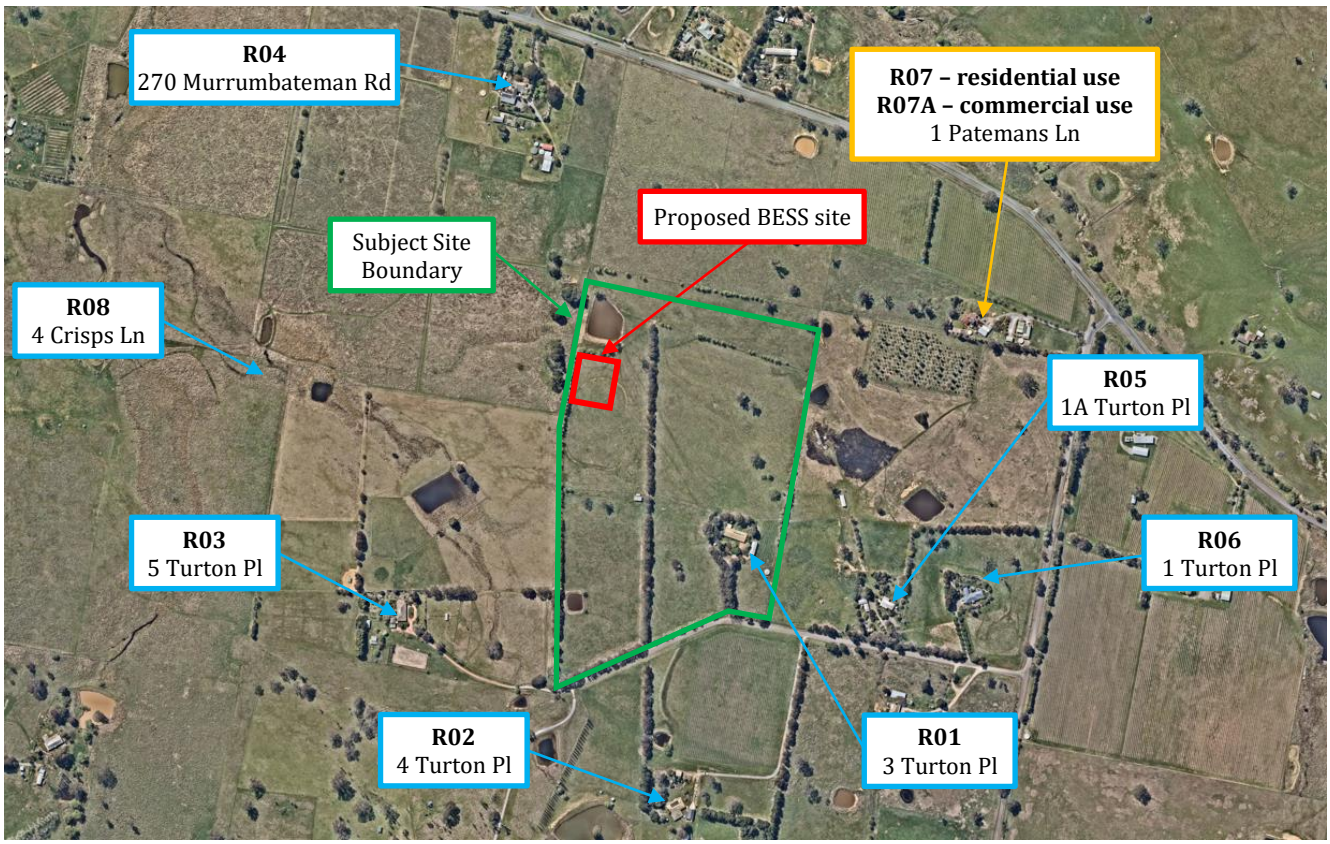


Figure 1: Proposed subject site and surrounding environment

5. Operational Phase Noise Assessment

5.1. Operational Noise Criteria

5.1.1. Overview

The NSW Environment Protection Authority (EPA) Noise Policy for Industry (NPfI) provides criterion for addressing operational noise emissions associated with the proposed use at sensitive receptors. The Policy was released in 2017 and includes relevant methodologies for assessment and management of typical operational noise emissions from industrial premises within NSW.

Within the NPfI, commercial noise emissions are considered during various assessment periods defined as the day, evening, and night to reflect the sensitivity associated within the impacts of noise. The assessment periods defined by the EPA are included within Table 2 below.

Table 2: EPA Defined Assessment Periods

EPA Assessment Period	Relevant Days	Relevant Time Periods
Day	Monday to Saturday	7:00am to 6:00pm
	Sunday	8:00am to 6:00pm
Evening	All Days	6:00pm to 10:00pm
Night	Monday to Saturday	10:00pm to 7:00am
	Sunday	10:00pm to 8:00am

When addressing noise emissions associated with commercial/industrial uses, the NPfi defines project trigger levels which are used to consider potential impacts at sensitive receptors. The levels are determined based on consideration of what the NPfI refers to as the 'Project Intrusiveness Noise Level', and the 'Project Amenity Noise Levels'.

In accordance with the NPfI methodologies, project trigger levels are adopted based on the lower and more stringent of the determined intrusiveness and amenity noise levels.

5.1.2. Project Intrusiveness Noise Criteria

The intent of the project intrusiveness noise level is to minimise the potential for change in the acoustic environment at relevant sensitive receptors by ensuring that impacts associated with a new source are controlled to values 5 dB above a minimum threshold noise level.

The attributable noise levels are defined as L_{Aeq} values assessed over a 15 minute period.

The proposed development is situated in a rural residential environment characterised by RU4 zoned land consisting of agricultural production with scattered dwellings. The site is additionally located in proximity to two major arterial roadways, Murrumbateman Road and the Barton Highway.

In response to commentary provided within the Rob Bullen Consulting report, and in the interest of understanding the existing acoustic environment in proximity to the nearby sensitive receptors, WMG has attended the subject site and has undertaken unattended noise monitoring.

The monitoring was undertaken during the period Friday 14th March to Saturday 22nd March 2025.

The monitoring device was placed at the location identified below and was considered representative of the acoustic environment at the critical residential receptors in proximity to the proposed BESS site.

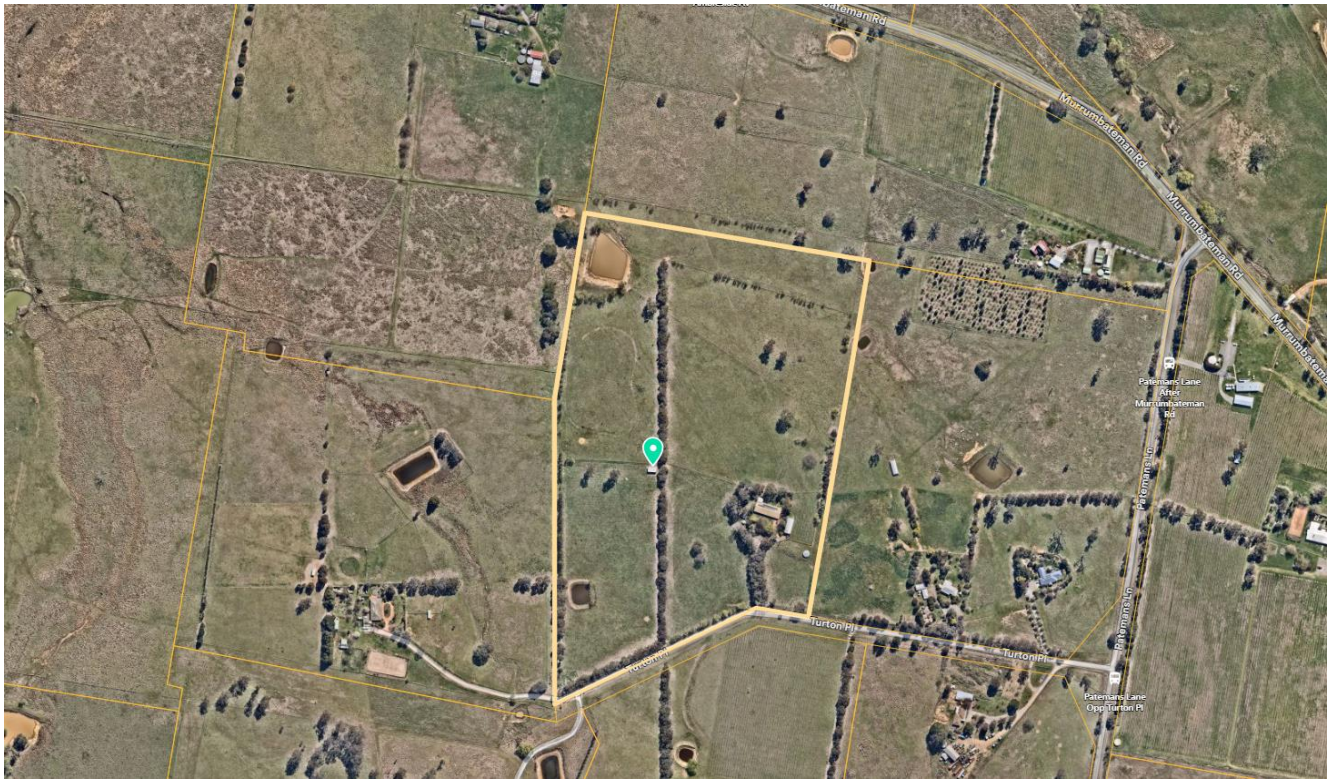


Figure 2: Aerial image including unattended noise monitoring location

Based on observations during deployment and collection of the unattended monitoring device, and through analysis of the data obtained by the device, WMG has concluded that the ambient background noise levels in the surrounding area are low.

During the night period (10:00pm to 7:00am), which is most critical for the assessment, WMG has measured ambient background noise levels in the order of 20-25 dB(A) L_{90}. During the less sensitive day and evening periods, measured values were in the order of 30-31 dB(A) L_{90}.

In consideration of the above, WMG is of the opinion that the NPfI minimum 'rating background levels' (RBLs) will be applicable to the assessment and hence, has adopted these levels as the basis for determining the project intrusiveness noise levels. The minimum RBLs adopted are nominated within the NPFI and are reproduced in Table 3.

Table 3: Minimum RBLs

Descriptor	NPfi Defined Assessment Period		
	Day	Evening	Night
Minimum RBLs	35 L_{A90}	30 L_{A90}	30 L_{A90}

The project intrusiveness noise levels have been determined based on the minimum RBLs in accordance with the methods provided in the NPFI. The adopted project intrusiveness noise levels are detailed in Table 4 and reflect the adopted minimum RBLs plus 5 dB.

Table 4: Project Intrusiveness Noise Levels

Descriptor	NPfi Defined Assessment Period		
	Day	Evening	Night
Project Intrusiveness Noise Levels	40 $L_{Aeq\ 15min}$	35 $L_{Aeq\ 15min}$	35 $L_{Aeq\ 15min}$

5.1.3. Project Amenity Noise Criteria

Project Amenity Noise levels, as detailed by the NPfI, are provided to address the ambient noise levels within an area from all industrial noise sources combined.

The intent of amenity noise levels is to allow for a consideration of noise impacts accumulated from the addition of surrounding commercial/industrial operations. Project amenity noise levels therefore limit the sole independent consideration of intrusiveness levels and the potential for continual increases to noise levels through the addition of separate commercial/industrial operations.

Derivation of the project amenity noise levels is based on the 'recommended amenity noise levels' contained within **Table 2.2: Amenity noise levels** of the NPfI. The values presented in the Table represent the total industrial noise which may impact on a receptor location over an assessment period.

In order to compare the amenity values with the **project intrusiveness level**, the values are adjusted from a $L_{Aeq\ period}$ to $L_{Aeq\ 15min}$, by adding a 3dB correction to the amenity noise level.

When determining the relevant amenity noise levels, WMG has considered the site as 'rural' as the surrounding land is generally comprised of agricultural land uses on RU4 land with scattered residential receptors. The amenity noise levels for 'rural' areas are summarised below.

Table 5: NPfI Amenity Noise Levels

Receiver	Noise Amenity Area	Time of Day	Recommended Amenity Noise Level	
			Raw NPfI Values	Adjusted for 15min*
Residential	Rural	Day	50 $L_{Aeq\ period}$	53 $L_{Aeq\ 15min}$
		Evening	45 $L_{Aeq\ period}$	48 $L_{Aeq\ 15min}$
		Night	40 $L_{Aeq\ period}$	43 $L_{Aeq\ 15min}$

** WMG notes that the Rob Bullen Consulting report does not adopt the same 3dB adjustment but accepts that it will not influence the assessment as the project trigger levels are based on the project intrusiveness criteria.*

New industrial noise sources are then subject to the **project amenity noise level** which is determined to represent an objective for any single commercial/industrial noise source at a receptor location.

Where the surrounds include other commercial/industrial uses which may impact on receptors, the project amenity noise level implements a negative adjustment to account for cumulative contributions.

It is noted that there are two existing wineries located to the northeast of the site identified as 'Dionysus Winery & Woo Chocolate', and 'Found Winds Vineyard'. Based on a review of each of the venue websites, the premises are open 11:00am-4:00pm which will align with the NPfI 'day' period and will avoid the night period which is critical for the proposed BESS site operations.

In consideration of the above, WMG has allowed for potential cumulative contributions due to the wineries during the day period, but not during the more critical evening and night periods at the sensitive receptor locations. The adopted values are therefore as shown below in Table 6.

Table 6: Project Amenity Noise Levels

Descriptor	NPfi Defined Assessment Period		
	Day	Evening	Night
Recommended Amenity Noise Level	50 $L_{Aeq\ period}$	45 $L_{Aeq\ period}$	40 $L_{Aeq\ period}$
Adjustment to allow for additional contributions	minus 5 dB	-	-
Adjustment to reflect 15min assessment period	plus 3 dB	plus 3 dB	plus 3 dB
Project Amenity Noise Levels	48 $L_{Aeq\ 15min}$	48 $L_{Aeq\ 15min}$	43 $L_{Aeq\ 15min}$

5.1.4. Adopted Project Trigger Noise Criteria

5.1.4.1. Residential Receptors

In accordance with the assessment methodologies contained within the NPfI, the project noise trigger levels will be determined based on whichever of the project intrusiveness level and the project amenity level is the lower or more stringent. In consideration of the above, the project trigger noise levels will be as shown in Table 7.

Table 7: Project Trigger Noise Levels

Descriptor	NPfi Defined Assessment Period		
	Day	Evening	Night
Project Intrusiveness Noise Levels	40 $L_{Aeq\ 15min}$	35 $L_{Aeq\ 15min}$	35 $L_{Aeq\ 15min}$
Project Amenity Noise Levels	48 $L_{Aeq\ 15min}$	48 $L_{Aeq\ 15min}$	43 $L_{Aeq\ 15min}$
Project Trigger Noise Levels	**40 $L_{Aeq\ 15min}$**	**35 $L_{Aeq\ 15min}$**	**35 $L_{Aeq\ 15min}$**

For sensitive residential receptors, and in accordance with the NPfI, the project noise trigger levels are to be assessed at the reasonably most-affected point on or within the residential property boundary or, if that is more than 30 metres from the residence, at the reasonably most affected point within 30 metres of the residence, but not closer than 3 metres to a reflective surface and at a height of between 1.2–1.5 metres above ground level.

For multi-storey residential buildings (greater than two storeys) where a ground floor assessment location is deemed to be unrepresentative of the exposure of upper stories, the assessment may be undertaken at a representative elevation and closer than 3 metres to a reflective surface, as agreed with the regulator.

However, the assessed/measured noise level is to be suitably adjusted to reflect a 'free field' (that is, nominally no reflective signals) assessment/measurement location.

Due to the continuous operation of the subject site and new equipment, the critical criteria will be based on the night period when the lowest criteria will be applicable.

5.1.4.2. Commercial Premises

Due to the proximity of the 'Dionysus Winery & Woo Chocolate' commercial premises to the subject site, it would also be considered reasonable to assess potential noise impacts at this receptor.

When considering potential noise impacts on independent commercial premises, the NPfI nominates amenity levels of 65 $L_{Aeq\ period}$ during times when the premises are in use.

When converted to a 15-minute assessment period, this objective will be 68 $L_{Aeq\ 15min}$.

5.1.5. Modifying Factor Corrections

When considering noise impacts on sensitive receptors, NPfI methodology includes relevant adjustment factors which account for the potential for the noise source under consideration to impact on the acoustic amenity of the noise sensitive receptor.

The relevant factors are included within Fact Sheet C of the NPfI and include:

- Tonal noise.
- Low frequency noise.
- Intermittent noise.

Clarification regarding each of the adjustments is shown below in Table 8.

Table 8: NPfI Modifying Factor Corrections

Relevant Factor	Assessment / Measurement	When to Apply	Correction
Tonal Noise	One-third octave band analysis.	Level of one-third octave band exceeds the level of the adjacent bands level on both sides by in the order of 5dB – 15dB as defined in the NPfI.	5 dB
Low-Frequency Noise	Measurement of source contribution C-weighted and A-weighted level and one third octave measurements.	Measure / assess source contribution C and A weighted Leq,t levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and the level defined in Table C2 of the NPfI is exceeded.	2 or 5 dB
Intermittent Noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.	The source noise heard at the receiver varies by more than 5 dB(A) and the intermittent nature of the noise is clearly audible.	5 dB

The adjustments are applied to the measured/predicted values at sensitive receptors for consideration relative to the project noise trigger levels. A maximum of 10dB correction will be applied to the measured/predicted noise levels at the sensitive receptor, with a maximum of 5dB applicable when the tonal character is in the low frequency range below 160Hz.

5.2. Noise Modelling Results

5.2.1. Noise Prediction Methodology

Modelling of operational noise emissions from the site has been conducted using DataKustik CadnaA environmental noise modelling software.

Relevant information regarding site elevations, site buildings and the surrounding environment has been provided by the client and sourced from online databases including Nearmaps, NSW Planning Portal, and topography from the ANZLIC Committee on Surveying and Mapping.

With the utilisation of the above, the model has been developed and configured with sufficient detail for appropriate noise emission calculations to be undertaken.

For this assessment, the modelling software has implemented the calculation procedures defined within International Standard ISO 9613-2: 1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation (ISO 9613).

The described standard has been considered and approved as part of many previous projects requiring noise emission assessment works. Through implementation of the Standard using CadnaA, the noise emission modelling considers the following attenuation measures:

- Geometrical spreading.
- Atmospheric absorption.
- Ground attenuation.
- Meteorological effects.
- Source / Receiver height effects.
- Attenuation due to the surrounding environment including existing buildings / structures.

In addition to the above, and in accordance with the methodologies contained within the NPfI, noise predictions must account for noise enhancing weather conditions in the direction of sensitive receptors.

This can be addressed via two options:

- **Option 1**
  Adopt the **noise-enhancing meteorological conditions** for all assessment periods for noise impact assessment purposes without an assessment of how often these conditions occur – a conservative approach that considers source-to-receiver wind vectors for all receivers and F class temperature inversions with wind speeds up to 2 m/s at night.

- **Option 2**
  Determine the **significance** of noise-enhancing conditions.

Option 1 has been adopted as the basis for predicting noise emissions from the proposed use and is often considered conservative as it represents a worst case operation scenario.

The critical receptors located in proximity of the subject site are understood to be single level dwellings, therefore an assessment height of 1.5m has been adopted as the basis for the noise model.

Predicted values at receptor locations have been calculated in the 'free-field', which do not include reflections from localised surfaces other than the ground.

5.2.2. Source Sound Power Levels

When considering noise emissions associated with the proposal, the client has advised that the relevant noise sources will include the following:

- 1no. MVPS including 2no. inverters and 1no. 5MVA transformer.
- 10no. liquid cooling battery containers.

Figure 2 below provides a site plan for the proposal including the relevant equipment locations.

Figure 3: Site plan including relevant noise sources

For the purposes of this assessment, WMG has considered source noise data provided by the inverter and battery unit manufacturers in combination with input from the client. A summary of the sound power/pressure levels adopted for each item of equipment is included within Table 9.

Table 9: Adopted source sound power levels

Noise Source	Adopted Noise Level
MVPS inverter – per unit	88 dB(A) – sound power
MVPS Transformer – 5MVA unit	65 dB(A) – sound power
Battery cabinet liquid cooling – per unit	81 dB(A) – sound power

Once commissioned, the electrical infrastructure which forms part of the facility will operate continuously 24 hours per day, 7 days per week. The assessment will therefore consider potential noise emissions during the day, evening, and night assessment periods.

5.2.3. Predicted Noise Levels

The noise sources forming part of the proposal have been modelled based on the following assumptions:

- The MVPS unit inverters and transformers have been assessed as omnidirectional noise sources. There may be the potential for the MVPS to include directivity which may reduce noise emissions in some directions pending their orientation.
- The battery units have been assessed with their noise source directivity facing north away from the nearest noise sensitive residential receptors.

The results of the noise model are presented below in Table 10.

Table 10: Noise modelling results compared with Project Trigger Noise Levels

Assessment Location	Predicted Noise Level (15_{min})	Project Trigger Noise Levels L_{Aeq}		
		Day	Evening	Night
R01	36 dB(A) L_{eq}	40	35	35
R02	26 dB(A) L_{eq}	40	35	35
R03	32 dB(A) L_{eq}	40	35	35
R04	30 dB(A) L_{eq}	40	35	35
R05	23 dB(A) L_{eq}	40	35	35
R06	<20 dB(A) L_{eq}	40	35	35
R07	22 dB(A) L_{eq}	40	35	35
R07A - commercial	22 dB(A) L_{eq}	68		
R08	28 dB(A) L_{eq}	40	35	35

The outcomes of the noise model indicate that in the absence of noise control, and without consideration of any NPfI modifying factors, predicted noise levels at the R02-R08 receptors are compliant with the project trigger noise levels.

When considered at R01 however, the predicted values indicate the potential for marginal exceedances of the project trigger levels by 1 dB(A) during the evening and night periods.

As part of previous assessments, WMG has identified that electrical infrastructure has the potential to include a tonal character which may be audible at nearby receptors and warrant an adjustment in accordance with the NPfI.

Due to the distance separation between the electrical infrastructure and nearby sensitive receptors however, there is potential that residual tonal noise may not be present and therefore not require an adjustment for this project.

In order to consider the potential for tonality at the sensitive receptors, WMG has reviewed the following:

- The one-third octave bands associated with the existing ambient background noise levels measured at the site.
- The results of the noise modelling which includes predicted one-third octave band noise levels at the receptors.

For the purposes of this assessment, WMG has focused on the 3150Hz one-third octave band frequency as this is the frequency where noise emissions from the subject site are predicted to be most prominent.

Based on a review of the ambient background noise levels measured at the site, the noise levels at the relevant 3150Hz during the critical night period are regularly below 15dB, and on occasion below 10dB.

The measured values are very low, and generally much lower than the values predicted using the noise model.

In consideration of the above, and in order to provide some basis for understanding the presence of modifying factors, WMG has compared the predicted one-third octave band values with the criteria nominated within the NPfI relating to tonal noise and low frequency noise.

The predicted one-third octave band noise levels at each of the sensitive receptors are summarised below.

Table 11: Predicted one-third octave band noise levels - dB

Rec	25Hz	31.5Hz	40Hz	50Hz	63Hz	80Hz	100Hz	125Hz	160Hz	200Hz	250Hz	315Hz	400Hz	500Hz	630Hz	800Hz	1kHz	1.25kHz	1.6kHz	2kHz	2.5kHz	3.15kHz	4kHz	5kHz	6.3kHz	8kHz	10kHz
R01	24	21	25	23	23	23	29	33	26	25	32	25	22	25	24	26	25	26	25	22	23	29	14	<10	<10	<10	<10
R02	19	17	21	19	18	19	21	24	20	16	22	15	15	17	16	18	16	17	16	12	11	16	<10	<10	<10	<10	<10
R03	23	21	25	23	23	23	27	31	24	22	29	21	20	22	21	22	22	22	21	18	18	24	<10	<10	<10	<10	<10
R04	18	16	20	18	17	19	20	24	21	16	22	15	14	16	17	19	17	17	16	13	11	16	<10	<10	<10	<10	<10
R05	17	15	19	17	16	17	19	23	17	14	20	13	12	14	13	14	13	14	12	<10	<10	14	<10	<10	<10	<10	<10
R06	16	13	17	15	14	15	16	20	15	11	17	10	9	11	10	11	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
R07 R07A	17	15	18	17	16	18	18	21	19	14	19	12	12	13	14	15	13	12	11	<10	<10	<10	<10	<10	<10	<10	<10
R08	21	19	22	20	20	21	23	26	21	17	24	17	16	18	17	18	18	18	17	13	14	19	<10	<10	<10	<10	<10

Based on the predicted one-third octave band values, WMG provides the following commentary:

Tonal noise
When considered at R02, R04, R06 and R07, the predicted values do not exceed the level of the adjacent one-third octave bands on both sides by the 5dB, 8dB and 15dB thresholds nominated in the NPfI. A tonal adjustment will not be applicable for the assessment at these receptors. For the R01, R03, R05 and R08 receptors, the acoustic energy at 3150Hz is sufficiently elevated that a tonal adjustment of +5dB(A) will be applicable.

Low frequency noise
The predicted values do not exceed the low-frequency noise threshold values, and hence an adjustment will not be applicable for the assessment.

The results of the updated assessment including the +5dB(A) tonal adjustment at the R01, R03, R05 and R08 receptors is summarised below.

Table 12: Noise modelling results compared with Project Trigger Noise Levels (including tonal adjustment)

Assessment Location	Predicted Noise Level (15_{min})	Project Trigger Noise Levels L_{Aeq}		
		Day	Evening	Night
R01	41 dB(A) L_{eq}	40	35	35
R02	26 dB(A) L_{eq}	40	35	35
R03	37 dB(A) L_{eq}	40	35	35
R04	30 dB(A) L_{eq}	40	35	35
R05	28 dB(A) L_{eq}	40	35	35
R06	<20 dB(A) L_{eq}	40	35	35
R07	22 dB(A) L_{eq}	40	35	35
R07A - Commercial	22 dB(A) L_{eq}	68		
R08	33 dB(A) L_{eq}	40	35	35

As shown above, with the inclusion of the +5dB(A) tonal adjustment, WMG has determined that residual noise impacts at the R01 and R03 receptors have the potential to exceed the project trigger levels, and hence additional noise control should be considered at the subject site.

5.2.4. Noise Control and Response to Peer Review Report Recommendations

The findings of the assessment identify potential exceedances of the project trigger levels by up to 6 dB(A) at the R01 receptor and 2 dB(A) at the R02 receptor.

Due to the predicted non-compliances, WMG has amended the noise model to include a 3.0m high acoustic barrier to the east and south of the electrical infrastructure which will provide noise shielding in the direction of these receptors.

The barrier will effectively block line of sight between the receptors and the electrical infrastructure forming part of the site operations, and hence will reduce the noise impacts. The barrier construction requirements are discussed in Section 5.2.5.

The proposed barrier alignment is included below.

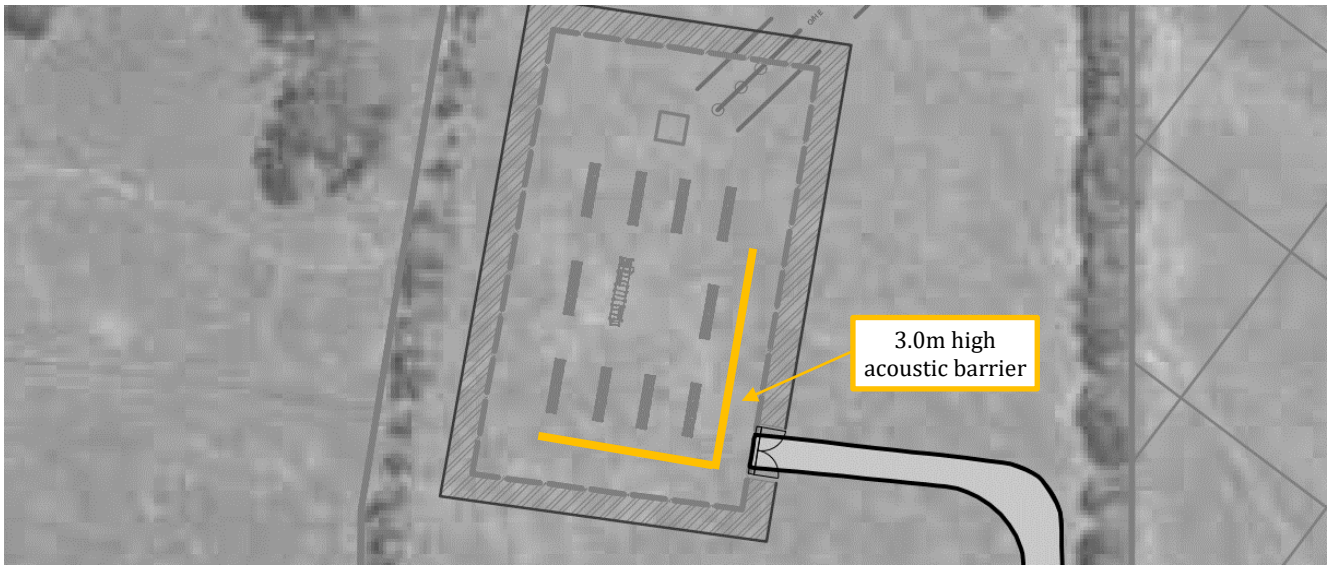


Figure 4: Proposed acoustic barrier arrangement

With the inclusion of the acoustic barrier, and the relevant tonal adjustment, WMG has determined that the predicted noise levels at each of the surrounding sensitive receptors will be compliant with the project trigger levels.

The results of the updated noise model are summarised below.

Table 13: Noise modelling results compared with Project Trigger Noise Levels (including tonal adjustment)

Assessment Location	Predicted Noise Level (15_{min})	Project Trigger Noise Levels L_{Aeq}		
		Day	Evening	Night
R01	35 dB(A) L_{eq}	40	35	35
R02	20 dB(A) L_{eq}	40	35	35
R03	34 dB(A) L_{eq}	40	35	35
R04	30 dB(A) L_{eq}	40	35	35
R05	28 dB(A) L_{eq}	40	35	35
R06	<20 dB(A) L_{eq}	40	35	35
R07	22 dB(A) L_{eq}	40	35	35
R07A - Commercial	22 dB(A) L_{eq}	68		
R08	33 dB(A) L_{eq}	40	35	35

The peer review report prepared by Rob Bullen Consulting recommended that EITHER:

- Measurements of existing ambient noise should be conducted before approval, both to confirm A-weighted background sound levels and to confirm the spectrum of the background noise. This may result in adjusted criteria and/or the presence of enough high-frequency ambient noise to mask the tone; OR
- The proposed barrier should be constructed as part of the project.

The findings of the site investigations have concluded that the existing noise environment at the site is not sufficiently elevated to 'mask' the potential tonal character of noise associated with the future site equipment.

In consideration of the above, and in accordance with the recommendation provided within the peer review report, it is expected that the client will be required to construct the acoustic barrier as part of the project, and not as part of a post commissioning compliance assessment.

5.2.5. Acoustic Barrier Construction

Based on the results of the noise model the acoustic barrier will need to be constructed to be 3000mm high and located to the south and east of the equipment to provide sufficient noise shielding in the direction of the nearby receptors.

To provide noise reduction qualities, the barrier must be constructed of materials with a surface minimum weight of 12 kg/m^2 and be constructed with no gaps between panels and between the panels and the ground below.

Where practical, the acoustic barrier location should be selected to maximise its height on the land topography, hence maximising the noise shielding in the direction of the sensitive receptors.

In addition to the above, the acoustic barrier must be lined on the equipment side using sound absorbing materials.

WMG recommends that the absorption coefficient performance of the sound absorbing lining achieve not less than 0.9 at the 3150Hz one third octave band frequency which has been identified as critical to the assessment. The overall NRC performance can be lower, and in the order of 0.7.

Suitability of the materials for external applications, and for installation within proximity of the proposed equipment must be considered and approved by others. From previous experience, a suitable material may include Megasorber faced with Soundmesh G8 facing. Fibrous insulation faced with perforated metal may also be a suitable alternative, however, will require a specific detail to ensure it was suitable for outdoor applications and could prevent rain ingress.

6. Construction Noise Assessment

6.1. Duration of Construction Works and Construction Program

The construction program for the proposed BESS facility is expected to have a duration of four weeks, during which various activities will be undertaken at the subject site.

The client has advised that the construction hours will be limited in accordance with the 'recommended standard hours' nominated by the EPA which include:

- Monday to Friday, 7:00am to 6:00pm.
- Saturday, 8:00am to 1:00pm.
- Sunday and Public Holidays, no construction works.

In consideration of the above, assessment of noise emissions due to construction activities at the site has been limited to the above 'recommended standard hours', as the client has advised that there is no need for works to be completed during other times.

For the purposes of this assessment, the client has provided a breakdown of the proposed construction program to assist with calculating residual noise levels at the critical sensitive receptors within proximity of the subject site.

The construction program is included below in Table 14 and indicates that the potentially 'noisy' activities including excavation, crane usage and heavy delivery vehicles will generally be limited to week 1 and week 2 of the program.

Table 14: Proposed construction program

Period	Site Works	No. of Vehicle Access per week
Week 1	• Drainage, road, and fencing works • Installation of concrete footings	Light – 10 (2 per day) Heavy – 2
Week 2	• Cable installation • Delivery of battery shipping containers and inverter station • Installation of battery shipping containers and inverter station	Light – 15 (3 per day) Heavy – 12
Week 3	• Electrical installation and cable termination • Electrical testing	Light – 15 (3 per day)
Week 4	• commissioning / demobilisation	Light – 10 (2 per day) Heavy – 1

6.2. Interim Construction Noise Guideline

6.2.1. General Assessment Methodologies

Construction noise and vibration associated with demolition, remediation, renewal, maintenance, and general building works has been identified as a major environmental issue within NSW. Construction activities can generate high levels of noise which can adversely impact on the surrounding acoustic environment including affecting sleep, concentration, mental and physical health.

In consideration of the above, several agencies including the Department of Environment and Climate Change (DECC), NSW Department of Planning, Roads and Traffic Authority (RTA), WorkCover NSW, NSW Health together with the Local Government and Shires Association of NSW prepared the *Interim Construction Noise Guideline* (INCG) to assist with addressing construction noise and vibration impacts.

The guideline was released in 2009 and provides methodologies for assessing and managing the potential impacts of construction noise on residences and other sensitive land uses.

The INCG document is currently under review by the EPA with a new draft guideline having been issued for *public consultation purposes only*, however had not been superseded at this stage.

In consideration of the above, WMG has adopted the currently applicable INCG document as the basis for providing an assessment of construction noise and vibration emissions associated with the project.

The main objectives of the ICNG are to:

- Promote a clear understanding of ways to identify and minimise noise from construction works.
- Focus on applying all 'feasible' and 'reasonable' work practices to minimise construction noise.
- Encourage construction activities to be undertaken only during the 'recommended standard hours' unless approval is given for works that cannot be undertaken during these hours.
- Streamline the assessment and approval stages and reduce time spent dealing with complaints at the project implementation stage.
- Provide flexibility in selecting site-specific feasible and reasonable work practices to minimise noise impacts.

When addressing construction noise and vibration, the guideline presents two alternative assessment methodologies expressed as either quantitative or qualitative and which vary based on the proposed construction project duration.

For shorter duration projects which are nominally defined as less than three weeks in total, the qualitative assessment procedures are commonly adopted which require the proponent to consider the guideline's checklist of work practices to minimise noise and implement appropriate strategies.

Where projects have a duration of greater than three weeks, the quantitative assessment procedure is recommended which includes derivation of 'noise management levels' (NML) and noise predictions to consider the potential noise impacts at sensitive receptor locations.

This BESS project will be undertaken for a period of four weeks and will therefore marginally exceed the timeframe which is nominated for a qualitative assessment. Furthermore, due to the proximity of the site to the nearest sensitive receptors, it is considered appropriate that a detailed investigation consistent with the quantitative assessment approach is undertaken for the proposal.

6.2.2. Determination of Project Noise Management Levels

The NMLs are determined based on an emergence of the construction noise impacts above the RBLs defined within the NPfI for the 'recommended standard hours' as shown within Table 15.

Table 15: Hours Nominated within ICNG

Period Designation	Relevant Hours
Recommended Standard Hours	Monday to Friday – 7:00am to 6:00pm Saturday – 8:00am to 1:00pm
Outside Recommended Standard Hours	All Days – 6:00pm to 7:00am Saturday – 1:00pm to 6:00pm Sunday / Public Holidays – All Day

A summary of the methodologies associated with determining the NMLs and the methods of application are included within Table 16 below.

Table 16: Noise impacts at residences using quantitative assessment procedure.

Time of Day	NML L_{Aeq} (15 min)	How to Apply
Recommended standard hours.	Noise affected RBL + 10 dB	The noise affected level represents the point above which there may be some community reaction to noise. ▪ Where the predicted or measured LAeq (15 min) is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. ▪ The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected 75 dB(A)	The highly noise affected level represents the point above which there may be strong community reaction to noise. ▪ Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: 1. Times identified by the community when they are less sensitive to noise (such as before and after school for works near schools, or mid-morning or mid-afternoon for works near residences. 2. If the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside recommended standard hours	Noise affected RBL + 5 dB	▪ A strong justification would typically be required for works outside the recommended standard hours. ▪ The proponent should apply all feasible and reasonable work practices to meet the noise affected level. ▪ Where all feasible and reasonable practices have been applied and noise is more than 5 dB(A) above the noise affected level, the proponent should negotiate with the community.

The NMLs are not mandatory limits, however where construction noise levels are predicted to exceed the NMLs, it is considered appropriate that the proponent implement feasible and reasonable work practices to minimise the potential impacts on noise sensitive receptors.

Guidance in relation to what is considered feasible and reasonable is included in the ICNG and generally relates to practical implementation and ongoing maintenance associated with the proposed treatment.

It also considers whether the overall noise benefits associated with the noise control approach outweigh the overall adverse social, economic, and environmental effects, including the cost of the measure.

When determining the noise management levels for the construction phase of the project, and in the absence of site measured data, WMG has adopted the minimum RBLs which form part of the NPfI.

The adopted NMLs for the project are therefore as shown below in Table 17.

Table 17: Residential Receptor Noise Management Levels for Construction

Descriptor	NPfi Defined Assessment Period		
	Day	Evening	Night
Recommended Standard Hours – Noise Affected	45 L_{Aeq}	N/A	N/A
Recommended Standard Hours – Highly Affected	75 L_{Aeq}	N/A	N/A

Where appropriate, the ICNG also requires consideration of ground borne noise impacts at residential receptors as well as the potential for noise emissions to cause sleep disturbance at residential receptors during the night periods.

Given the distance setback of the closest sensitive receptor to the site and the proposed construction hours which are limited to the day period, potential ground borne noise emissions, and the potential for sleep disturbance has not been considered further.

6.3. Proposed Construction Activities and Noise Assessment

Based on information provided by the client, equipment which will form part of the construction works associated with preparation and commissioning of the subject site will include:

- Excavator.
- Grader.
- Drum roller.
- Water dust suppression truck.
- Truck mounted crane (60 tonne) – lifting and positioning works expected to be completed in 1 day.
- Concrete truck and associated agitator.
- Power hand tools.

In addition to the above, a total of fifteen (15) heavy vehicles will attend the subject site throughout the four week construction program, with fourteen (14) expected within the first two weeks. The heavy vehicles will deliver the battery containers and inverter station. The final truck will likely be for waste collection.

An indicative breakdown of the construction stages during which each type of equipment will be utilised is included below within Table 18.

Table 18: Summary of Construction Activities.

Construction Stage	Equipment and Activity
Access road construction.	▪ Excavator. ▪ 10t smooth drum roller. ▪ Grader for gravel road construction. ▪ Water trucks for dust suppression.
Drainage and fencing works.	▪ Excavator for landscaping. ▪ Water trucks for dust suppression. ▪ Concrete truck and associated agitator for fence construction. ▪ Private vehicles.
Installation of concrete footings	▪ Concrete truck and associated agitator. ▪ Private vehicles.
Delivery of battery shipping containers and inverter station unit.	▪ Semi-trucks for good deliveries. ▪ Crane truck to move containers and place in position. ▪ Private vehicles.
Cable installation	▪ Excavator for cable trenching. ▪ Water trucks for dust suppression. ▪ Powered hand tools for connection. ▪ Private vehicles.
Electrical installation, cable termination and electrical testing.	▪ Powered hand tools for connection. ▪ Private vehicles.
Commissioning and demobilisation	▪ Private vehicles. ▪ Waste truck.

Private vehicles, although relevant, will have source sound power levels significantly lower than other potential noise sources forming part of the proposed construction activities and will not contribute to the calculated value at the sensitive receptors. In consideration of the above, WMG has not considered noise associated with private vehicles further within the construction noise assessment.

Transient sources such as trucks may travel within the site boundaries, however, for the purposes of this assessment, WMG has considered that the construction activities will generally occur where the electrical infrastructure will be located.

The exception to this will be that trucks will need to travel along the access road to enter the site, and hence will be in closer proximity to R01 at various times throughout the construction period. Furthermore, specific road preparation and construction works will also need to occur in proximity to R01, and hence have been considered at this location as part of the assessment.

When addressing source noise levels associated with the construction activities, WMG has considered the following:

- Maximum noise levels from plant and equipment nominated within Appendix C of the Construction Noise and Vibration Strategy document issued by Transport for NSW 2019.
- Noise level data provided by the manufacturer/equipment suppliers.
- Noise level data obtained by WMG as part of previous independent investigations.

Based on the above, and with input from the client, the equipment types and adopted sound power levels are included within Table 19 below.

Table 19: Summary of Equipment and Associated Sound Power Levels

Construction Stage	Equipment Type	No. of Units	Adopted Sound Power Level	Operating Time in 15min period	Adopted L_{WA} per Stage
Access road construction.	Excavator	1	95 dB(A)	100 %	111 dB(A)
	Roller	1	107 dB(A)	50 %	
	Grader	1	113 dB(A)	50 %	
	Water Cart	1	102 dB(A)	50 %	
Drainage and fencing works.	Excavator	1	95 dB(A)	100 %	111 dB(A)
	Water Cart	1	102 dB(A)	50 %	
	Concrete Truck	1	104 dB(A)	25 %	
	Concrete pouring	1	110 dB(A)	100 %	
Concrete footings install	Concrete Truck	1	104 dB(A)	25 %	110 dB(A)
	Concrete pouring	1	110 dB(A)	100 %	
Delivery of battery shipping containers and inverter station unit	Truck movements	1	101 dB(A)	25 %	102 dB(A)
	Crane truck	1	104 dB(A)	50 %	
Cable installation.	Excavator	1	95 dB(A)	100 %	102 dB(A)
	Water Cart	1	102 dB(A)	50 %	
	Hand Tools	3	96 dB(A)	50 %	
Electrical installation, cable termination and electrical testing	Hand Tools	3	96 dB(A)	50 %	98 dB(A)
Commissioning and demobilisation.	Waste Truck	1	101 dB(A)	50 %	98 dB(A)

The client has advised that each phase of the construction program will be undertaken progressively which will result in cumulative noise levels during each stage rather than due to multiple construction stages.

Using the adopted sound power levels and usage rates described in Table 19, the calculated resultant noise levels at the critical receptors are summarised within Table 20 below.

Table 20: Predicted Construction Noise Levels

Construction Phase	Predicted Noise Levels $L_{Aeq\ (15\ minute)}$								Predicted Noise Levels relative to Derived NMLs $L_{Aeq\ (15\ minute)}$							
	R1	R2	R3	R4	R5	R6	R7	R8	R1	R2	R3	R4	R5	R6	R7	R8
Access road construction.	59	49	49	42	45	42	40	43	45	45	45	45	45	45	45	45
Drainage and fencing works.	53	44	49	48	46	39	40	46	45	45	45	45	45	45	45	45
Concrete footings install	52	44	48	47	45	38	39	45	45	45	45	45	45	45	45	45
Battery containers and inverter station unit delivery and placement	45	37	40	39	37	30	32	37	45	45	45	45	45	45	45	45
Cable installation.	45	37	40	39	37	30	32	37	45	45	45	45	45	45	45	45
Electrical installation, cable termination and electrical testing	40	31	36	35	33	26	28	34	45	45	45	45	45	45	45	45
Commissioning and demobilisation.	40	31	36	35	33	26	27	34	45	45	45	45	45	45	45	45

The results of the noise model indicate that during the initial stages of the construction program, noise emissions associated with the construction of the access road, concrete truck use, and more particularly, the concrete pouring process have the potential to be higher than the 'Noise Affected' NMLs during the recommended standard hours.

The calculated values will continue to be well below the 'highly affected' NML of 75 dB(A).

Given the calculated NML exceedances, construction noise mitigation strategies have been included in Section 6.4.

It must be noted that the R01 receptor who is predicted to receive exposure to the higher levels of construction noise, is associated with the proposal, and hence has open communication with the client regarding the proposed works and construction methodology.

In consideration of the above, it is expected that this receptor will be more tolerant of the potential construction noise impacts that other nearby receptors.

6.4. Construction Noise Mitigation and Management

The NSW ICNG requires that noise emissions associated with construction are assessed against NMLs.

The NMLs are not mandatory noise limits, however where construction activity noise levels are predicted to exceed the NMLs, it is considered appropriate that the proponent implement feasible and reasonable work practices to minimise the potential impacts on noise sensitive receptors.

Guidance regarding minimisation of disturbance due to construction is included within *AS2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites'* as well as the ICNG and includes the reference to the following:

- Implementation of universal work practices relating to minimising noise.
- Selection of low noise plant and equipment.
- Consultation and transparency with the surrounding community.

In addition, due to the calculated exceedances of NMLs at the R01, R03 and R04 receptors, specific noise control for some activities should be considered by the client.

6.4.1. General Work Practices

Universal work practices which should form part of a construction management plan will include:

- Regular enforcement (ie toolbox talks) of the need to minimise noise and vibration. This will include educating heavy vehicle drivers regarding expectations of their vehicle use (eg. avoid engine brakes, sudden acceleration, minimising reversing etc).
- Regular identification of noisy activities and adoption of improvement techniques.
- Avoiding the use of portable radios, public address systems or other methods of site communication that may unnecessarily impact upon nearby residents.
- Developing routes for the delivery of materials and parking of vehicles to minimise noise.
- Where possible avoiding the use of equipment that generates impulsive noise.
- Minimising the need for vehicles reversing at the site and within proximity of receptors.
- Use of broadband audible alarms on vehicles and elevating work platforms used on site.
- Minimising the movement of materials and plant and unnecessary metal-on-metal contact.
- Minimising truck movements.
- Scheduling respite periods (eg. noisy periods limited to 3 hours).
- Prioritise ensuring that construction works, and heavy vehicle movements occur during standard work hours between 7am and 6pm Monday to Friday, and 7am to 1pm Saturday.

6.4.2. Plant and Equipment

General work practices which will minimise the potential for noise emissions to cause disturbance at sensitive receptors will include:

- Where possible, implementing quieter techniques for high noise activities.
- Choosing quieter mobile and fixed equipment based on the site requirements.
- Operating equipment in the quietest and most efficient manner.
- Regular inspection and maintenance of equipment to ensure it is in good working order.

6.4.3. Community Relations

Communication and transparency with the surrounding community will be critical in minimising the potential for adverse impacts on the acoustic amenity at sensitive receptors. In order to orchestrate the above, it is advised that the client implement the following:

- Appoint a relevant community relations manager prior to project commencement.
- The manager must approach and communicate with sensitive receptors information regarding the project timeline, construction methodologies, potentially noisy periods.
- Maintain contact with receptors throughout duration of project to ensure that they are up to date on when certain events will commence and finish.
- Provide a construction noise management plan to the sensitive receptors which includes site contact information for residents to call regarding complaints and other queries.

Where complaints are received, they must be recorded on a centralised system and handled in a prompt and responsive manner. This may involve noise monitoring or a review or processes.

6.4.4. Specific Construction Activity Noise Control

6.4.4.1. Concrete Truck Pouring

The noise emission assessment has identified the potential for exceedances of NMLs at the critical R01, R03, R04 and R08 receptors due to the concrete pouring works which will occur during fencing and concrete footing installation.

Predicted values at all other identified receptor locations will be < 45 L_{Aeq} during the described works which is below the NML for the recommended standard hours at these locations.

Due to the calculated exceedances, it would be recommended that the client engage in consultation with the receptors and ensure that they are aware of the works proposed and the duration of the works.

It would be expected that the main source of noise associated with the pouring activity will be the truck engine revs, therefore the contractor should minimise this where possible to minimise noise emissions.

Furthermore, in accordance with information provided in AS2436-2010, where feasible, the contractor should:

- Locate static mixing activities as far as possible from sensitive receptors.
- Ensure that workers do not hammer the drum as part of cleaning.
- Fit more efficient silencers to diesel or petrol engines.

6.4.4.2. Reversing and Warning Alarms

Community concerns in relation to construction noise have often resulted from the use of tonal reversing beepers associated with mobile equipment at construction sites. In consideration of the above, WMG provide the following recommendations:

- Equipment which is based at site should be fitted with ‘new generation’ broadband reverse alarms which vary their noise output according to the ambient noise level in the surrounding environment.
- Encourage operators of commercial vehicles making deliveries / collection at site to replace any tonal revering beepers with the described ‘new generation’ broadband reverse alarms.
- Configure the site to minimise the requirement for non-site based vehicles to reverse.

Where possible, non-audible warning systems (eg. flashing lights, reversing cameras) should be used to reduce noise and must be approved by relevant safety authorities.

7. Vibration Assessment

The project construction and operational phase will not include any vibration intense activities such as piling and ramming and hence, have not been considered further.

8. Road Traffic Noise Assessment

During the operational phase of the BESS project, it is understood that there will be no permanent staff based at the site, and therefore no regular traffic movements.

Site inspections and maintenance works will be undertaken intermittently as required.

Given the infrequency of the operational vehicle movements, noise impacts during these times will be negligible and are not expected to impact adversely on the acoustic environment at sensitive receptors.

The focus of any vehicle movements will therefore be based on the project construction phase during which there will be weekly vehicle movements. It is understood that during this phase, vehicles will access the site via the internal access road from Turton Place.

When addressing the potential noise impacts associated with vehicle movements along public roads, commonly adopted criterion is provided within the NSW Department of Environment Climate Change and Water (DECCW) Road Noise Policy, March 2011.

The Policy includes assessment criteria to consider the potential noise impacts at residences affected by traffic on existing roadways generated by land use developments as shown in Table 21.

Table 21: Road Traffic Noise Assessment Criteria for Residential Land Uses

Road Category	Type of Project / Land Use	Assessment Criteria L_{Aeq}	
		Day (7am to 10pm)	Night (10pm to 7am)
Freeway	Existing residences affected by additional traffic on described roadway generated by land use developments	60 (15 HOUR)	55 (9 HOUR)
Local Roads	Existing residences affected by additional traffic on described roadway generated by land use developments	55 (1 HOUR)	50 (1 HOUR)

Based on guidance provided by the client, it is understood that the following light and heavy vehicle movements will form part of the four week project construction program:

- **Week 1** – two light vehicles accessing the site per day, and a total of two heavy vehicles accessing the site across the week period. No more than one heavy vehicle in a one hour period.
- **Week 2** – three light vehicles accessing the site per day, and a total of twelve heavy vehicles accessing the site across the week period. No more than one heavy vehicle in a one hour period.
- **Week 3** – three light vehicles accessing the site per day, and no heavy vehicles.
- **Week 4** – two light vehicles accessing the site per day, and a total of one heavy vehicle accessing the site across the week period.

The heavy vehicles will be delivering materials to the site including the new battery storage containers and the MVPS containers. Light vehicles will be associated with construction staff and their personal vehicles.

Based on a review of aerial photography of the surrounding area, it is understood that dwellings will be setback from access roads which may carry site vehicles by 40-50m.

Based on calculations, the proposed construction program traffic movements will be below the assessment criteria values nominated in Table 20 above.

9. Conclusion

WMG has undertaken an acoustic assessment to address potential operational and construction noise and vibration impacts associated with the BESS facility proposed at the site described as 3 Turton Place, Murrumbateman, New South Wales.

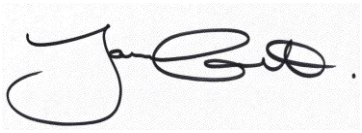
Assessment of noise emissions from the proposed site operations, and construction activities have been based on the methodologies described within the following documentation:

- NSW EPA Noise Policy for Industry.
- NSW Interim Construction Noise Guideline 2009.
- Department of Environment and Conservation's 'Assessing Vibration: a technical guideline'.
- NSW Department of Environment Climate Change and Water Road Noise Policy 2011.

The findings of the assessment have concluded that noise control, including the construction of a 3.0m acoustic barrier will be required to reduce operational noise emissions from the subject site to comply with the adopted project trigger levels at sensitive receptors.

When addressing general construction noise and vibration as well as road traffic noise, the findings of the assessment concluded the following:

- Noise due to construction vehicle movements is predicted to be below noise level criteria nominated within the Road Noise Policy.
- Noise emissions due to some construction activities have been predicted to exceed NMLs at receptors. In these instances, WMG has provided suitable noise mitigation strategies to minimise the potential for adverse impacts on the relevant sensitive receptors.
- The project construction and operational phase will not include any vibration intense activities such as piling and ramming and hence, have not been considered further.



JORDAN GROWCOTT
WATSON MOSS GROWCOTT
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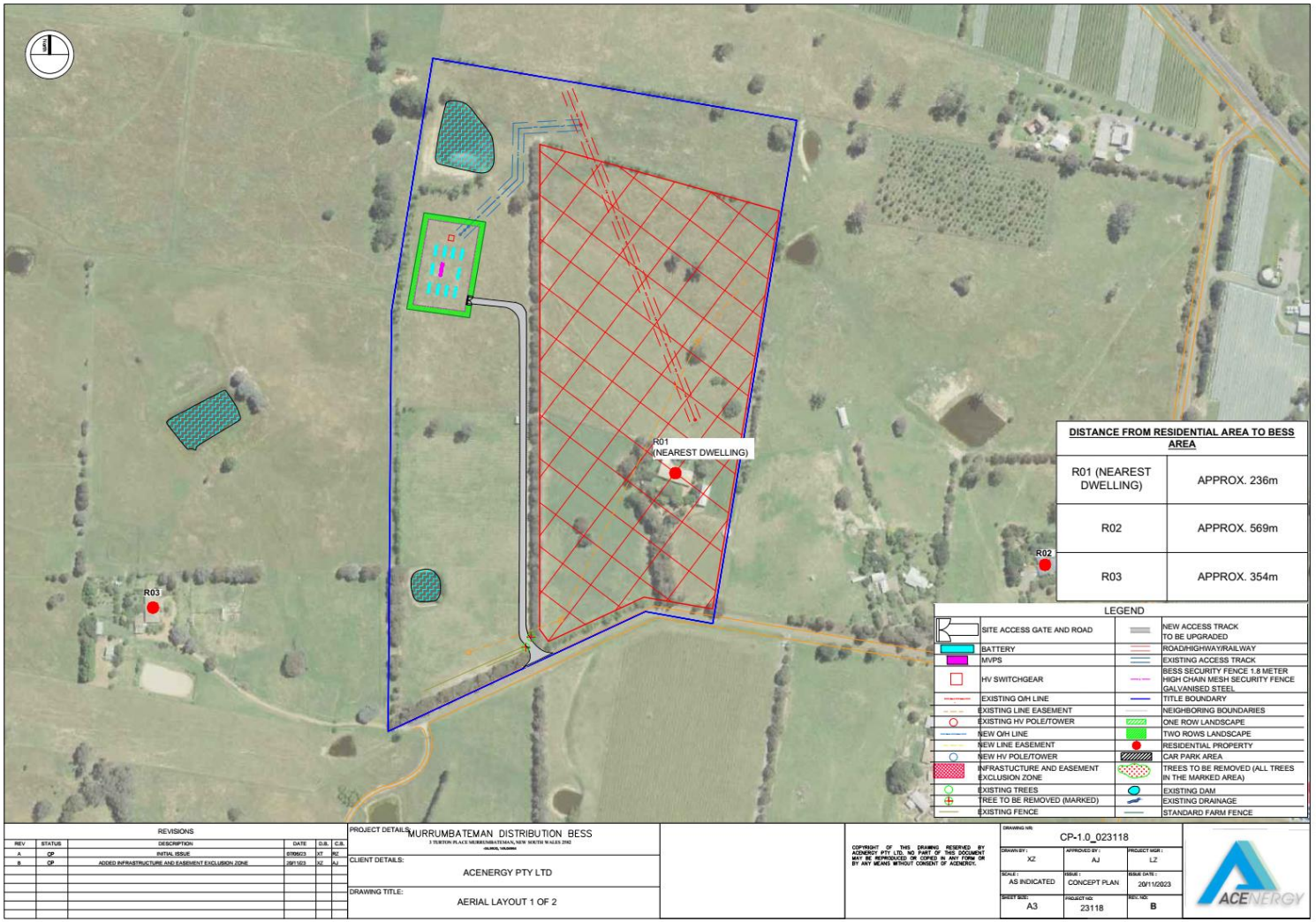
Appendix 1 – Aerial Site Plan Layout



REF: 6559BF

Date: 17/4/25

BUSH FIRE MANAGEMENT & EMERGENCY RESPONSE PLAN

BATTERY ENERGY STORAGE SYSTEM

LOT 23 DP 248413

3 TURTON PLACE

MURRUMBATEMAN

LGA: Yass Valley

Client: ACEnergy Pty Ltd

HARRIS ENVIRONMENTAL CONSULTING
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Version Control

Date Created				
Version Number	Name	Issue Detail	Date Modified	Status
1.0	LJ & KH	DRAFT BFMERP	9/4/24	LJ & KH
1.0	LJ & KH	FINAL BFMERP	16/5/24	LJ & KH
1.1	LJ & KH	FINAL BFMERP	16/5/24	LJ & KH
1.2	LJ & KH	FINAL BFMERP	7/3/25	LJ & KH
1.3	CRH 7 LJ	Updated Plans	17/4/25	LJ & KH

ASSESSOR & QUALIFICATIONS

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DISCLAIMER

The recommendations provided in the summary of this report are a result of the analysis of the proposal in relation to the requirements of Planning for Bushfire Protection 2019. Utmost care has been taken in the preparation of this report; however, there is no guarantee of human error. The intention of this report is to address the submission requirements for Development Applications on bushfire prone land. There is no implied assurance or guarantee the summary conditions will be accepted in the final consent, and there is no way Harris Environmental Consulting is liable for any financial losses incurred should the recommendations in this report not be accepted in the final conditions of consent. This bushfire assessment provides a risk assessment of the bushfire hazard as outlined in the PBP 2019 and AS3959 2018. It does not provide protection against any damages or losses resulting from a bushfire event.

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1 INTRODUCTION

ACEnergy Pty Ltd engaged Harris Environmental Consulting to prepare a Desktop Bush Fire Management and Emergency Response Plan (the plan) for the proposed Battery Energy Storage System (BESS) development at 3 Turton Place, Murrumbateman.

The subject site is classified Bush Fire Prone Land (BFPL) under the Yass Valley BFPL Map.

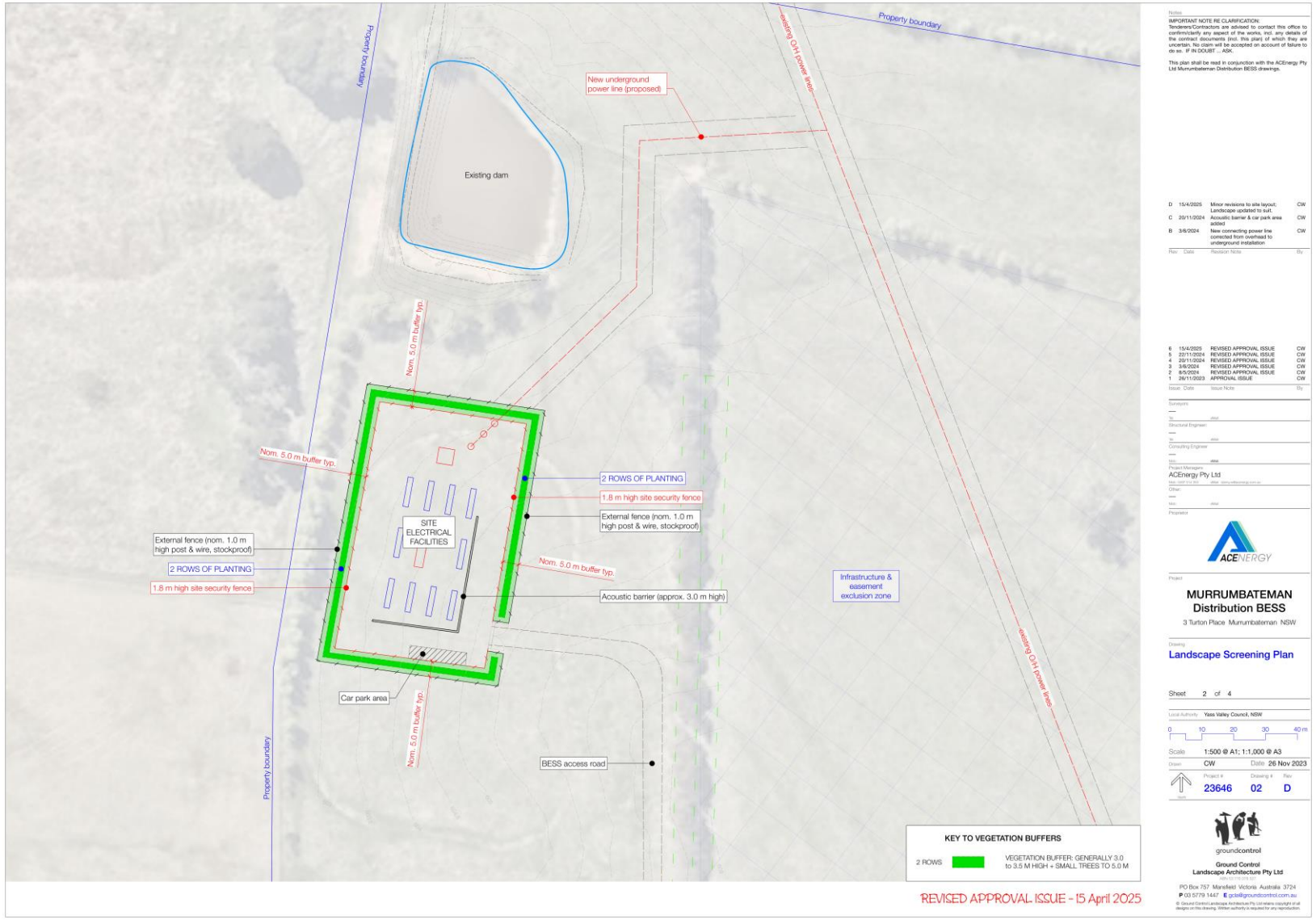
The plan has been prepared per the requirements of *Planning for Bush Fire Protection 2019* (PBP), the NSW Rural Fire Service (RFS) document: *A guide to developing a bush fire emergency management and evacuation plan,* and Australian Standard AS 3745:2010 *Planning for emergencies in facilities.*

The purpose of the plan is to evaluate the bushfire risk profile of the site and identify a package of bushfire management measures and emergency response actions that can be taken to protect human life and minimise impacts on assets from the threat of a bush fire.

2 FACILITY DETAILS

The proposed development will involve the construction and operation of a Battery Energy Storage System on the northwestern corner of the subject site. The proposed development includes 10 batteries, one MVPS and associated facilities within a 0.5 ha fenaced site with proposed internal property access from Turton Place on the south.

Figure 1 - Proposed Development



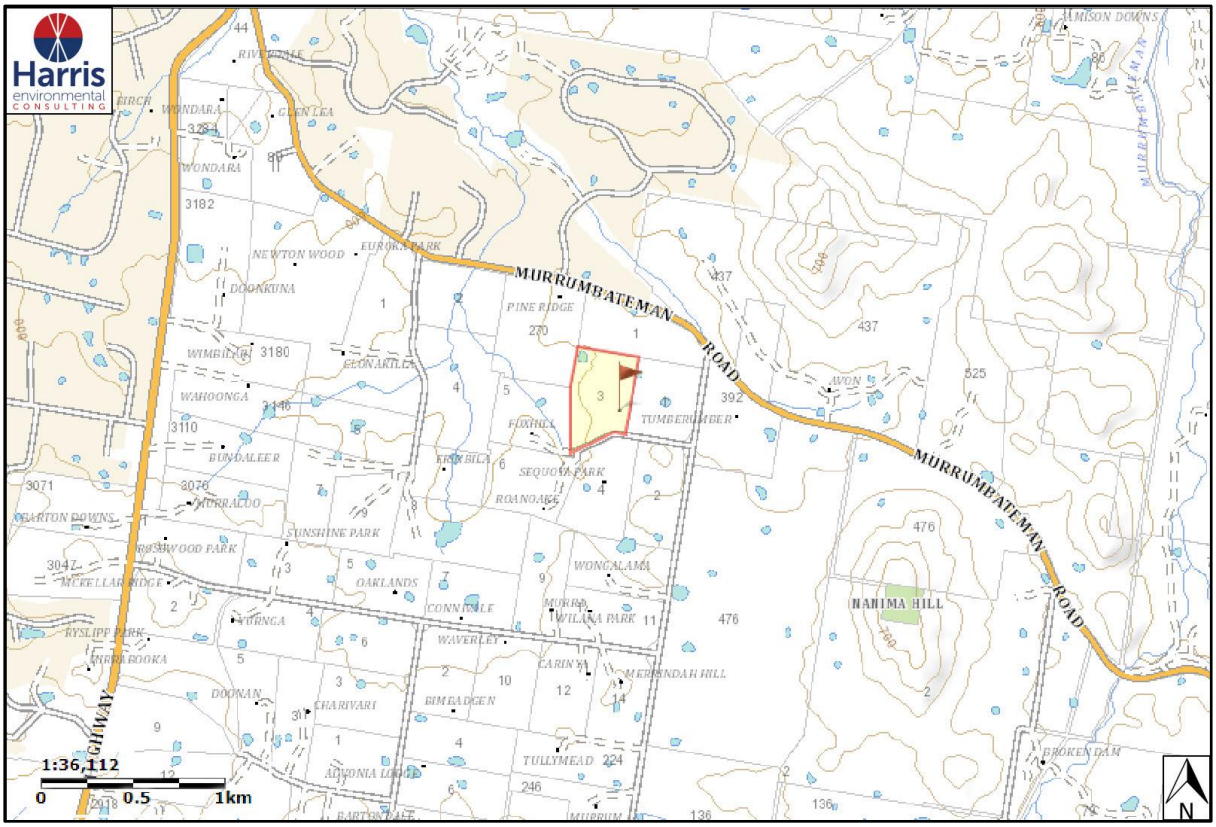
3 SITE DESCRIPTION

The site is located 7km east of the main township of Murrumbateman in the Southern Tablelands of NSW and 40 km north of Canberra (ACT).

The legal title of the property is Lot 23 in DP 248413, 3 Turton Place, Murrumbateman NSW 2582.

The site is located within the Yass Valley Local Government Area (LGA) and is zoned RU4 - Primary Production Small Lots under the *Yass Valley Local Environmental Plan 2013.*

Figure 2 - Site Location



4 LANDSCAPE BUSHFIRE RISK PROFILE

4.1 Southern Tablelands

The site is located in the Southern Tablelands of NSW. The Southern Tablelands Bush Fire Management Committee (BFMC) coordinates all bushfire risk management.

The BFMC area covers roughly 1,455,100ha of land from the lower Blue Mountains and Wyangla Dam in the north, Burrinjuck Dam in the south-west to the Shoalhaven River in the east and borders onto the north east of the Australian Capital Territory.

The BFMC area generally experiences temperate to cool climate with warm to hot summers and cool winters. The average annual rainfall across the region is 800-1000mm which occurs during winter and spring, with minimal rainfall in the summer months. The fire season typically commences in October and continues in late March/April.

The BFMC area has an average of 265 bushfires per year, 5 of which are considered major fires. Yass Valley has a history of major fires occurring in a cycle of 2.5 years.

The majority of bushfires in the BFMC area are from lightning strikes associated with spring and summer storm activity as well as burns escaping from legal and illegal burns and use of farm machinery.

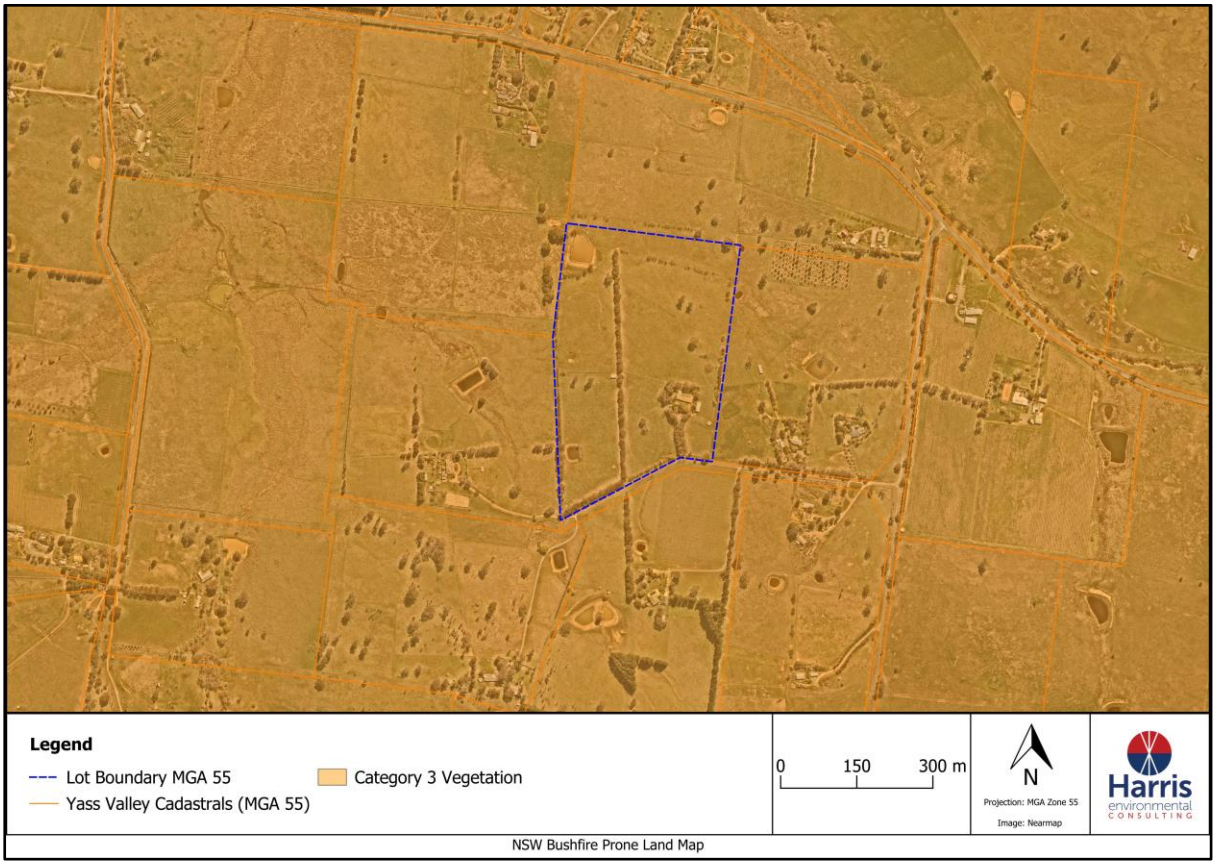
4.2 Bushfire Hazard Assessment

The site contains and is surrounded by rural residential land, vineyards and agricultural farming.

Yass Valley Council maps the BFPL within and surrounding the subject site as Category 3 bushfire-prone vegetation.

Vegetation Category 3 is considered to be medium bushfire-risk vegetation. It is higher in bushfire risk than Category 2 (and the excluded areas) but lower than Category 1. It is represented as dark orange on a BFPL map and consists of Grasslands, freshwater wetlands, semi-arid woodlands, alpine complexes, and arid shrublands.

Figure 3 – Bushfire Prone Land Map



4.2.1 Classified Vegetation

The majority of the land surrounding the development is not classified on the State Vegetation Type Map, with only minimal remnant trees mapped as 'Southern Tableland Grassy Woodland' (NSW DPIE, 2022). This vegetation has <5% tree cover and has been classified as Grassland in accordance with PBP 2019.

The proposed Landscaping (Appendix IV) is located wholly outside the 1.8 m high security fence.

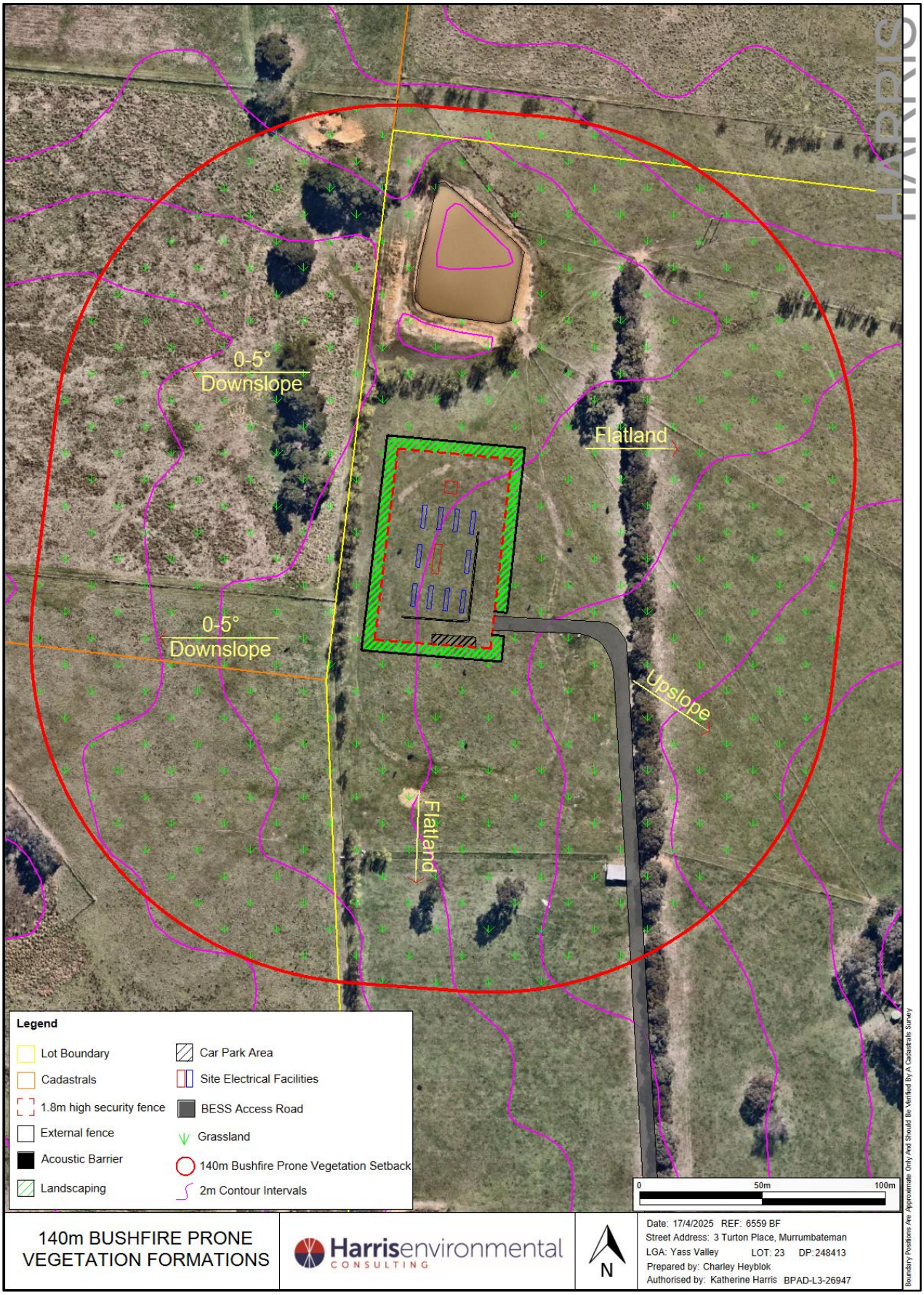
4.2.2 Effective Slope

Australian Standard AS3959-2018 *Construction of buildings in bushfire-prone areas* and PBP 2019 identify that the slope of the land under the classified vegetation is much more important than the slope between the proposed development and the edge of the classified vegetation.

The effective slopes influencing bushfire behaviour towards the proposed development were assessed using elevation data from Spatial Services NSW, April 2023.

The development area is located on a gentle slope that falls west. Slopes to the west are considered 0-5 degrees downslope, with land in all other directions considered flatland/upslope.

Figure 4 – Classified vegetation and effective slopes influencing bushfire behaviour



4.2.3 Potential Bush Fire Behaviour

Based on the desktop assessment of land use, classified vegetation and effective slopes within 140 metres of the subject site, the predominate risk to the proposed development is likely to be from grassland fires impacting the site or spreading from the site.

The bushfire risk posed by a grassland hazard differs from fires in other vegetation communities. Fires burning through a grassland hazard generally spread rapidly at higher intensities and have shorter residence time. Ember production is limited, smaller and fewer in number than those produced from forest fires but can still propagate spot fires ahead of the main fire front.

5 BUSHFIRE RISK ANALYSIS

The bushfire risk to people, property, and the environment has been assessed in relation to the likelihood and consequence per the Australian Standard AS ISO 310000 *Risk Management Guidelines*.

The plan identifies assets within the site, protection measures and management zones.

5.1 Asset Identification

Assets are defined as anything valued by the community, which includes agricultural land, forests, livestock, heritage buildings and places, infrastructure, the environment, commercial and industrial buildings and equipment that may be at risk from bushfires.

Assets within the site have been divided into four asset types.

5.1.1 Human Settlements:

- Residential areas, including urban bushland interface areas and rural properties, and
- Other human settlement areas, including commercial and industrial areas.

5.1.2 Economic:

- Built assets within the subject site, e.g. the battery energy storage systems, MVPS, compound, access roads, landscaping and all associated facilities
- Commercial operation of the facility.

5.1.3 Environmental:

- Threatened species, populations and ecological communities within the site; and
- Locally important species and ecological communities that are susceptible to fire.

5.2 Risk Register and Risk Management Matrix

Refer to Appendix I.

6 BUSHFIRE MANAGEMENT AND PROTECTION MEASURES

The Bushfire Management Plan has been prepared in accordance with the NSW Rural Fire Service *Model Bushfire Risk Management Plan*. The plan identifies a package of bushfire management and protection measures that can be taken to protect life and minimise impacts on assets from bushfires.

6.1 Asset Protection Zones

The intent of an Asset Protection Zone (APZ) is to minimise the risk of bushfire attacks and maintain reduced fuel loads to ensure radiant heat levels at buildings and assets are below critical limits. The APZ provides a safe operational environment for emergency service personnel undertaking operations.

Assets are defined as anything valued by the community, which includes agricultural land, forests, livestock, heritage buildings and places, infrastructure, the environment, commercial and industrial buildings and equipment that may be at risk from bushfires.

The APZ is located wholly in grassland, with no trees within the development footprint. This grass that should be kept mown (<100mm in height). A 11-14-metre-wide APZ around the electrical facilities provides a defendable space and safe operational access to all assets and infrastructure. This APZ is located within surrounding security fence.

The proposed Landscaping (Appendix IV) is located wholly outside the proposed APZ area.

6.2 Bushfire Management Zones

Bushfire Management Zones have been assessed in consideration of the Southern Tablelands BFRMP. Management zones are based on the overall and long term management of the site in consideration of bushfire impacting the site as well as protection of the surrounding landscape from a fire escaping the site.

The Precinct map for west of Murrumbateman is shown in Appendix II and shows no Strategic Fire Advantage Zone or Land Management Zones within the surrounding area. An APZ has been identified within the site based on the bushfire risk profile and risk analysis detailed in section 4.3. The APZ is illustrated in Figure 5 and detailed in Table 1.

Based on the layout of the facility this assessment also recommends a fuel free zone directly surrounding the MVPS, batteries and HV switchgear for the purposes of minimising the likelihood of fires within the site and reducing their potential severity or extent.

Figure 5 - Land Management Zones

Table 1: Bushfire management zones.

Fuel Free Zone	
Description	A fuel-free area under and surrounding critical assets.
Purpose	The primary purpose of a fuel-free area is to prevent the spread of fire and inhibit fire propagation from spot fires.
Location	Immediately adjacent critical assets at risk of bushfire. 1-5m
Tactics	• Gravel or concrete. • Herbicide application.
Management Intensity	Managed at a high intensity to minimise available fuel loads.
Asset Protection Zones(APZ):	
Description	A fuel-reduced area surrounding an asset that creates a buffer from the bushfire-prone vegetation and provides a defendable space for firefighting operations.
Physical Description	**Trees:** • tree canopy cover should be less than 15% at maturity; • trees at maturity should not touch or overhang the building; • lower limbs should be removed up to a height of 2m above the ground; tree canopies should be separated by 2 to 5m; and • preference should be given to smooth barked and evergreen trees. **Shrubs:** • shrubs create large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided; • shrubs should not be located under trees; • shrubs should not form more than 10% ground cover; and • clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation. **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.
Purpose	The primary purpose of an APZ is to protect human life (including residents, community members and firefighters), property and highly valued public assets (such as human settlement, economic, environmental and cultural items) from the direct impacts of bushfires.
Location	APZs are generally implemented within the development site and immediately adjacent assets at risk of bushfire to provide separation from bushfire-prone vegetation.
Tactics	• Slashing and mowing. • Herbicide application. • Grazing. • Implement frequent prescribed burning. • Carry out selective hand clearing.

	• Grassland within the APZ should be kept mown (as a guide, grass should be kept to no more than 100mm in height). • The APZ should be established before the commencement of works and maintained for the life of the development.
Management Intensity	Vegetation within the APZ is managed at a high intensity to minimise available fuel loads. As a minimum, APZs are to be treated as required to maintain the specifications of the APZ. APZs should be audited bi-annually

6.3 Construction Standards

To ensure the proposed development is afforded a suitable package of bushfire protection measures, all critical assets should be constructed from non-combustible materials designed to mitigate the risk of flame damage, ember attack and radiant heat. The APZ within the fenced site can achieve a BAL 40 setback, based on the remoteness of the development, the external services should be shielded or designed to withstand 40kWm2 of radiant heat (BAL 40). Where applicable, all critical assets should include ember protection.

Ember protection can be achieved by enclosing all openings or covering openings with a non-corrosive metal screen mesh with a maximum aperture of 2mm. This includes subfloor areas, open windows, vents, weep holes and eaves. External doors should be fitted with draft excluders.

6.4 Safe Operational Access

The subject site has direct access to Turton Place to the south. The site access gate is located on Turton Place. The access is approximately 390 m in length to the 8 m wide access gate.

Based on the length of the internal access road within the property it is recommended the access comply with the PBP- Property Access Table 7.4a. This includes:

- A minimum carriageway width of four metres;
- provide enough turning room for a fire tanker that requires an inner minimum turning radius of 6 m and outer minimum radius of 12 m;
- Curves a minimum inner radius of six metres;
- The minimum distance between inner and outer curves is six metres;
- The cross fall is not more than 10 degrees;
- Maximum grades for sealed roads do not exceed 15 degrees (28 per cent) and not more than 10 degrees (18 percent) for unsealed roads; and
- There is suitable access for a Category 1 fire appliance to within 4m of the static water supply.

6.5 Provision of Services

The proposed development will not be connected to reticulated water. A minimum of 20,000L of static water should be located within the development site to ensure adequate water is provided to protect assets during and after the passage of a bushfire.

Above-ground tanks must be manufactured of concrete or metal and raised tanks have protected stands. A suitable connection for firefighting purposes, such as a 65mm Storz outlet and a gate or ball valve, should be provided where required.

All above-ground electrical transmission lines should be managed under specifications issued by the managing authority.

6.6 Site Management

All land management must be undertaken according to license conditions and legislation, whether inside or outside the site.

Under the *Rural Fires Act 1997*, the RFS can direct landholders to undertake hazard reduction activities on their property.

6.7 Total Fire Bans

During the construction and operation phase of the facility, the safe work procedures and restrictions associated with a total fire ban, as outlined by the NSW RFS, should be followed. A total fire ban means no fires out in the open. A total fire ban helps limit the potential for fires to develop.

During a total fire ban, you cannot light, maintain or use a fire in the open or carry out any activity in the open that causes or is likely to cause a fire.

Call the local NSW RFS Fire Control Centre or local Council for further advice.

6.8 Fire Safety

Based on the nature of the development, there is potential for fires to initiate from the components within the site.

The proposed development includes hardware for the purposes of fire safety. Each battery container is built with fire suppression system and have multiple built-in fire protection devices that work collaboratively, including flammable gas, smoke and thermal sensors, pressure relief system and aerosol fire extinguishing system. Therefore, a container will automatically suppress an internal fire in the first instance.

The battery type is a lithium-Ion phosphate (LFB) which are considered to be one of the safest battery chemistries within the industry. LFP does not contain heavy metals. Battery cell and BESS containers provide double layers. LFP does not include any oil colling but has anti-leaking connectors within the self-contained design. The development includes a surrounding fence, gate and landscaped area for security purposes limiting trespassing.

7. EMERGENCY RESPONSE

7.1 Emergency Planning Committee

This section outlines standard requirements and protocols developed based on similar projects. Detailed protocol and measures are subject to reasonable changes and confirmed by the appointed EPC contractor.

The persons responsible for managing the site should form an Emergency Planning Committee (EPC). The EPC shall consist of at least two people.

The EPC is responsible for implementing and maintaining the emergency plan, emergency response procedures, and related training. The duties of the EPC include the following:

- Ensuring that resources are provided to enable the development and implementation of the emergency plan;
- Ensuring that the emergency plan is readily identifiable and available to the appropriate persons;
- Ensuring those with control of emergencies operate per the emergency plan, that this person/persons are current and readily available, and continue to operate at all times;
- Authorise and implement the emergency plan. The following shall apply to the implementation:
    - awareness of the emergency response procedures,
    - training,
    - testing emergency procedures, and
    - reviewing emergency procedures;
- Ensuring the emergency procedures remain viable and effective by testing and reviewing policies as required;
- Establishing strategies to ensure all onsite personnel are made aware of emergency response procedures;
- Ensuring a permanent record of events for emergencies is compiled and retained;
- Identifying opportunities for improvement in the emergency plan;
- Obtain professional advice on the level of indemnity provided to EPC members and be aware of the level of the indemnity supplied; and
- Shall meet before the inception of the Plan and as required to ensure the Plan is relevant and up to date.

7.2 Emergency Control Organisation

The Emergency Control Organisation (ECO) is responsible for organising and supervising the safe movement of onsite personnel in an emergency. During emergencies, instructions given by the ECO personnel shall take precedence over the normal management structure.

This Plan documents the pre-emergency, emergency and post-emergency duties and responsibilities during a bushfire emergency.

The following roles are recommended to the appropriate staff: Chief Warden, Deputy Chief Warden, Communications Officer, Building Wardens, Safety Officers, and First Aid Officers. A Chief Warden is required as a minimum.

Selection criteria for ECO personnel:

- Be capable of performing their duties;
- Have leadership qualities and the ability to command authority;
- Display practical decision-making skills;
- Demonstrate the capability to remain calm under pressure;
- Be available onsite to undertake their appointed duties
- Possess practical communication skills; and
- Be able to undertake relevant training.

7.3 Roles and Responsibilities

Construction Stage

Chief Warden	
Position:	
Contact Details:	
The Chief Fire Warden shall be identifiable by wearing white (white helmet, cap, hat or vest) with the words "Chief Fire Warden" prominently displayed.	

Deputy Warden	
Position:	
Contact Details:	
The Deputy Warden shall be identifiable by wearing white (white helmet, cap, hat or vest) with the words "Deputy Warden" prominently displayed.	

Operational & Maintenance Stage

For the Operational Stage, emergency personnel's roles and responsibilities and fire emergency protocol are to be in accordance with Appendix I.

Chief Warden/ HSE Manager	
Position:	
Contact Details:	
The Chief Fire Warden shall be identifiable and if applicable, by wearing white (white helmet, cap, hat or vest) with the words "Chief Fire Warden" prominently displayed.	

Deputy Warden/ O&M Manager	
Position:	
Contact Details:	
The Deputy Warden shall be identifiable and if applicable, by wearing white (white helmet, cap, hat or vest) with the words "Deputy Warden" prominently displayed.	

7.3.1 Pre-emergency Task

Chief Warden

- Maintain a current register of ECO members;
- Replace ECO members when a position becomes vacant;
- Conduct regular exercises;
- Ensure the emergency response procedures are kept up to date;
- Attend meetings of the EPC as appropriate;
- Attend training and emergency exercises as required by EPC; and
- Ensure personal ECO identification is available.

Deputy Warden

- Ensure personal proficiency in the operation of communication equipment;
- Maintained records and logbooks and make them available for emergency response;
- Ensure that ECO members are proficient in the use of the communication equipment;
- Ensure that emergency communication contact details are up to date;
- Attend training and emergency exercises as required by EPC;
- Confirm sufficient wardens for the area of responsibility;
- Coordinate the completion of Personal Emergency Evacuation Plans (PEEP) documentation;
- Report on the deficiencies of the emergency equipment;
- Ensure that wardens have communicated the emergency response procedures to all occupants within their nominated areas;
- Ensure that occupants are aware of the identity of their wardens;
- Coordinate safety practices by wardens throughout their area of responsibility;
- Ensure that all occupants are aware of the emergency response procedures; and
- Carry our safety practices (e.g. Clear access to emergency equipment).

7.3.2 Emergency Task

Refer to the Bushfire Emergency Response Plan for actions.

7.3.3 Post-Emergency Task

Chief Warden:

- When the emergency incident is rendered safe, or the Emergency Service returns control, notify the ECO members to have occupants return to the site, as appropriate;
- Organise a debrief with ECO members and, where applicable, with any attending Emergency Service; and
- Compile a report for the EPC and management.

Deputy Warden:

- Records events and actions during the emergency for debriefing;
- Clean and service used specialised equipment; and
- Replace specialised equipment when necessary.

7.4 Evacuation Considerations

To the north a Neighbourhood Safer Place have been identified if the site is occupied during a bushfire event and local emergency services have issued evacuation orders.

- North West (5.4 kms) – Open Space –- Murrumbateman Recreation Grounds– 19 East Street, Murrumbateman NSW.

No Neighbour Safer Places exist south towards the Australian Capital Territory, however this assessment has identified an area to the south to evacuate towards. It should be noted emergency services are likely to provide an area to the south if evacuation is to occur in this direction.

- South (29 kms) – Playing Fields –- Perce Douglas Memorial Playing Fields, Nicholls ACT 2913.

As illustrated in Figure 6, the entire road network associated with access and egress from the site traverses agricultural and rural land.

During an emergency, the anticipated times have been calculated for evacuation to the designated safer places north and south, as shown below in Table 2.

Table 2: Travel times rounded up to the nearest minute.

Average Speed Km/h	Travel time to Murrumbateman Recreation Grounds – 5.4 km North West	Travel time to Perce Douglas Memorial Playing Fields – 29 km South
50 km/h	7 minutes	35 minutes
40 km/h	9 minutes	44 minutes
30 km/h	11 minutes	58 minutes
25 km/h	13 minutes	1 hour 10 minutes
10 km/h	33 minutes	2 hour 54 minutes

7.4.1 Evacuation Centres

In a major bushfire event, evacuation centres will likely be established to meet the needs of those affected by the bushfires. Evacuation centres are generally existing facilities that can often open with little notice to provide immediate assistance. It is advised that the Site Manager monitors evacuation centres established in the area and follows the advice of the emergency service when directed to evacuate. The location of evacuation centres is likely to impact on-road use and expected travel times in the event of an evacuation.

Figure 6 - Evacuation routes to safer places: North

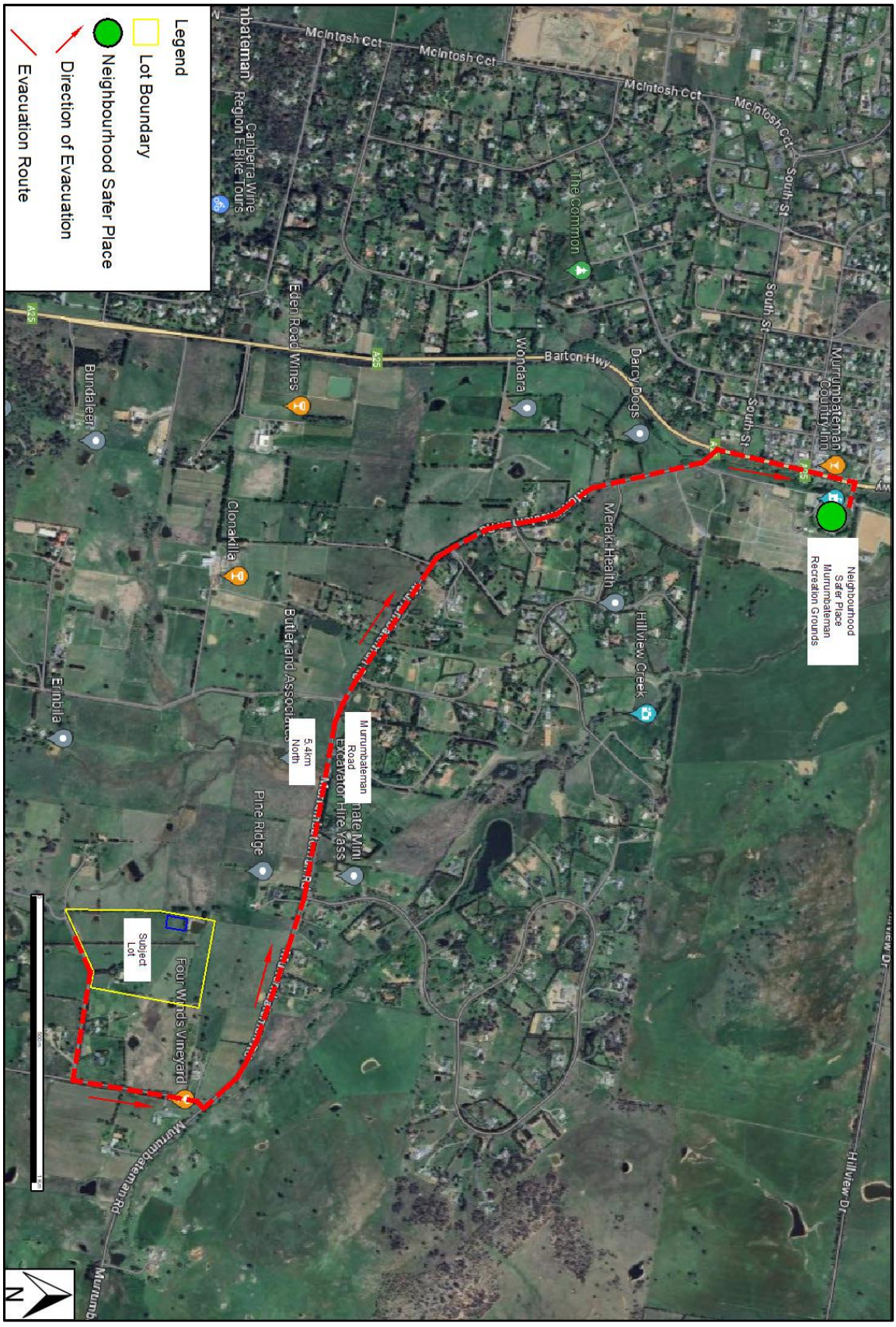
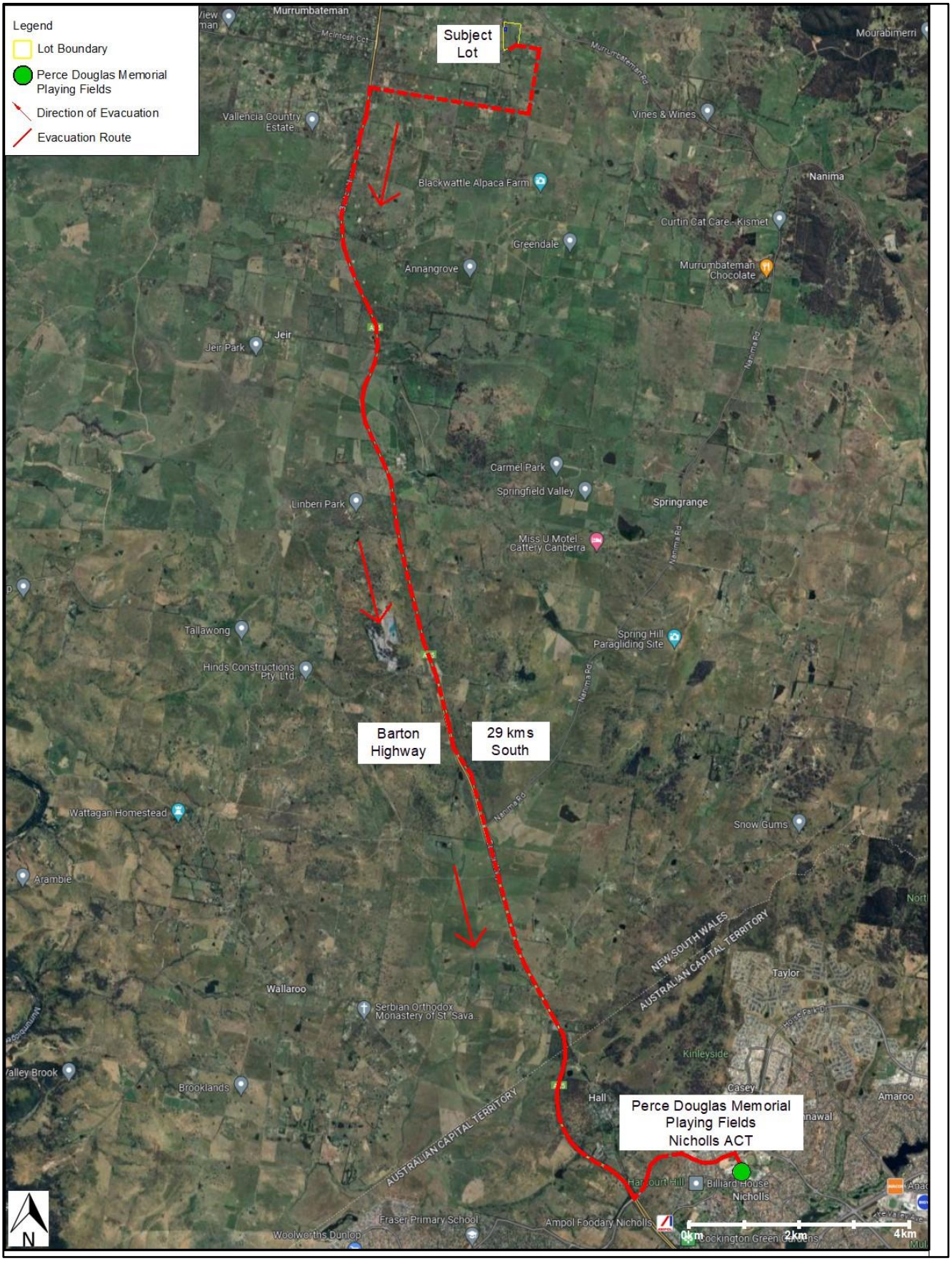


Figure 7 - Evacuation routes to ACT: North



7.5 Preparation

The Chief Warden is to prepare ahead of the start of the fire season and potential bushfire events by undertaking the following steps.

Site:

- Ensure the Plan is up to date;
- Ensure the system regularly checked and maintained by an authorised technician;
- Ensure any firefighting equipment is serviceable and available. e.g. Ladders, spades, shovels, mops, buckets, and hoses;
- Keep the important contact details such as the contractor installer, system manufacturer somewhere safe and easily accessible in case of an emergency. Labelling and signage to inform emergency responders in accordance with the Australian Standard AS/NZS 5139 Electrical installations - Safety of battery systems for use with power conversion equipment may also be required;
- Ensure areas around the assets are prepared and maintained;
- Keep the area where the system is installed clear of all materials (especially those that are combustible) and other equipment;
- Ensure all landscaping within the site is maintained to an APZ standard;
- Ensure onsite powerlines are maintained, liaise with relevant providers;
- Check and update external emergency contact numbers; and
- Monitoring risks from adjoining private and public land, maintaining communication with adjoining landowners and land managers for any changes in management or increased risks to the site.

Onsite personnel:

- Have all onsite personnel details easily identifiable to account for all persons on site;
- Have informative signage in key locations in the site (front gate) outlining the emergency management procedures and bushfire protection measures;
- Have a site layout plan that shows the designated assembly areas and evacuation details available for all onsite personnel; and
- Have emergency kits available: e.g. Whistle, portable battery radio, waterproof torch, spare batteries, first aid kit and manual, waterproof bag for valuables, emergency contact details, duct and masking tape, non-perishable food and water, and pocket knife.

Planning:

- Evacuation safety is dependent on several factors, such as fire danger rating, temperature, wind strength and direction. The time to evacuate may take more than expected during weekends or school holidays when traffic is heavy;
- When advised to evacuate, the early departure of all onsite personnel before emergency services arrive is recommended.
- Similarly, when advised to evacuate, early evacuation is recommended as it is not appropriate to move people through areas with heaving smoke or where a bushfire may be burning or is predicted to burn through;
- The Chief Warden is to check with emergency services and the Live Traffic NSW website: https://www.livetraffic.com/;

Maintenance and Training:

- Ensure up to date training for all onsite personnel. Safe work practices, including observance of standards, codes and regulations, provision of material data including safety data sheets and company policies and procedures, all have important bearing on fire safety and should be explicitly addressed;
- Ensure site is maintained including removal of trade wastes; regular maintenance of installed facilities and equipment; as well as clearance and checking of drains and collection pits.

7.6 Monitoring Bush Fire Threats

7.6.1 Information

For information on bushfires, call the **Bush Fire Information Line:**

- 1800 NSW RFS (**1800 679 737**).

The two systems used by the Rural Fire Service which provide triggers for evacuation are:

- **The Fire Danger Ratings**- used **before** a fire has started; and
- **The Bush Fire Alerts**- are used **once** a fire has started.

Both of these warning systems are described below.

7.6.2 Fire Danger Rating

Before a fire starts, monitor the **Fire Danger Ratings** daily at www.rfs.nsw.gov.au/fdr. The higher the fire danger rating, the more dangerous a fire is likely to be.

These ratings are based on predicted conditions such as the temperature, humidity, wind and dryness of the landscape. It indicates how a bushfire may act, what impacts could occur and the consequences of a bushfire in the identified conditions. The table below and the graph are taken from the RFS Bushfire Survival Plan and show how the fire danger gets higher, so does the potential loss of life and property.

FIRE DANGER RATING	WHAT YOU SHOULD DO
CATASTROPHIC	**For your survival, leave bush fire risk areas.** › These are the most dangerous conditions for a fire. › Your life may depend on the decisions you make, even before there is a fire. › Stay safe by going to a safer location early in the morning or the night before. › Homes cannot withstand fires in these conditions. › You may not be able to leave and help may not be available.
EXTREME	**Take action now to protect your life and property.** › These are dangerous fire conditions. › Check your bush fire plan and ensure that your property is fire ready. › If a fire starts, take immediate action. › If you and your property are not prepared to the highest level, go to a safer location well before the fire impacts. › Reconsider travel through bush fire risk areas.
HIGH	**Be ready to act.** › There's a heightened risk. Be alert for fires in your area. › Decide what you will do if a fire starts. › If a fire starts, your life and property may be at risk. The safest option is to avoid bush fire risk areas.
MODERATE	**Plan and prepare.** › Stay up to date and be ready to act if there is a fire.
NO RATING	› Fire danger ratings are used on days when you need to take action. On days of minimal risk, 'No Rating' will be issued.

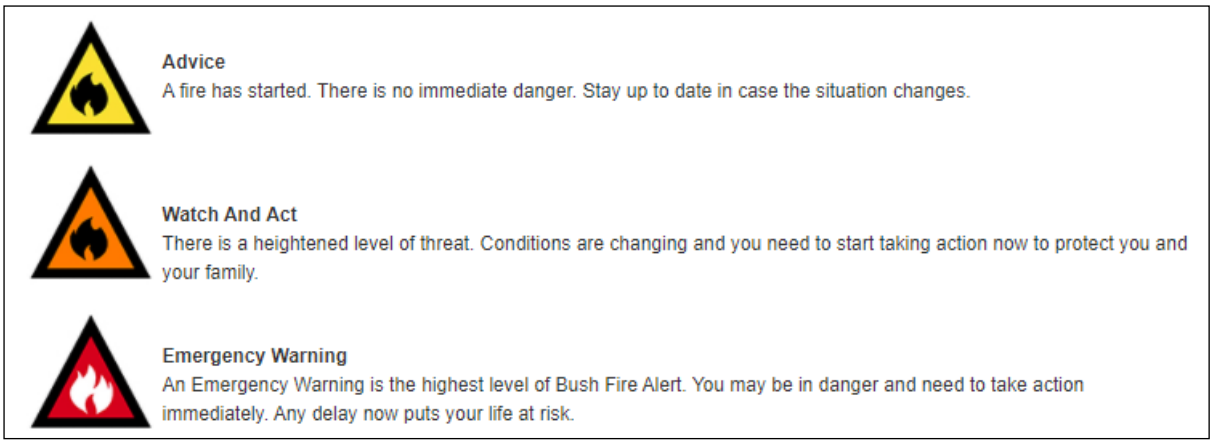
7.6.3 Fires Near Me

After a fire has started, the 'Fires Near Me' website and mobile application provide information and warnings about bushfires and other incidents attended by the NSW RFS.

Website: https://www.rfs.nsw.gov.au/fire-information/fires-near-me

Use the FIRES NEAR ME mobile application to help you stay up to date on bushfires in your area

The following alert levels are provided to give you an indication of the level of threat from a fire:



7.6.4 Radio Updates

In an emergency, ABC Radio can provide up-to-date information. The local stations for Griffith LGA include:

- ABC Radio – **666 AM** Canberra and Digital radio ;
- ABC Radio Central West – **549 AM** Cumnock
- ABC RN – **856 AM** Canberra and Digital radio; and
- ABC NEWS on the radio – **103.9 AM** Canberra and Digital radio ;

7.6.5 Road Closures

The unpredictable nature of bushfires may result in roads being closed without warning. Where emergency services have issued evacuation orders, leaving early is always the safest option. Information on road closures can be obtained from emergency services and found on the Live Traffic NSW website: https://www.livetraffic.com/

7.6.6 Early Evacuation

In a bushfire emergency, emergency services may issue evacuation orders. If off-site evacuation is required, Evacuation Centres will often be set up to accommodate those evacuating. The evacuation direction will depend highly on the existing fire conditions, and advice should be sought from emergency services concerning suitable evacuation routes to the designated Evacuation Centres.

7.7 Emergency

Refer to the Bushfire Emergency Response Plan for actions.

7.8 Post-Emergency Task

- The Chief Warden should seek advice from emergency services before returning to the site;
- A record of the emergency response and evacuation should be taken, and the Emergency Plan updated were applicable.

3 Turton Place, Murrumbateman

BUSHFIRE EMERGENCY AND EVACUATION PLAN

This plan has been designed to assist management in protecting life.
This plan outlines evacuation and site closure procedures to protect occupants from a bushfire threat.

The primary actions to follow are:

Evacuate and close on forecasted Extreme and Catastrophic Fire Danger Rating days

Facility	Battery Energy Storage System
Facility type	Commercial - Utilities
Location	Lot 23 in DP 248413, 3 Turton Place, Murrumbateman NSW 2582.
Estimated occupancy	During Construction: During Operation:
Travel arrangements from the site	Private vehicles.
Chief Warden	
Deputy Warden	

EMERGENCY CONTACTS

In an emergency, call

000

Organisation	Location	Contact
Murrumbateman Rural Fire Brigade	39 Rose St, Murrumbateman NSW	0419 899 979
Springfield NSWRFS	Patemans Ln, Murrumbateman NSW	0418 444 325
Fire and Rescue NSW	90 Meehan St, Yass NSW	02 6229 6711
NSW Police	47 Rossi St, Yass NSW & 31 Anthony Rolfe Ave, Gungahlin ACT	02 6226 9399 000
NSW Ambulance	Charnwood ACT	000
Yass Valley Council	209 Comur St, Yass NSW 2582	02 6226 1477

SITE CLOSURES AND EARLY EVACUATION PROCEDURES – This plan recommends non-occupation on extreme or catastrophic fire weather days and leaving early in all circumstances.

Early evacuation procedure: Non-operational on days of forecasted extreme or catastrophic fire weather

If the site is operational in a bushfire event, relocate all site occupants to the emergency assembly areas and follow the advice of local emergency services.

If evacuation orders are issued, evacuate to the local safer places, evacuation centres or emergency care facilities as directed.

Emergency Assembly Area: Property Access Gate – south onto Turton Place

Trigger to evacuate	Actions
An extreme or catastrophic fire danger rating is forecast for the next day. OR	• The Chief Warden should consult the NSW RFS, check the NSW RFS website, call 1800 NSW RFS, or use smartphone applications and local firefighting resources for fire situations and updates;

<table>
<tr>
<td rowspan="2">Fire 'Advice' Warning is likely to impact the site.

OR

Fire' Watch and Act' Warning is likely to impact the site.

OR

When directed to do so by NSW Police or the NSW Rural Fire Service (RFS)</td>
<td>• The Chief Warden is to take control of the bushfire situation: Remain calm and explain to onsite personnel what is happening and the fire situation;
• The Chief Warden is to advise the local emergency service that the site is being evacuated as directed by the emergency services (including how many people and where they are going).
• Ensure the Wardens and Site Manager have mobiles and are contactable.
• Make arrangements for private transportation for evacuation.</td>
</tr>
<tr>
<td>Off-site Evacuation
• Arrange for onsite personnel to make their way to the designated Emergency Assembly Area;
• Confirm all onsite personnel have been notified;
• Make sure all onsite personnel have transportation for evacuation;
• Arrange for suitable transportation to meet at the emergency assembly point for persons without transport, persons with compromised mobility and persons that require medical assistance;
• Advise all onsite personnel with access to private transportation and do not require medical assistance to make their way to the designated Safer Place or Evacuation Centre as directed by the local emergency services.
• Monitor the progress of the evacuation;
• The Chief Warden is to advise the relevant emergency service that provided the evacuation orders when all persons have been evacuated;</td>
</tr>
</table>

	• Should the fire services arrive, the Chief Warden will hand control over to the officer in charge and provide an operational brief listing injured or vulnerable persons needing assistance. • Maintain situational awareness through radio, the NSW RFS website, 1800 NSW RFS, smartphone applications and local firefighting resources.

THIS PLAN DOES NOT SUPPORT SHELTERING ONSITE
Site closure on days of forecasted extreme or catastrophic fire weather and leaving early in all circumstances.

DAILY ACTIONS					
ACTIONS	**Bush Fire Danger Ratings**				
	NO RATINGS	**MODERATE**	**HIGH**	**EXTREME**	**CATASTROPHIC**
Chief Warden should Monitor the ACT ESA website and check the 'Fires Near Me' site or app.		By 1 pm	Minimum 1 pm and 3 pm	Monitor conditions every hour. The site should be closed and non-operational on forecasted extreme fire weather days. The site is closed.	Monitor conditions every hour. The site should be closed and non-operational on forecasted catastrophic fire weather days. The site is closed.
Fire is predicted to impact the site.	Monitor conditions every hour. Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	Monitor conditions every hour. Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	Monitor conditions every hour. Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	Monitor conditions every hour. The site should be closed and non-operational on forecasted extreme fire weather days. The site is closed.	Monitor conditions every hour. The site should be closed and non-operational on forecasted catastrophic fire weather days. The site is closed.

The time to fire impact is less than the time required to evacuate.	Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	Relocate all site occupants to the **Emergency Assembly Area.** Prepare for off-site evacuation. The site is closed.	The site should be closed and non-operational on forecasted extreme fire weather days.	The site should be closed and non-operational on forecasted catastrophic fire weather days.
After the bush fire event: The Chief Warden is to confirm with emergency services that the site is safe (utilities and buildings) and coordinate all clean-up, repair and maintenance as required to allow the site to return to normality. Where applicable, occupants affected by the event should be identified and provided with appropriate counselling and support.					

Figure 8 – Bush Management and Emergency Response Plan

Appendix I: Hazard Matrix and Risk Register

The bushfire risk to people, property (assets), and the environment has been assessed in relation to the likelihood and consequence per the Australian Standard AS ISO 310000 *Risk Management Guidelines*. Table 3 describes the likelihood and the consequence on a scale of 1 to 5, increasing with severity.

Table 3: Likelihood & Consequence Description

Likelihood		**Consequence**	
Almost Certain (5)	Expected to occur in most circumstances	Catastrophic (5)	Death or permanent injury, considerable economic and irreversible environmental damage
Likely (4)	Will probably occur in most circumstances.	Major (4)	Serious injury, hospital treatment, major economic and irreversible local environmental damage
Possible (3)	May occur occasionally	High (3)	Injury requiring medical treatment, long-term economic and environmental damage
Unlikely (2)	Could happen sometime	Medium (2)	Minor injury, first aid required, minor short-term economic and environmental damage
Rare (1)	May happen only in exceptional circumstances	Low (1)	No injuries, low financial loss, minor environmental impact

Likelihood	**Consequence**				
	Insignificant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost Certain	High	High	Extreme	Extreme	Extreme
Likely	Medium	High	High	Extreme	Extreme
Possible	Low	Medium	High	Extreme	Extreme
Unlikely	Low	Low	Medium	High	Extreme
Rare	Low	Low	Medium	High	High

Risk Level	Risk Response
Extreme	**High priority - unacceptable risk – Immediate action required** Urgent site-specific mitigation and comprehensive management measures are required to reduce risk levels.
High	**High priority - unacceptable risk – Immediate action required** site-specific mitigation and comprehensive management measures are required to reduce risk levels.
Medium	**Medium priority - Potentially unacceptable risk** Site-specific mitigation and comprehensive management measures are required to reduce risk levels.
Low	**Low priority - Acceptable risk** Ongoing mitigation and management measures will ensure risk level remains low and risk is eliminated over time.

Risk Register – Construction and operation of the Murrumbateman Battery Energy Storage System					
Risk No#	**Description**	**Risk Rating**	**Treatment**	**Residual Risk Rating**	**Responsible**
1	Physical impact on persons or loss of life.	High	• Implementation of the bushfire management and protection measures detailed in section 6 & 7. • Daily actions outlined in the Bushfire Emergency And Evacuation Plan	Medium	Site management EPC Fire Wardens Site Occupants
2	Fire impacting the subject site and assets.	High	• Implementation of the bushfire management and protection measures detailed in section 6 & 7.	Medium	Site management EPC Fire Wardens
2	Fire propagation within the site and spreading from the site.	High	• Implementation of the bushfire management and protection measures detailed in section 6 & 7. • Follow advice from emergency services.	Medium	Site management EPC Fire Wardens

Appendix II: EPC Contractor

Table 1 outlines the roles and responsibilities of key personnel involved in a fire emergency during the operation of the BESS.

All personnel shall follow the corresponding Fire Emergency Protocols in **Table 2** below during or after a bushfire incident.

Table 1 – Roles and Responsibilities

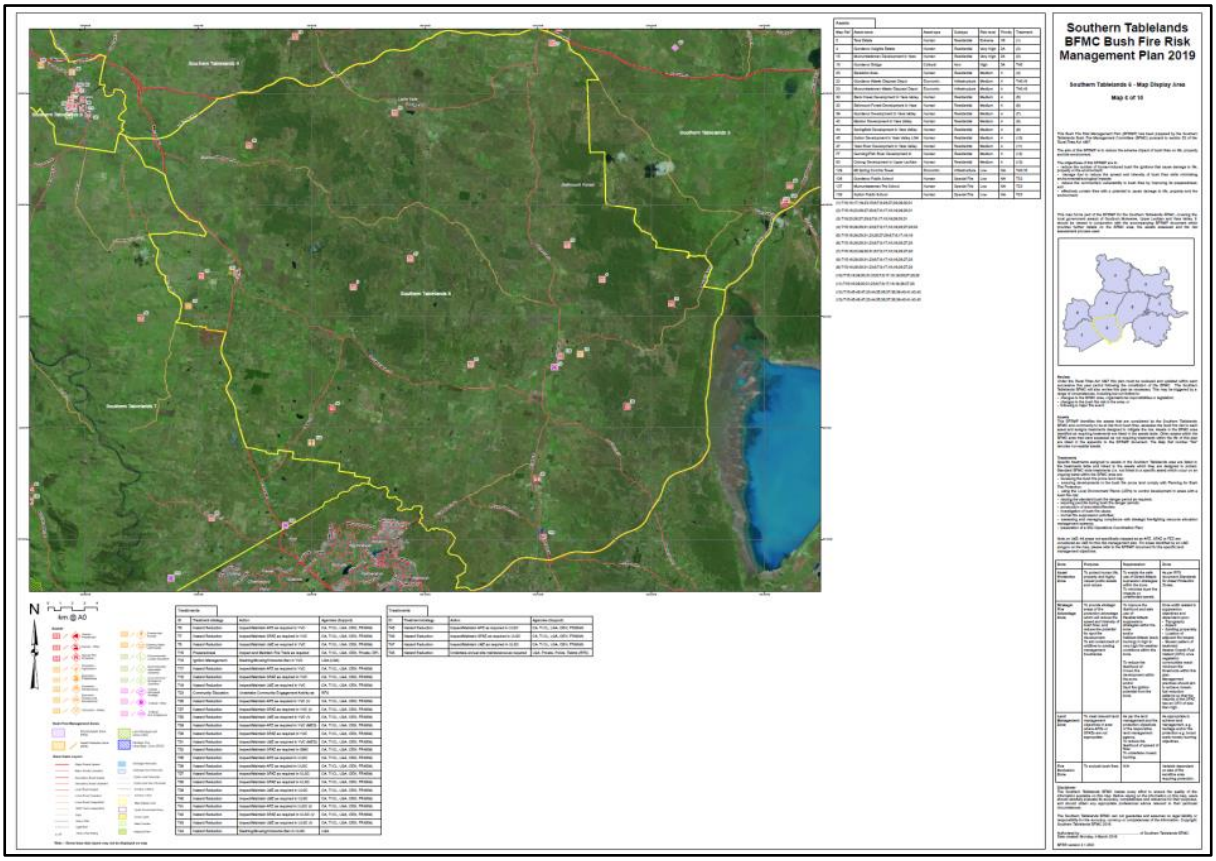
Role	Responsibility
O&M Manager (Office based)	• Respond to emergency calls • Respond to HSE Officer's request for any required assistance • Report incident to Asset Owner • Review and update relevant emergency procedures
HSE Officer (Site based)	• Respond to emergency calls • Ascertain the nature of the emergency • Initiate the corresponding emergency protocol • Arrange first responders to attend to the fire • Notify Emergency Services and First Responders • Notify the O&M Manager of any required assistance • Control and guide the emergency response process
Trained First Aiders (Site based)	• Treat injured individuals in coordination with the HSE Officer
First Responders	• Assist in the emergency response process and provide adequate resources to the HSE Officer
Employees (Site based)	• Raise the alarm • Notify HSE Officer • Follow the emergency procedure with instructions from O&M Manager and HSE Officer

Table 2 – Fire Emergency Protocol

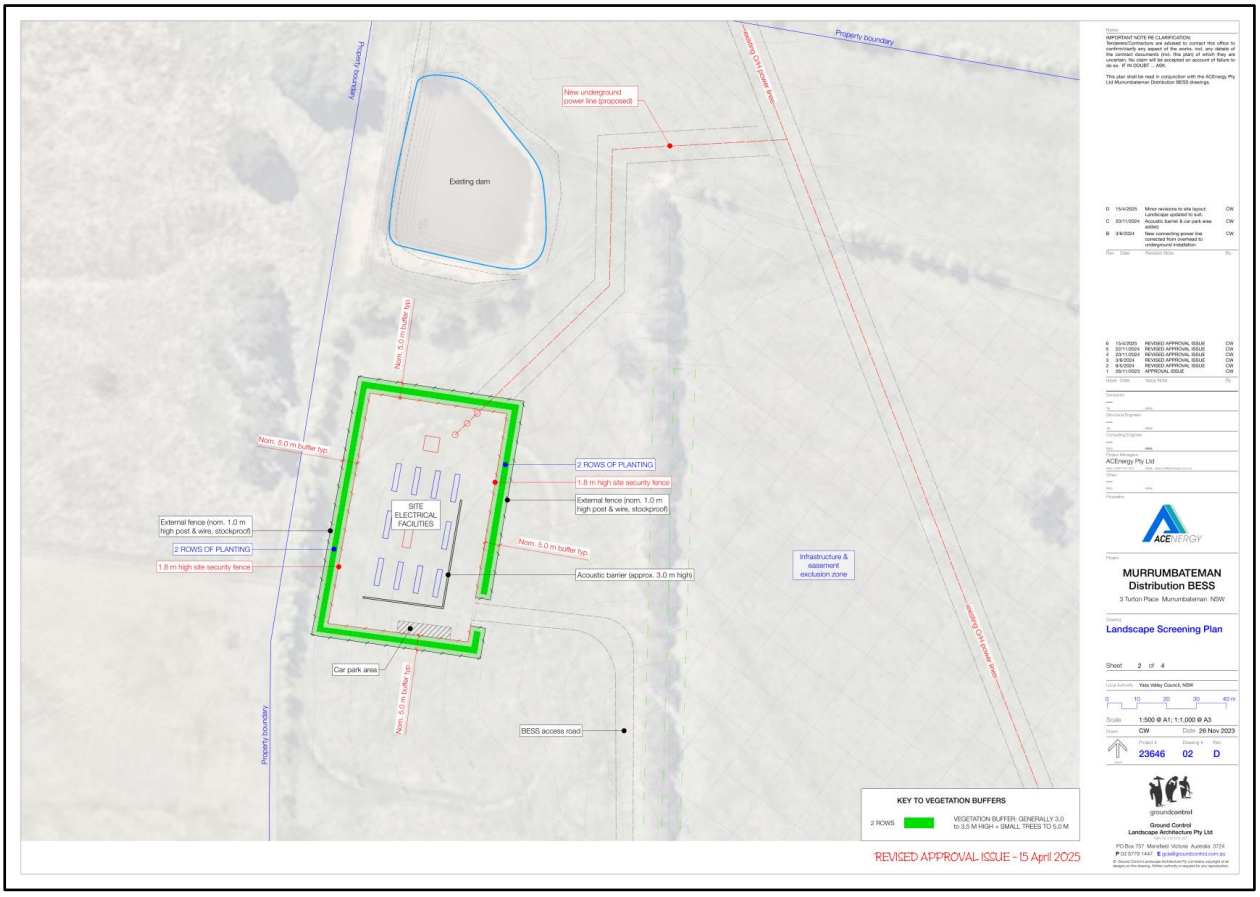
Fire	
Project # and Title	
O&M Manager	During the incident: ▪ Respond to HSE Officer's request for any required assistance ▪ Respond to emergency calls After the incident: ▪ Notify the Asset Owner of the incident. ▪ Submit incident report to Asset Owner. ▪ Review and update all applicable procedures.
HSE Officer	During the incident: ▪ Evaluate the event. ▪ Send first responders to work crew location/s. ▪ Arrange evacuation if required.

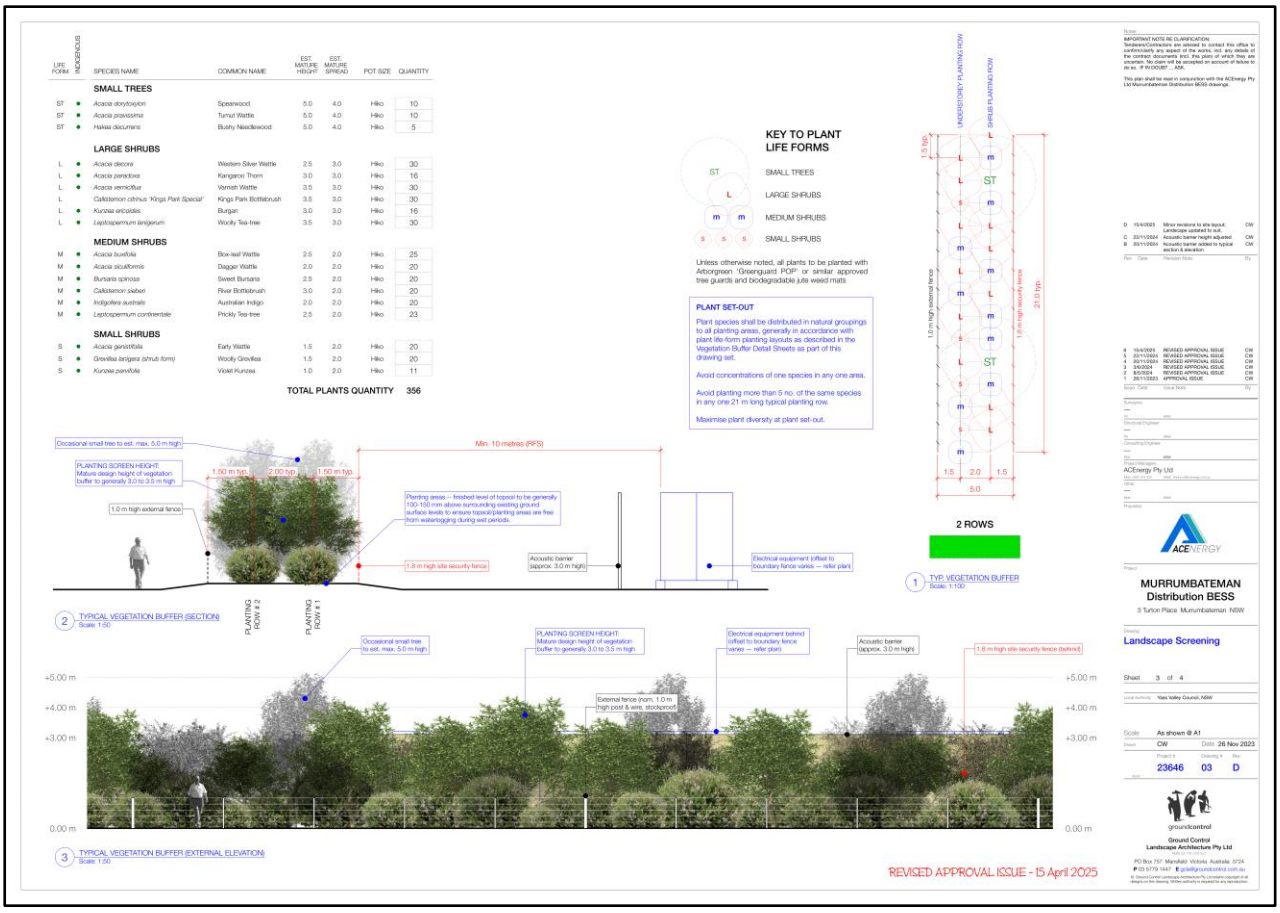
	▪ Notify the O&M Manager about the incident ▪ Notify the O&M Manager of any required assistance ▪ Keep the O&M Manager up to date on the incident. ▪ Dial 000 for emergency services, if required. ▪ Terminate incident. After the incident: ▪ Confirm it is safe to return to work. ▪ Complete debrief. ▪ Complete an incident report for O&M Manager. ▪ Provide counselling as required. ▪ Return to work if deemed safe to do so.
Employees	During the incident: ▪ Raise the alarm. ▪ Contact the HSE Officer. ▪ Provide details on the emergency. ▪ Follow the emergency procedure with instructions from O&M Manager and HSE Officer After the incident: ▪ Return to work after receiving confirmation from HSE Officer.
First Responders	During the incident: ▪ Attempt first attack extinguishing and containment, if safe to do so. ▪ Keep the HSE Officer up to date on the incident. ▪ Rescue any injured personnel, if safe to do so. ▪ Extinguish the fire, if possible and be safe to do so. After the incident: ▪ Return to work after receiving confirmation from HSE Officer.
Trained First Aiders	During the incident: ▪ Provide first aid, if required. After the incident: ▪ Return to work after receiving confirmation from HSE Officer.

Appendix III: Southern Tablelands BFRMP Precinct Map



Appendix IV: Landscape Plan





LANDSCAPE WORKS CONSTRUCTION NOTES:

1 WORKS BY CIVIL/OTHERS
All construction & civil works incl. demolition, building works, bulk earthworks, drainage infrastructure, road pavements, site electrical & battery facilities & associated infrastructure, fencing and other related works.

The civil contractor will ensure the following minimum depths of site topsoil are provided for the landscape works:

- Planting areas -- min. 150 mm depth site topsoil.
- Finished level of topsoil to be generally 100-150 mm above surrounding existing ground surface levels to ensure topsoil/planting areas are free from waterlogging during wet periods.

2 INSURANCES
Provide certificates of currency for Public Liability Insurance (min. $20M) and Workcover insurance (min. $20M) to the Superintendent prior to commencing works. Each certificate of currency shall note the Proprietor as an interested party.

3 ROAD OPENING PERMIT
Apply to the responsible authority for a road opening permit (if required), incl. the payment of all fees and charges re same. An approved copy of the approved road opening permit shall also be provided to the Superintendent prior to works commencing on site.

4 LANDSCAPE PRE-COMMENCEMENT MEETING
The Contractor shall initiate, coordinate and attend a pre-commencement meeting with Council, Proprietor & Superintendent, incl. achieving compliance with all Council & specified requirements, checklists, insurances, approvals, etc.

5 TRAFFIC MANAGEMENT
If required, prepare and submit to the responsible authority a traffic management plan to their satisfaction, incl. the payment of all fees and charges re same. An approved copy of this plan shall also be provided to the Superintendent prior to works commencing on site. Implement approved traffic management plan during the duration of the Works on site.

6 LOCATE EXISTING SERVICES
Locate all existing services prior to commencing works, contacting Dial Before You Dig, the project civil engineers/contractor and/or the relevant authorities re same as required. Identify all overhead services prior to commencing works.

7 SET OUT THE WORKS
Accurately set the works out as per the documentation set.

8 SOIL TESTING
Undertake soil sampling & testing from an approved ag. soil testing laboratory, incl. seeking recommendations for fertilising planting zone to improve soil NPK balance, trace elements, etc. Any recommended adjustments must be made to improve the soil conditions for native tree & shrub planting.

9 PLANTING AREAS PREPARATION -- INITIAL
These works to be done ideally in LATE FEBRUARY/MARCH of the planting year:

- Eradicate broadleaf, woody and noxious weeds from all planting areas using selective, non-residual herbicides. Manual removal of larger woody weeds may be required -- inspect site to confirm extent.
- Rip along planting line to 2.0 m wide to min. 300 mm depth with a Yeomans/Keyline plough with tynes at max. 750 mm centres to break up/aerate natural subgrade and to relieve compaction, grade & level.
- Apply fertilisers and additives at rates recommended by soil test results.
- Cultivate planting lines to break up soil clods and provide an appropriate planting medium.
- DO NOT WORK WET SOIL. Remove any deleterious material brought to the surface, consolidate soil and grade surface to even grades, free of any depressions or undulations.

10 PLANTING AREAS PREPARATION -- SECONDARY
These works to be done ideally in APRIL/MAY of the planting year:

- Eradicate broadleaf, woody and noxious weeds from all planting areas using selective, non-residual herbicides. Manual removal of larger woody weeds may be required.
- Re-cultivate planting lines to break up soil clods and provide an appropriate planting medium.
- DO NOT WORK WET SOIL. Remove any deleterious material brought to the surface, consolidate soil and grade surface to even grades, free of any depressions or undulations.

11 PLANT SUPPLY
All plants shall be healthy, free from any pests or diseases, be attractive, well grown and well formed plant specimens and shall have a healthy, well formed root system commensurate in size with the foliage mass (root systems must not be pot bound). Plant container sizes shall be as listed in the detail planting schedule, but shall be min. hiko, VirоTube or 50 mm round/square pot size.

The planting contractor shall inspect all plants on delivery to site and shall certify in writing to the Superintendent that all plants supplied are as described above and are accepted by the planting contractor for planting in this project.

12 PLANTING
Set out plants as documented. Individual holes are to be dug (tree planter, mini-auger, etc.) in the prepared planting areas of sufficient size to easily accommodate the plant's root system and relieve any polishing. Create broad, shallow watering bowl to ALL plants to facilitate effective watering (min. 5 litre capacity). All plants shall be watered-in immediately after planting and at such times during the Contract period as is required to maintain growth free of water stress. Planting medium must be moist - do not plant into dry soil. Handle and plant all plants at all times in accordance with best horticultural practice.

13 FERTILISING
Refer maintenance section.

14 WEED MATS
Supply & install to each plant a 600 x 600 mm TreeMax or similar approved jute weed mat. Installation strictly to manufacturer's recommendations.

15 TREE/PLANT GUARDS
Supply & install to each plant Arborgreen 'Greenguard POP' 450 x 200 mm (sides): Code: 'GRGRDPOP-TRI' or similar approved 100% biodegradable tree guard, incl. 1 no. x 25 x 25 x 750 mm HWD stake per guard to all plants. Ensure stake extends min. 300 mm into ground. Installation strictly to manufacturer's recommendations.

16 GRASSING (IF REQUIRED)
Some areas of grass seeding may be required and will be directed and quantified by the Superintendent.

Do not sow seed in periods of extreme heat, cold or wet, or where wind velocities are excessive unless otherwise approved. Seed mix shall be as follows:

- TURF-TYPE REGENERATING PERENNIAL RYEGRASS 95% by count
- TURF-TYPE TALL FESCUE 3% by count
- SUB CLOVER 1% by count
- WHITE CLOVER 1% by count

Seeding rate shall be min. 30 gms per m2. Apply seed evenly – seed application shall be via direct drilling or by other approved methods. Seeding shall be programmed when there is a period of anticipated weather conditions (i.e. rain) that will provide the best chance for germination of grass seed. Any areas affected by heavy rain, wind removing seed or other cause shall be re-seeded as specified to achieve an even cover of grass.

Slash grass when growth height has reached 100 mm or otherwise as directed by Superintendent. Should all the areas not require cutting at one time, complete all further cuts as necessary until 100% of the area has achieved successful coverage and all areas have received at least first cut.

17 PRACTICAL COMPLETION COORDINATION
The Contractor shall initiate, coordinate and attend a Practical Completion meeting with Council, Proprietor & Superintendent, incl. achieving compliance with all Council & specified requirements, checklists, insurances, approvals, etc.
NOTE: Min. 3 no. working days notice is required for a Practical Completion meeting.

18 LANDSCAPE ESTABLISHMENT MAINTENANCE PERIOD
Maintain the contract works from the Date of Practical Completion to the Date of Final Completion/hand-over.

Maintenance shall include care of the contract area by accepted horticultural practices, and rectification of any defects that become apparent during this period. Maintenance tasks to be carried out during the maintenance period shall include, but shall not be limited to, slashing, watering as required, weed control, pest & disease control & management, tree/plant guard adjustment/replacement as required, rubbish removal.

WEED CONTROL – PLANTED AREAS:
In planted areas, poison all broadleaf, noxious & woody weeds as they appear. Slashable grasses are to be retained generally between planting rows. Selective herbicides shall be nominated by the Contractor and approved by the Superintendent prior to use. Non-selective herbicide shall be Monsanto 'Roundup BIACTIVE' glyphosate-based herbicide -- standard 'Roundup' is NOT to be used. NO OTHER HERBICIDE SHALL BE USED WITHOUT PRIOR APPROVAL. All herbicide applications shall use NuFarm 'Spraymate' or similar approved marker dye admixture and shall be handled and applied strictly according to manufacturer's recommendations, recommended rates and directions.

GRASS MANAGEMENT – PLANTED AREAS:
Slash all areas between plants in rows and min. 1.5 m along all outside edges of all planting zones on a regular basis to maintain grass height to max. 100 mm. Slashing shall comply with all local Council and RFS guidelines re grass heights.

JUTE MAT & TREE/PLANT GUARDS:
Maintain jute mat and tree/plant tree guards for first two summers minimum, repair and replace as required during this period.

PLANT REPLACEMENT:
Replace any failing, failed or dead plants during the maintenance period. The Superintendent and the Contractor will inspect the full planting areas at the end of each summer and will identify the number and species of plants that are failing, have failed/died. The Contractor shall replace all such plants identified.

WATERING:
The Contractor shall ensure all plants planted/maintained under this contract receive adequate (but not excessive) watering to maintain optimum growth and health. Watering shall be localised to each plant, not broad spraying across the entire planting area, to limit weed/grass growth between planting rows.

Watering shall be either manually via watercart/hose as required OR via a drip irrigation system, using Netafim 'UniRAM AS' inline dripline @ 1.6 LPH with emitter spacing of 400 mm -- one surface dripline per planting row. Drip irrigation system to be designed by an accredited irrigation designer and connect to an available clean water source, incl. filtration at source.

All plants shall be watered as required for at least the FIRST TWO SUMMERS to aid in establishment of healthy root systems and foliage growth, with further waterings if required during late spring and/or early autumn or at any other time of the year based on prevailing climatic conditions. Further waterings may be needed beyond this minimum establishment watering should prevailing climatic conditions deteriorate with potential to lead to deterioration of plant growth, health or plant deaths (e.g. severe drought, El Niño conditions, etc.).

FERTILISING:
All plants (excluding Proteacea family) shall be fertilised with Scotts 'Osmocote® Plus Trace Elements: Native Gardens' (NPK 21.8 : 0.7 : 7.2) or similar approved at the manufacturer's recommended rates. Fertiliser shall be locally spread on soil surface around plants during planting operations. If unsure which plants are in the Proteacea family – ASK.

Allow for one fertiliser application in Year 1 and second application in Year 2.

PESTS & DISEASES:
Regularly monitor all plants grasses planted/maintained under this contract for evidence of pest and/or disease attack -- identify and treat any/all problems arising.

RABBITS, HARES, KANGAROOS, ETC.:
Identify any predation by rabbits, hares and other pests with potential to damage or destroy the landscape works under this contract. Take all necessary steps, within local authority regulations and/or guidelines, to limit or eradicate predation. Maintain all tree guards in good condition to limit rabbit/hare/kangaroo/other damage to plants with installed guards.

REVISED APPROVAL ISSUE - 15 April 2025

Notes:
IMPORTANT NOTE RE CLARIFICATION:
Tenderers/Contractors are advised to contact this office to confirm/clarify any aspect of the works, incl. any details of the contract documents (incl. this plan) of which they are uncertain. No claim will be accepted on account of failure to do so. IF IN DOUBT ... ASK.

This plan shall be read in conjunction with the ACEnergy Pty Ltd Murrumbateman Distribution BESS drawings.

Rev	Date	Revision Note	By
B	15/4/2025	Minor revisions to site layout. Landscape updated to suit.	CW
A	6/5/2024	Fully revised to amended D-BESS site layout. Plant spacings revised, plant schedule updated.	CW

Issue	Date	Issue Note	By
6	15/4/2025	REVISED APPROVAL ISSUE	CW
5	22/11/2024	REVISED APPROVAL ISSUE	CW
4	28/11/2024	REVISED APPROVAL ISSUE	CW
3	3/6/2024	REVISED APPROVAL ISSUE	CW
2	6/5/2024	REVISED APPROVAL ISSUE	CW
1	28/11/2023	APPROVAL ISSUE	CW

Project Managers: ACEnergy Pty Ltd

Proprietor: ACENERGY

Project: **MURRUMBATEMAN Distribution BESS**
3 Turton Place, Murrumbateman, NSW

Drawing: **Landscape Specification Notes**

Sheet 4 of 4

Local Authority: Yass Valley Council, NSW

Scale: N.T.S.
Drawn: CW Date: 26 Nov 2023
Project #: 23646 Drawing #: 04 Rev: B

groundcontrol
Ground Control Landscape Architecture Pty Ltd
PO Box 757 Mansfield Victoria Australia 3724
P 03 5779 1447 E gcla@groundcontrol.com.au

8 REFERENCES

Australia, G. (2019). *ELVIS - Elevation - Foundation Spatial Data*. Elevation.fsdf.org.au. Available at: http://elevation.fsdf.org.au/

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Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P, Cox S (2010). *Native Vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands*. Cunninghania 11:359-406.

Ahmed A

From: Letara Judd <letara@hec.eco>
Sent: Friday, 7 March 2025 11:32 AM
To: Ahmed A
Cc: Katherine Harris; Harris Environmental
Subject: RE: Murrumbateman D-BESS Project
Attachments: BMP for proposed Battery Energy Storage System 3 Turton Place Murrumbateman 250307 v3.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Categories: Red category

Hi Ahmed,

Please find attached updated Bushfire Management Plan with Landscape Plan included.

This email confirms the proposed Landscape Plan and planting is consistent with the APZ requirements. The proposed planting is located outside the identified APZ. All recommendations remain unchanged.

Kind Regards

Letara Judd

Bushfire Consultant – BPAD L2

letara@hec.eco | (02) 4236 0954 | (02) 4862 1168

Harrisenvironmental CONSULTING

Wastewater | Bushfire | Stormwater

From: Ahmed A <Ahmed.A@acenergy.com.au>
Sent: Tuesday, 25 February 2025 12:42 PM

TRAFFICWORKS™

Traffic Impact Assessment Report

3 Turton Place Murrumbateman NSW

Project Number 230350
Final Report 6/05/2024

Client ACEnergy Pty Ltd

TRAFFICWORKS™

Document control record

Document prepared by:

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Disclaimer

Document control	
Report title	3 Turton Place Murrumbateman NSW
Project number	230350
Client	ACEnergy Pty Ltd
Client contact	Ahmed Adel

Revision	**Date issued**	**Revision details / status**	**Prepared by**	**Authorised by**
Draft	3/04/2024	Preliminary draft	Stuart Redman	Kate Kennedy
Final	6/05/2024	Final	Stuart Redman	Kate Kennedy

TRAFFICWORKS™

Executive summary

ACEnergy Pty Ltd engaged Trafficworks to undertake a traffic impact assessment (TIA) for the proposed development of a Battery Energy Storage System (BESS) at **3 Turton Place Murrumbateman NSW**.

The table below summarises the subject site's proposed development and our conclusions and recommendations.

Address	3 Turton Place Murrumbateman NSW
Zoning	RU4: Primary Production Small Lots
Proposed development	Battery Energy Storage System (BESS)
Road network	— Barton Highway (A25 - State Road) — Murrumbateman Road (Regional Road) — Patemans Lane (Local Road) — Turton Place (Local Road)
Traffic generation	Construction phase (per day): — 3 light vehicles — 2 heavy vehicles Operation phase (per fortnight): — 2 light vehicles
Car parking	Construction phase: 3 spaces Operation phase: 2 spaces

Conclusion	We conclude that subject to the implementation of our recommendations, no traffic engineering reasons would prevent the development from proceeding.
	— the peak hour traffic generation is likely to occur during the construction phase of the development, where the peak hour volumes are expected to be:
	  — 3 light vehicles
	  — 1 heavy vehicle
	— the construction phase is expected to take 4 weeks
	— the subject site will generate a peak car parking demand of 3 spaces during the construction period and 2 spaces post-opening
	— the development plan includes a designated parking area that will satisfy the parking demand

	— adequate sight distance is available at the intersection of Patemans Lane and Murrumbateman Road; no further treatment is required — the proposed site access driveway along Turton Place satisfies the minimum entering sight distance, as specified in AS/NZS 2890.1 — the setback of the proposed security gate from the edge of Turton Place will accommodate the storage of a 19 m semi-trailer clear of the traffic lane — no additional turn lane treatments are required due to the traffic generated by the proposed development.
Recommendations	It is recommended that: — **Recommendation 1:** trim or remove the tree restricting sightlines to the north (as shown in Figure 17) — **Recommendation 2:** the subject site access driveway should be constructed according to Figure 7.4 in Austroads Guide to Road Design Part 4 requirements and to the council's satisfaction.

Referenced documents

References used in the preparation of this report include the following:

- Austroads Guide to Road Design
  - Part 4: Intersections and Crossings, for details of the access driveway
  - Part 4A – Unsignalised and Signalised Intersections, for sight distance criteria and provision for turning vehicles at intersections (AGRD4)
- Austroads Guide to Traffic Management
  - Part 6 – Intersections, Interchanges and Crossings Management**,** for sight distance criteria and provision for turning vehicles at intersections (AGTM6)
- Australian Standards:
  - AS 2890.1-2004 Parking facilities - Off-street car parking
- RTA Guide to Traffic Generating Developments, Version 2.2, October 2002.
- Yass Valley Council
  - Yass Valley Local Environmental Plan (LEP) 2013
  - Yass Valley Development Control Plan (DCP) 2013*

    *2024 version currently on exhibition

TRAFFICWORKS™

Table of Contents

1 Introduction

ACEnergy Pty Ltd engaged Trafficworks to undertake a traffic impact assessment (TIA) for the proposed development of a Battery Energy Storage System (BESS) at **3 Turton Place Murrumbateman NSW**.

For the details about:

- existing site conditions – see section 2
- description of the proposed development – see section 3.1
- traffic impact of the proposed development – see section 3
- car parking assessment of the proposed development – see section 4
- assessment of the access to the proposed development – see section 5
- our conclusions and recommendations – see section 5.3.

2 Existing conditions

2.1 Subject site

The subject site is:

- located about 3 km southeast of Murrumbateman and comprises a small area contained within Lot 23 of DP248413
- currently occupied by farmland with a residential dwelling and outbuildings.

Vehicular access to the subject site is available from Murrumbateman Road (Regional Road) via Patemans Lane and Turton Place.

Figure 1 shows the subject site's location, which is surrounded by farmland and rural properties.

Figure 1: Location plan (reproduced with permission from Nearmap)

The subject site is located within a wider area of the RU4: Primary Production Small Lots zone on the south side of the regional road and east of the Barton Highway (a state road located within SP2: Classified Road zone), as per the Yass Valley Council's (council) Local Environmental Plan (LEP).

Figure 2 shows the zoning for the subject site and surrounding area.

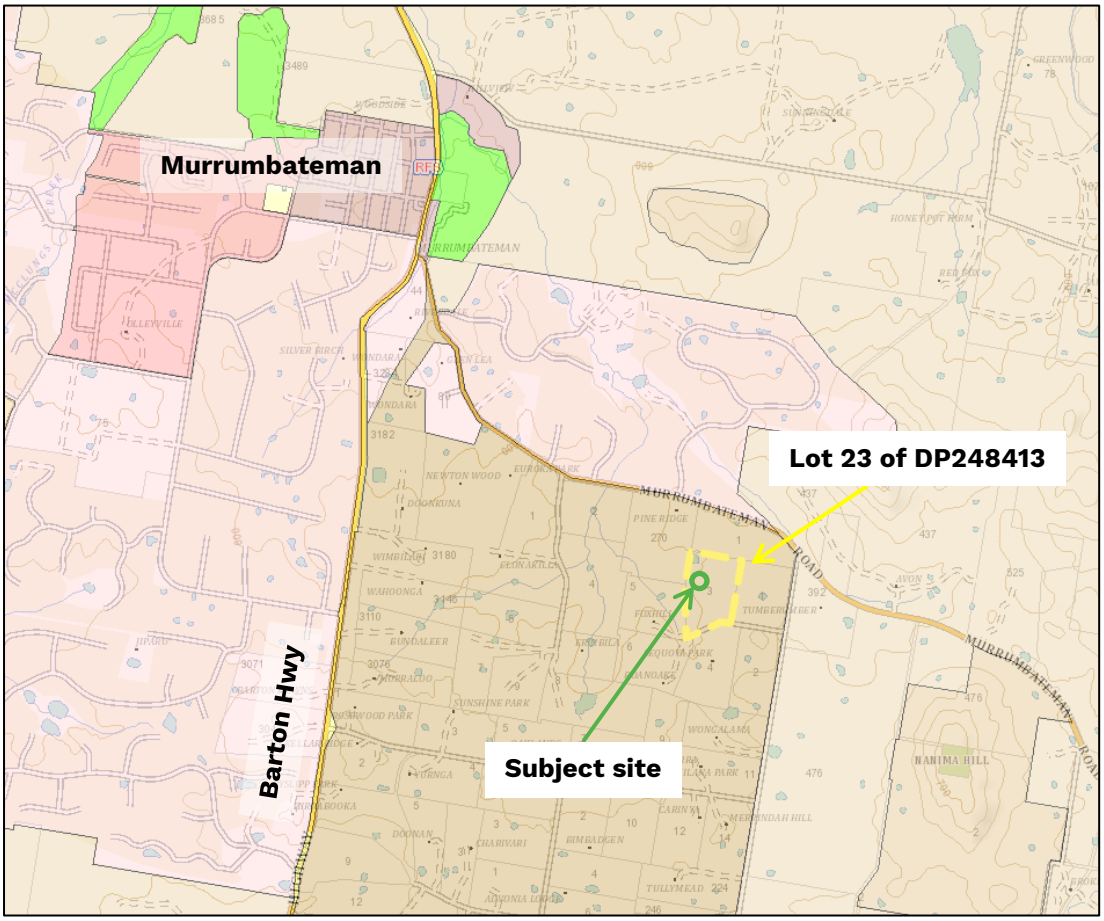


Figure 2: Zoning plan (reproduced from NSW ePlanning Spatial Viewer)

2.2 Road network

The road network includes:

- Barton Highway (A25 - State Road)
- Murrumbateman Road (Regional Road)
- Patemans Lane (Local Road)
- Turton Place (Local Road)

2.2.1 Barton Highway (A25)

Table 1 describes the features of this road.

Table 1: Barton Highway features

Feature	Description
Road type	Classified state arterial road managed by Transport for New South Wales (TfNSW) and part of the National Auslink network.
Access	Connects Hume Highway at Yass to Federal Highway in Canberra
Carriageway	Two-lane, two-way sealed road consisting of 2x 3.5 m traffic lanes with sealed shoulders ranging from 2.0 m to 3.5 m wide. A channelised right turn lane is provided for northbound vehicles turning right at the T-intersection with Murrumbateman Road.
Road reservation	30 - 40 m wide
Speed limit	50 km/h through Murrumbateman 70 km/h about 200 m south of the intersection with Murrumbateman Road 100 km/h about 800 m south of the intersection with Murrumbateman Road

Figure 3 and Figure 4 provides further information about the road.

Figure 3: Barton Highway, looking north towards the intersection with Murrumbateman Road (Source: Google)

Figure 4: Barton Highway, looking south towards the intersection with Murrumbateman Road (Source: Google)

2.2.2 Murrumbateman Road

Table 1 describes the features of this road.

Table 2: Murrumbateman Road features

Feature	Description
Road type	Classified regional road managed by the Council and funded by TfNSW.
Access	Connects Barton Highway (to the west) with Sutton Road (to the east)
Carriageway	Two-lane, two-way sealed road consisting of 2 x 3.2 m traffic lanes with 0.6 m wide sealed shoulders. An auxiliary right turn lane is provided for eastbound vehicles turning right at the intersection with Patemans Lane. An offroad shared use path (SUP) is within the road reserve. It crosses the road (north to south) about 80 m west of the Patemans Lane intersection.
Road reservation	20 m wide
Speed limit	70 km/h (subject length between Barton Highway and 100 m east of the intersection with Patemans Lane)

Figure 5 and Figure 6 provides further information about the road.

Figure 5: Murrumbateman Road, looking southeast from the intersection with Patemans Lane

Figure 6: Murrumbateman Road, looking northwest from the intersection with Patemans Lane towards the SUP crossing

2.2.3 Patemans Lane

Table 3 describes the features of this road.

Table 3: Patemans Lane features

Feature	Description
Road type	Local road managed by council
Access	Provides access to a few residential properties and farmland to Murrumbateman Road. The road is a no-through road south of the intersection with Euroka Avenue.
Carriageway	Two-way sealed road with a 6.0 m wide formation
Road reservation	20 m wide
Speed limit	70 km/h (subject length between Murrumbateman Road and 90 m south of the intersection with Turton Place)

Figure 7 and Figure 8 provide further information about the road.

Figure 7: Patemans Lane, looking north from the intersection with Turton Place

Figure 8: Patemans Lane, looking north towards the intersection with Murrumbateman Road, the SUP to the left of the road formation.

2.2.4 Turton Place

Table 3 describes the features of this road.

Table 4: Turton Place features

Feature	Description
Road type	Local road managed by council
Access	Provides access to a few residential properties and farmland to Patemans Lane. The road is a no-through road.
Carriageway	Two-way sealed road with a 6.0 m wide formation
Road reservation	20 m wide
Speed limit	no posted speed limit signs exist Due to short length, no-through access and horizontal/vertical alignment, the assumed operating speed is in the order of 50 km/h to 60 km/h

Figure 9 and Figure 10 provide further information about the road.

Figure 9: Turton Place, looking southwest towards the end of the road, near the proposed subject site driveway

Figure 10: Turton Place, looking northeast towards the bend in the road, near the proposed subject site driveway

2.3 Traffic volumes

2.3.1 Barton Highway

TfNSW Traffic Volume Viewer details traffic volumes for many of the arterial roads in New South Wales. Scrutiny of the records indicates that in 2012, during a typical midweek period, for Station Id: 94445:

- northbound volume of 4,354 vehicles per day (vpd) and southbound volume of 4,929 vpd
- AM commuter peak (7:00 to 8:00 am) northbound volume of 158 vehicles per hour (vph) and southbound volume of 687 vph
- PM commuter peak (5:00 pm – 6:00 pm) northbound volume of 559 vph and southbound volume of 290 vph.

Projecting the traffic volumes to 2024 by adopting an annual compound growth rate of 3 %[1] per annum, Barton Highway is currently estimated to carry:

- northbound volume of 6,208 vpd and southbound volume of 7,028 vpd
- AM commuter peak (7:00 to 8:00 am) northbound volume of 225 vph and southbound volume of 979 vph
- PM commuter peak (5:00 pm – 6:00 pm) northbound volume of 797 vph and southbound volume of 413 vph.

2.3.2 Regional / Local Roads

The council has no recent traffic volume data for any of the local roads (including Murrumbateman Road) mentioned in Section 2.2. The local roads are not expected to carry more traffic than the Barton Highway. As a result, the average daily traffic volume has been estimated for each of the roads as follows:

- Murrumbateman Road acts as a regional link road / collector road
    - about 5,000 vpd
    - peak-hour two-way volume of 500 vph
- Patemans Lane services some residential and rural farmland properties
    - less than 1,000 vpd
    - peak-hour two-way volume of 100 vph

[1] Investigation of traffic volumes within the region indicates a less than 3 % growth rate within the last 10 years. Therefore, the assumption of applying a 3 % growth rate is conservative for projecting the traffic volumes to 2024.

- Turton Place services rural residential properties
    - less than 100 vpd
    - peak-hour two-way volume of 10 vph

2.4 Crash history

The TfNSW Centre for Road Safety website details all injury crashes throughout New South Wales and reports that a single casualty crash occurred on the roads near the subject site in the last 5 years (2018 – 2022).In 2020, a minor injury rear-end (RUM code 30) crash occurred in daylight conditions on Murrumbateman Road southeast of the intersection with Patemans Lane.

Based on this, we conclude that no trend requires immediate investigation.

3 Traffic assessment of the proposed development

3.1 The proposal

The proposed development involves constructing a BESS with batteries and a medium voltage power station (MVPS) housed in 40ft containers. The proposed facility will be unstaffed, and the period that will generate the most traffic will be the construction phase.

Vehicular access to the site is proposed directly from Turton Place via an existing farm gate access approximately 100 m southwest of the bend in the road (Figure 11). An extract of the proposed development plan is shown in Figure 12, and the full plan is provided in Appendix 1.

Figure 11: The location of the proposed driveway access to the subject site to / from Turton Place

Figure 12: Extract of the development plan

3.1.1 Construction

On-site construction for the proposed BESS is limited mainly to assembly and connecting components with the typical battery energy storage system shipping containers. Most of the equipment will be transported to the subject site via rigid trucks, with only the batteries and MVPS required to be delivered by a 19 m semi-trailer (B-doubles will not be used for transportation).

The typical construction delivery schedule for this BESS is shown in Table 5.

Table 5: Construction delivery schedule

Time period	Site Works
Week 1	drainage, road and fencing works installation of concrete footings
Week 2	cable installation delivery of battery shipping containers and MVPS installation of battery shipping containers and inverter station
Week 3	electrical installation and cable termination electrical testing
Week 4	commissioning / demobilisation

There is a 4-week construction phase before the full operation of the BESS.

3.1.2 Heavy vehicle access to the subject site

All heavy vehicle traffic from Barton Highway will arrive/depart the subject site via Murrumbateman Road, Patemans Lane and Turton Place. Heavy vehicles will enter the subject site by turning left from Barton Highway to Murrumbateman Road, making 3 right turns at the intersections with Patemans Lane and Turton Place, and then entering the subject site about 500 m along Turton Place.

Heavy vehicles will exit the subject site in the reverse direction, making 3 left turns from Turton Place, Patemans Lane and Murrumbateman Road, and a right turn onto Barton Highway to head north towards Hume Highway.

Figure 13 indicates the route for all heavy vehicles arriving and departing the subject site.

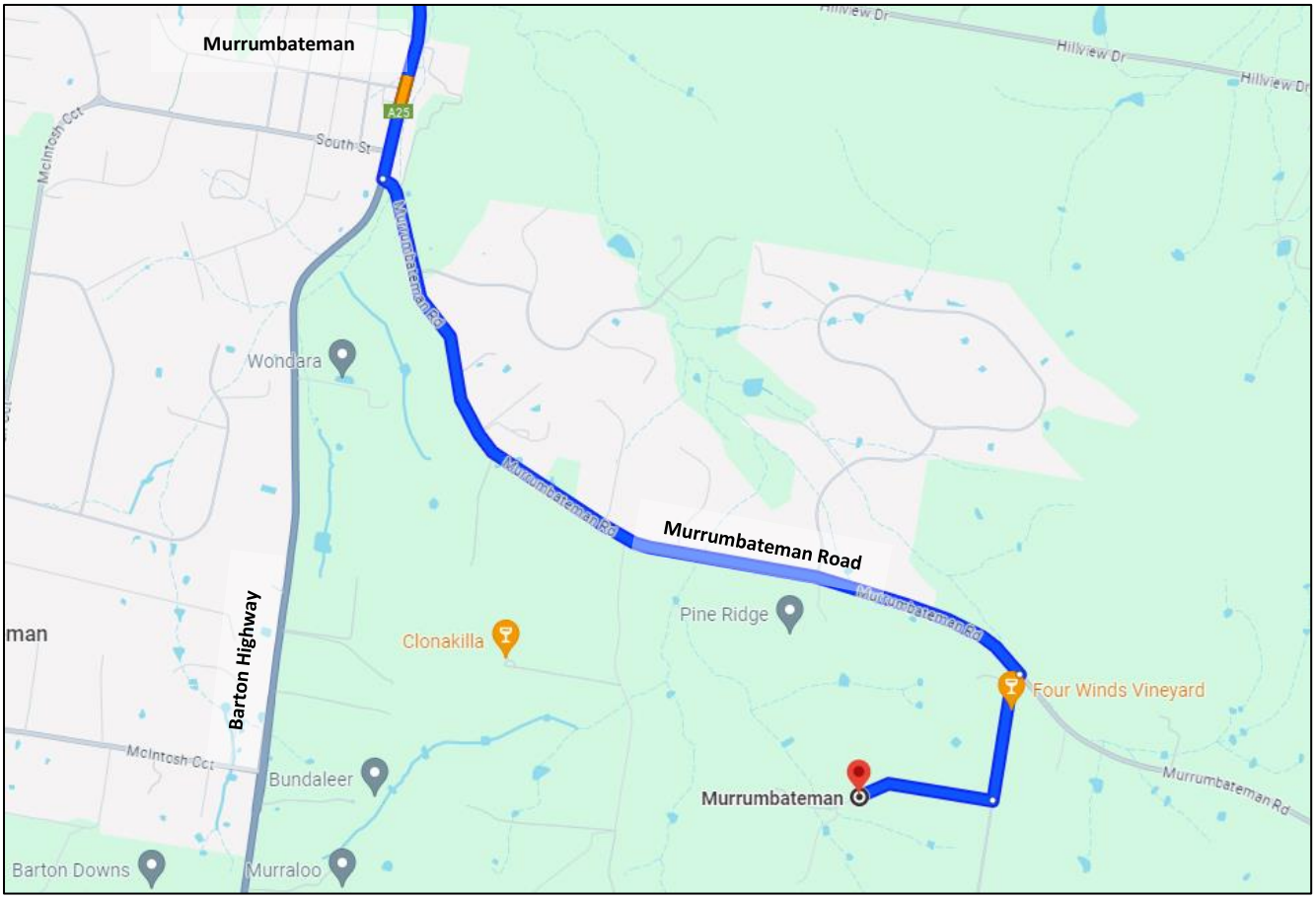


Figure 13: Indicative route for heavy vehicle arrivals (source: Google Maps)

The light vehicles are expected to arrive from Yass and Murrumbateman (from the north) or the more significant population centre of Canberra to the south.

3.1.3 Operation / decommissioning

The proposed use is based on a 40-year lease. If the lease is not renewed after this period, the facility's operator must decommission it, remove all installations, and restore the subject site to its pre-existing state.

Upon approval of this application, the responsible authority may require a decommissioning and rehabilitation plan to be submitted for endorsement.

3.2 Traffic generation

Typically, the traffic generation for new developments is estimated using the traffic generation rates provided in the RTA Guide to Traffic Generating Developments – Version 2.2A 2002 (the RTA Guide). However, the RTA Guide does not include traffic generation rates for BESS facilities.

Therefore, the traffic generation to/from the proposed development was estimated empirically. Traffic generation analysis was undertaken for the development's construction and operational phases to establish the likely peak traffic generation.

3.2.1 Construction phase traffic volumes

Based on the information provided, the peak light vehicle traffic generation is likely to occur from the start of the construction phase to the completion of this phase, with a maximum traffic generation likely to occur during weeks 1 to 3. This is when 3 construction staff vpd will access the subject site, resulting in a total daily traffic generation of 6 vpd (3 vpd arriving at the start of the shift and 3 vpd departing at the end of the shift).

Assuming the construction work will be undertaken during regular working hours, it is anticipated that 3 vehicles will access the subject site during a given peak hour (at the start of the morning shift).

Assessment of the heavy vehicles accessing the subject site during the construction phase revealed that peak traffic generation is likely to occur from the start, with a maximum number of heavy vehicles accessing the subject site during week 2. This period includes delivery of battery shipping containers when up to 10 heavy vehicles will access the subject site weekly and up to 2 vpd. Therefore, this would result in a total daily traffic generation of 4 vpd (2 vpd arriving and 2 vpd departing). It is unlikely that heavy vehicles will arrive within the same hour as deliveries will be managed by the project team (i.e. delivery schedule).

The vehicles are anticipated to access the subject site outside the commuter peak hours for the surrounding road network.

The impact of heavy vehicles is considered negligible; however, conservatively, for this assessment, it has been assumed that a single heavy vehicle will access the subject site during the AM (arriving) and PM (departing) peak hours.

3.2.2 Operational phase traffic volumes

The proposed BESS will have remote monitoring in real-time, allowing for constant surveillance and monitoring of the facility without the requirement for staffing on-site.

The compound contains critical infrastructure that requires a high degree of security. Upon identification of potential issues, action can be taken indirectly from the control centre or directly by chosen contractors who would travel to the subject site if required. During the operational phase, 2 light vehicles will attend the subject site fortnightly for general maintenance.

3.2.3 Peak traffic generation

Assessment of the likely traffic generation volumes during the construction and operational phases of the development revealed that the peak traffic generation for the subject site would occur during the construction phase. Therefore, the assessment was undertaken to determine the traffic implications during this phase.

Conclusion 1: the peak hour traffic generation is likely to occur during the construction phase of the development, where the peak hour volumes are expected to be:

- 3 light vehicles
- 1 heavy vehicle

Conclusion 2: the construction phase is expected to take 4 weeks.

3.3 Traffic distribution assumptions

Based on the surrounding road network, it has been assumed that light vehicle traffic will access the site as follows:

- 30% to/from the south (Canberra)
- 70% to/from the north (Murrumbateman / Yass)
- 100% of the heavy vehicles will arrive from the north to the subject site.

It has been assumed that all vehicles will enter the site in the AM peak and depart during the PM peak.

3.4 Anticipated traffic volumes

Given that the proposed BESS will have peak traffic generation during the construction phase, the anticipated development traffic volumes for 2024 (when the facility is under construction) are summarised in Table 6. This table reflects the turning movements at the Barton Highway / Murrumbateman Road intersection.

Table 6: Directional split of peak traffic flow at the intersection of the Barton Highway and Murrumbateman Road

Period	Type	Left In	Right In	Left Out	Right Out	Total
AM Peak	Light	2	1	0	0	3
	Heavy	1	0	0	0	1
	TOTAL	**3**	**1**	**0**	**0**	**4**
PM Peak	Light	0	0	1	2	3
	Heavy	0	0	0	1	1
	TOTAL	**0**	**0**	**1**	**3**	**4**

4 Car parking assessment of the proposed development

4.1 Planning scheme car parking assessment

The RTA Guide provides car parking rates for new developments. However, the parking requirement for BESS facilities is currently unavailable. Therefore, an empirical assessment was undertaken to estimate the demand for car parking for the proposed development.

Section 3.2.1 outlined that:

- up to 3 light vehicles are anticipated to access the subject site per day during the construction phase of the development

Section 3.2.2 outlined that:

- up to 2 light vehicles are anticipated to access the subject site every fortnight after the facility opens for periodic maintenance.

The proposed site plan indicates a formal on-site car parking area, providing sufficient space to accommodate the required on-site parking.

Conclusion 3: the subject site will generate a peak car parking demand of 3 spaces during construction and 2 spaces after opening.

Conclusion 4: the development plan includes a designated parking area to satisfy the parking demand.

5 Access to the subject site

5.1 Site access – intersection SISD requirement

The visibility criterion typically applied to intersections is Safe Intersection Sight Distance (SISD). Figure 14 shows the SISD, which:

- is nominated in the Austroads Guide to Road Design, Part 4A (AGRD4) as the minimum distance that should be provided on a major road at any intersection (refer to Section 3.2.2 in AGRD4A)
- provides sufficient distance for the driver of a vehicle on the major road:
    - to observe a vehicle from the minor access approach moving into a collision situation, e.g., in the worst case, stalling across the traffic lanes
    - to decelerate to a stop before reaching the collision point.

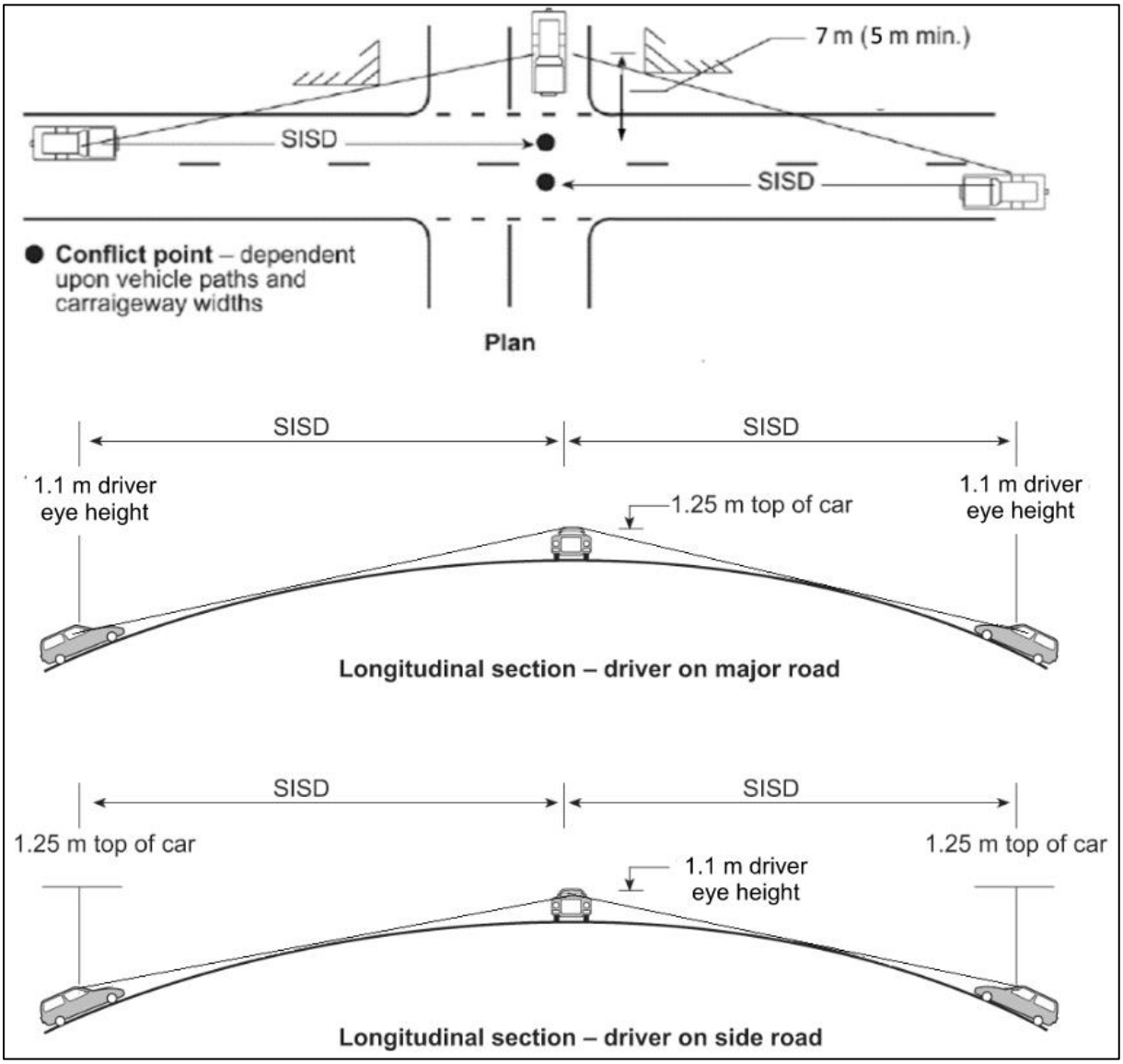


Figure 14: Safe Intersection Sight Distance (SISD) (Source: Figure 3.2 from AGRD4)

5.1.1 Murrumbateman Road

The minimum SISD criterion, specified in Table 3.2 of AGRD4A, requires clear visibility for a desirable minimum distance of **181 m**, relating to the general reaction time RT of 2 seconds and a design speed of 80 km/h (posted speed + 10 km/h).

SISD for heavy vehicles is calculated with reduced deceleration coefficients and increased observation heights to incorporate the different vehicle characteristics. With a 70 km/h design speed, the SISD for a heavy vehicle at this location is **178 m**.

The available sight distance at the intersection of Patemans Lane and Murrumbateman Road is demonstrated in Figure 15 and Figure 16.

Figure 15: Patemans Lane at the Murrumbateman Road intersection – view northwest (about 200 m)

Figure 16: Patemans Lane at the Murrumbateman Road intersection – view southeast (> 300 m)

The site assessment concluded that the visibility requirements at the Patemans Lane and Murrumbateman Road intersection are satisfied; no further treatment is required.

Conclusion 5: adequate sight distance is available at the intersection of Patemans Lane and Murrumbateman Road; no further treatment is required.

5.1.2 Patemans Lane

The minimum SISD criterion, specified in Table 3.2 of AGRD4A, requires clear visibility for a desirable minimum distance of **181 m**, relating to the general reaction time RT of 2 seconds and a design speed of 80 km/h (posted speed + 10 km/h).

SISD for heavy vehicles is calculated with reduced deceleration coefficients and increased observation heights to incorporate the different vehicle characteristics. With a 70 km/h design speed, the SISD for a heavy vehicle at this location is **178 m**.

The available sight distance at the intersection of Patemans Lane and Turton Place is demonstrated in Figure 17 and Figure 18.

Figure 17: Turton Place and Patemans Lane intersection – view north, the sightlines are restricted to 120 m due to a tree in the road reserve

Figure 18: Turton Place and Patemans Lane intersection — view south. Sightlines are about 180 m, with a slight downhill grade towards the intersection from the road's crest. A tree to the right of the road within the reserve reduces sightlines.

The site assessment concluded that the visibility requirements at the intersection of Turton Place and Patemans Lane to the:

- north is **not** satisfied
- south is satisfied.

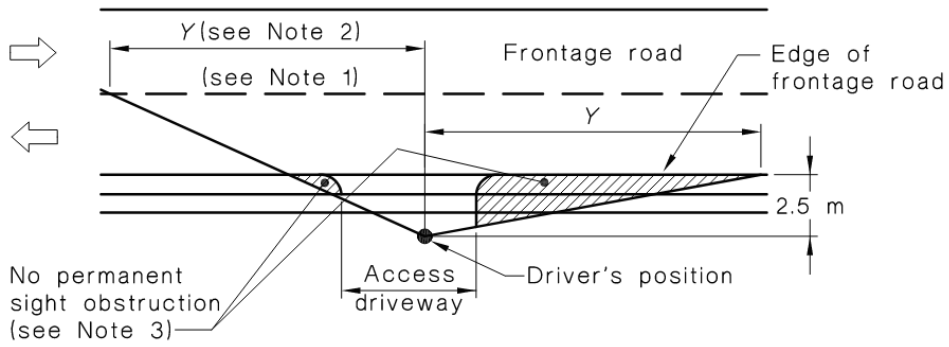
The sight constraints are existing issues, particularly the mature roadside vegetation

Recommendation 1: trim or remove the tree restricting sightlines to the north (as shown in Figure 17).

5.2 Site access – Access driveway ESD requirement

Section 3.2.4 in AS/NZS 2980.1 Parking Facilities – Part 1: Off-street car parking sets out the entering sight distance (ESD) criteria for a driver exiting an access driveway to traffic on the frontage road.

Un-signalised access driveways shall be located so the intersection sight distance available to drivers leaving the driveway along the frontage road is at least that shown in Figure 3.2 of AS/NZS 2890.1 (reproduced in Figure 19).



Frontage road speed (Note 4) km/h	Distance (*Y*) along frontage road m		
	Access driveways other than domestic (Note 5)		Domestic property access (Note 6)
	Desirable 5 s gap	Minimum SSD	
40	55	35	30
50	69	45	40
60	83	65	55
70	97	85	70
80	111	105	95
90	125	130	Use values from 2nd and 3rd columns
100	139	160	
110	153	190	

Figure 19: Sight distance requirements at driveways (Source: Figure 3.2 from AS/NZS 2890.1)

The proposed site access to the development along Turton Place is subject to an expected 60 km/h operating speed. The corresponding minimum Stopping Sight Distance (SSD) is 65 m. This can be achieved east and west of the proposed site access driveway. Figure 20 and Figure 21 show there is no vegetation restricting the sight distance to the northeast and southwest of the site access.

Figure 20: At the intersection of the site access driveway and Turton Place facing northeast

Figure 21: At the intersection of the site access driveway and Turton Place facing southwest

Conclusion 6: the proposed site access driveway to Turton Place satisfies the minimum entering sight distance specified in AS/NZS 2890.1.

5.3 Access location and operation

The subject site access driveway is recommended to be constructed per Figure 7.4 in Austroads Guide to Road Design Part 4: Intersections and Crossings requirements and to the council's satisfaction (refer to Figure 22). It should provide sufficient width to facilitate the movements of a 19 m semi-trailer accessing the subject site.

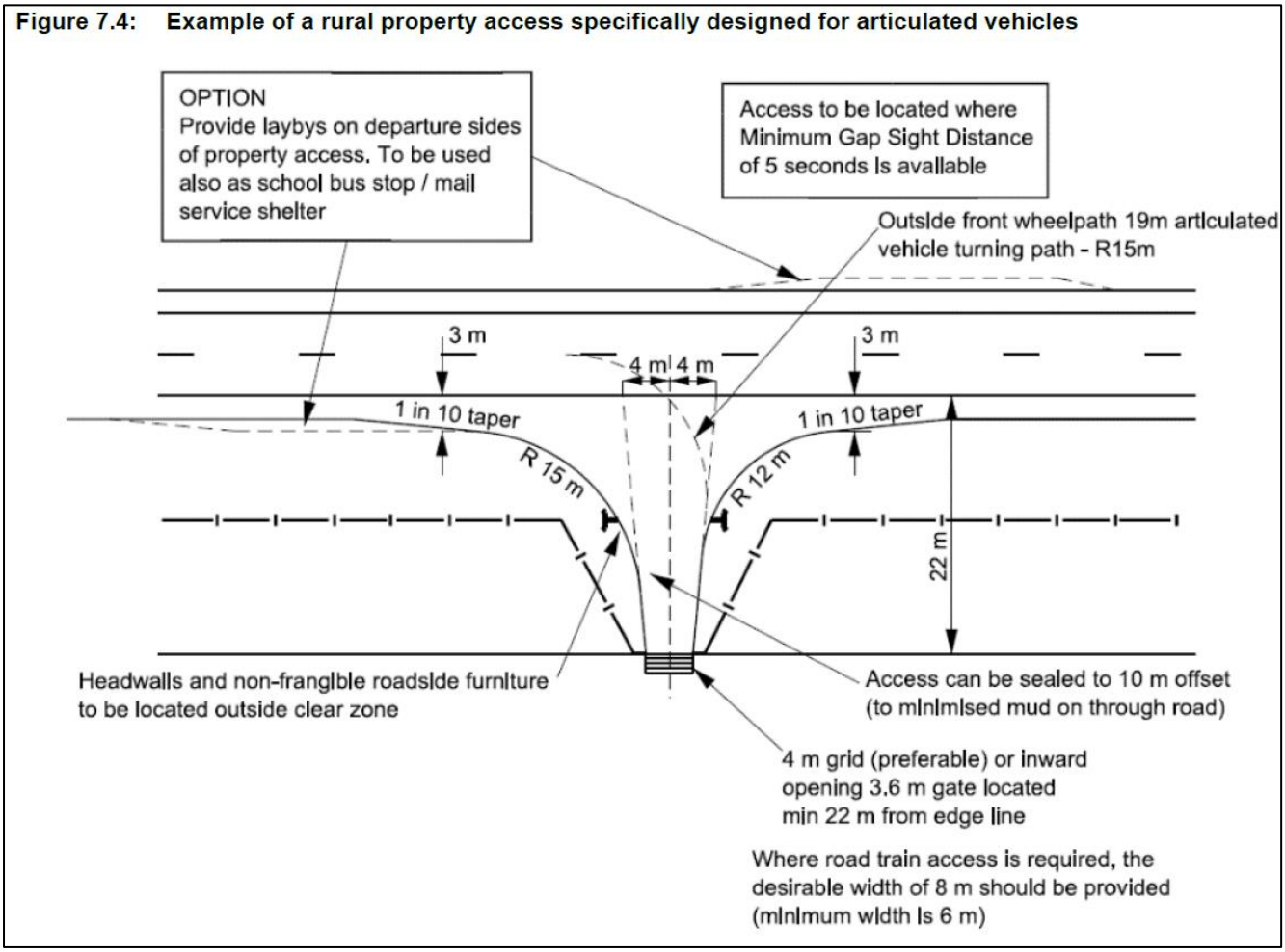


Figure 22: rural property access designed for an articulated vehicle

Recommendation 2: the subject site access driveway should be constructed according to Figure 7.4 in Austroads Guide to Road Design Part 4 requirements and to the council's satisfaction.

5.4 Site security

The proposed development will include installing site security and restricting access to authorised vehicles only. This will involve the provision of security fencing and gates at the development's entrance. The proposed security gate is >300 m from the edge of the formation on Turton Place, located at the end of the driveway.

It is indicated that only 1 truck is expected to arrive and queue at any time, with a 19 m semi-trailer being the largest vehicle accessing the subject site. Hence, the access gate is setback a sufficient distance from the edge of Turton Place to allow a 19 m semi-trailer to wait clear of the carriageway.

Conclusion 7: the setback of the proposed security gate from the edge of Turton Place will accommodate the storage of a 19 m semi-trailer clear of the traffic lane.

5.5 Local network impacts

The traffic turning from major roads into minor roads should not delay through traffic. Generally, turn treatments from major roads into minor roads at sign-controlled intersections are provided for safe and efficient intersection operation.

Due to the low turning volumes during construction (3 light vehicles and 1 heavy vehicle) and operation (2 light vehicles) and the short-term duration of the construction period, the safety and operation of the intersections between the subject site, Turton Place, Patemans Lane, Murrumbateman Road and Barton Highway can be maintained with no additional turn lane treatments.

Conclusion 8: no additional turn lane treatments are required due to the traffic generated by the proposed development.

6 Conclusions and recommendations

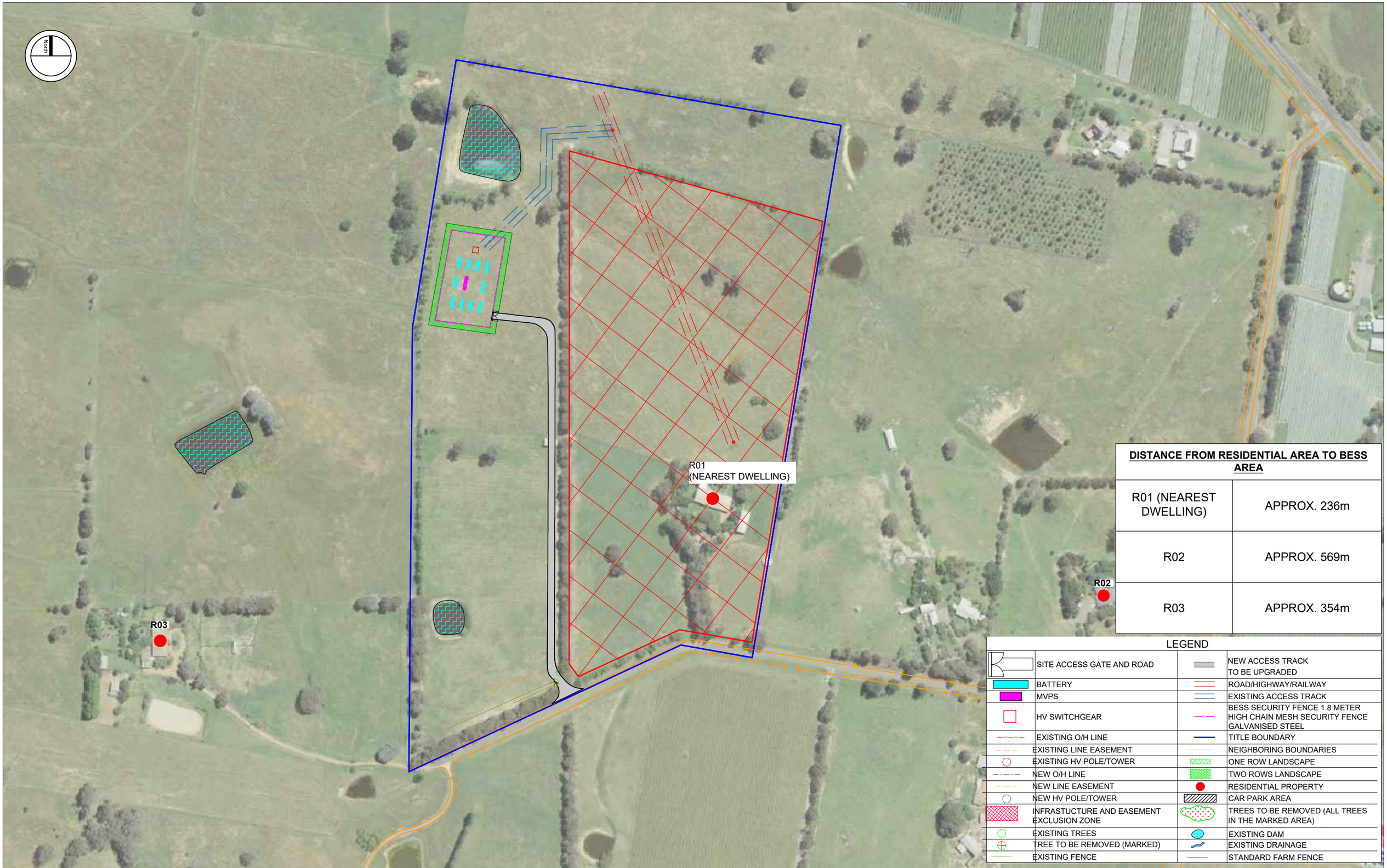
We conclude there are no traffic engineering reasons that would prevent the development from proceeding, as outlined below:

- the peak hour traffic generation is likely to occur during the construction phase of the development, where the peak hour volumes are expected to be:
    - 3 light vehicles
    - 1 heavy vehicle
- the construction phase is expected to take 4 weeks
- the subject site will generate a peak car parking demand of 3 spaces during the construction period and 2 spaces post-opening
- the development plan includes a designated parking area that will satisfy the parking demand
- adequate sight distance is available at the intersection of Patemans Lane and Murrumbateman Road; no further treatment is required
- the proposed site access driveway along Turton Place satisfies the minimum entering sight distance, as specified in AS/NZS 2890.1
- the setback of the proposed security gate from the edge of Turton Place will accommodate the storage of a 19 m semi-trailer clear of the traffic lane
- no additional turn lane treatments are required due to the traffic generated by the proposed development.

However, this TIA has identified a recommendation that needs to be addressed:

- **Recommendation 1:** trim or remove the tree restricting sightlines to the north (as shown in Figure 17)
- **Recommendation 2:** the subject site access driveway should be constructed according to Figure 7.4 in Austroads Guide to Road Design Part 4 requirements and to the council's satisfaction.

Appendix 1 – Development Plans



DISTANCE FROM RESIDENTIAL AREA TO BESS AREA

R01 (NEAREST DWELLING)	APPROX. 236m
R02	APPROX. 569m
R03	APPROX. 354m

LEGEND

	SITE ACCESS GATE AND ROAD		NEW ACCESS TRACK TO BE UPGRADED
	BATTERY		ROAD/HIGHWAY/RAILWAY
	MVPS		EXISTING ACCESS TRACK
	HV SWITCHGEAR		BESS SECURITY FENCE 1.8 METER HIGH CHAIN MESH SECURITY FENCE GALVANISED STEEL
	EXISTING O/H LINE		TITLE BOUNDARY
	EXISTING LINE EASEMENT		NEIGHBORING BOUNDARIES
	EXISTING HV POLE/TOWER		ONE ROW LANDSCAPE
	NEW O/H LINE		TWO ROWS LANDSCAPE
	NEW LINE EASEMENT		RESIDENTIAL PROPERTY
	NEW HV POLE/TOWER		CAR PARK AREA
	INFRASTUCTURE AND EASEMENT EXCLUSION ZONE		TREES TO BE REMOVED (ALL TREES IN THE MARKED AREA)
	EXISTING TREES		EXISTING DAM
	TREE TO BE REMOVED (MARKED)		EXISTING DRAINAGE
	EXISTING FENCE		STANDARD FARM FENCE

REVISIONS

REV	STATUS	DESCRIPTION	DATE	D.B.	C.B.
A	CP	INITIAL ISSUE	07/06/23	XT	RZ
B	CP	ADDED INFRASTRUCTURE AND EASEMENT EXCLUSION ZONE	20/11/23	XZ	AJ

PROJECT DETAILS: MURRUMBATEMAN DISTRIBUTION BESS
3 TURTON PLACE MURRUMBATEMAN, NEW SOUTH WALES 2582
-34.9920, 149.04964

CLIENT DETAILS: ACENERGY PTY LTD

DRAWING TITLE: AERIAL LAYOUT 1 OF 2

DRAWING NR: CP-1.0_023118

DRAWN BY :	APPROVED BY :	PROJECT MGR :
XZ	AJ	LZ
SCALE : AS INDICATED	ISSUE : CONCEPT PLAN	ISSUE DATE : 20/11/2023
SHEET SIZE: A3	PROJECT NO: 23118	REV. NO: B

ACENERGY

Appendix 2 – Acronyms and terms

Acronyms / terms	Definition
AGRD4	Austroads Guide to Road Design Part 4 – Intersections and crossings
AGRD4A	Austroads Guide to Road Design Part 4A – Unsignalised and signalised intersections
AGTM6	Austroads Guide to Traffic Management Part 6 – Intersections, interchanges and crossings management
AGTM8	Austroads Guide to Traffic Management Part 8 – Local street management
AS/NZS2890.1	Australian Standard / New Zealand Standard 2890.1 Parking facilities Part 1: Off-street car parking
DPE	Department of Planning and Environment
ESD	Entering site distance
PSP	Precinct structure plan
SIDRA	SIDRA intersection – micro analytical traffic engineering software to model the performance of intersections
SISD	safe intersection sight distance
TIA	traffic impact assessment
TfNSW	Transport for New Soth Wales (NSW)
vpd	vehicles per day
vph	vehicles per hour

WARATAH ECOLOGY

Flora and Fauna Report

3 Turton Place, Murrumbateman NSW 2582

Prepared for ACENERGY Pty Ltd

WARATAH ECOLOGY

DOCUMENT TRACKING

Project Name	3 Turton Place, Murrumbateman; Flora and Fauna Assessment
Project Number	WE2024-4-28A
Prepared by	Jock McNaughton, Ecologist
Approved by	Melanie Allan, Principal Ecologist
Status	Final V4.0
Last saved on	14 November 2024

This report should be cited as 'Waratah Ecology Pty Ltd 2024. *3 Turton Place, Murrumbateman NSW, Flora and Fauna Assessment.'*

ACKNOWLEDGEMENTS

This document has been prepared by Waratah Ecology Pty Ltd with support from Ahmed Adel of ACENERGY Pty Ltd

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1. Introduction

1.1. Purpose of this report

Waratah Ecology was commissioned by ACENERGY Pty Ltd ('the client') to undertake a flora and fauna assessment for a proposed development at 3 Turton Place, Murrumbateman NSW 2582 ('the study area'). This document reports on the ecological values identified within the study area and considers both the direct and indirect impacts from the proposed works in relation to current environmental planning legislation. This includes an assessment of the impacts of native flora and fauna listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) that could occur in the study area.

1.2. Study Area Description

The study area is located at 3 Turton Place, Murrumbateman, in the Local Government Area (LGA) of Yass Valley (**Figure 1**). The study area covers approximately 16.3 hectares (163,000m^2) and can be further identified as Lot 23 in Deposited Plan (DP) 248413 (**Figure 2**). The study area is zoned as RU4 – Primary Production Small Lots, as per the Yass Valley Local Environmental Plan (LEP) 2013 Land Zoning Map (Sheet LZN_005). The subject site is classified as Category 3 Bush Fire Prone Land (BFPL) under the Yass Valley BFPL Map. The proposed development is permissible with consent under the Yass Valley Local Environmental Plan 2013.

The majority of the study area is mapped as Category 1 – Exempt Land on the Draft native vegetation regulatory map, with some areas, including the southern boarder of the site and the driveway, being mapped as Category 2 – Regulated Land (NSW Government, 2024) (**Figure 6**). Further explanation of the relevant native vegetation regulatory map categories is provided in **Table 2**.

The study area consists of several grassed paddocks utilised for agricultural purposes, largely cleared of vegetation. A driveway bordered by tall trees runs north-south from Turton Place to a dwelling further surrounded by vegetation. Two dams are located in the northwest and southwest corners of the property.

1.3. Proposed Development

The proposed works involve the construction of a battery energy storage system (BESS) in the northwest of the property. In total, the BESS development is calculated to occupy approximately 7,170m^2 (0.72ha), with a driveway to be developed along the eastern boundaries of the western paddocks, as well as an underground and overhead line connecting to the storage system. As per the development plans provided by the client (**Figure 3**), the works will require the removal of several trees along the property's southern boundary, to allow for connection of a driveway to Turton Place.

An Asset Protection Zone (APZ) is also required for the proposed development, as described by Harris Environmental Consulting (2024). This consists of a 10-13m wide spacing around the electrical facilities, providing a defendable space as well as safe operational access to all assets and infrastructure. The APZ will be located within the surrounding security fence. Based on the layout of the facility, this assessment also recommends a fuel free zone directly surrounding the batteries, HV switchgear and other associated electrical equipment for the purposes of minimising the likelihood of fires within the site and reducing their potential severity or extent.

The total calculated area required to be cleared for the proposed development is approximately 0.72ha, as presented in **Table 1**.

Table 1: Required Development Area

Asset	Required Clearance Area (m^2)
Electrical Equipment Area	1180
Asset Protection Zone (APZ)	2500
Access Road	2430
Connection Route & Easement	1060
Total	7,170

Figure 1: Study Area (Source: NearMaps)

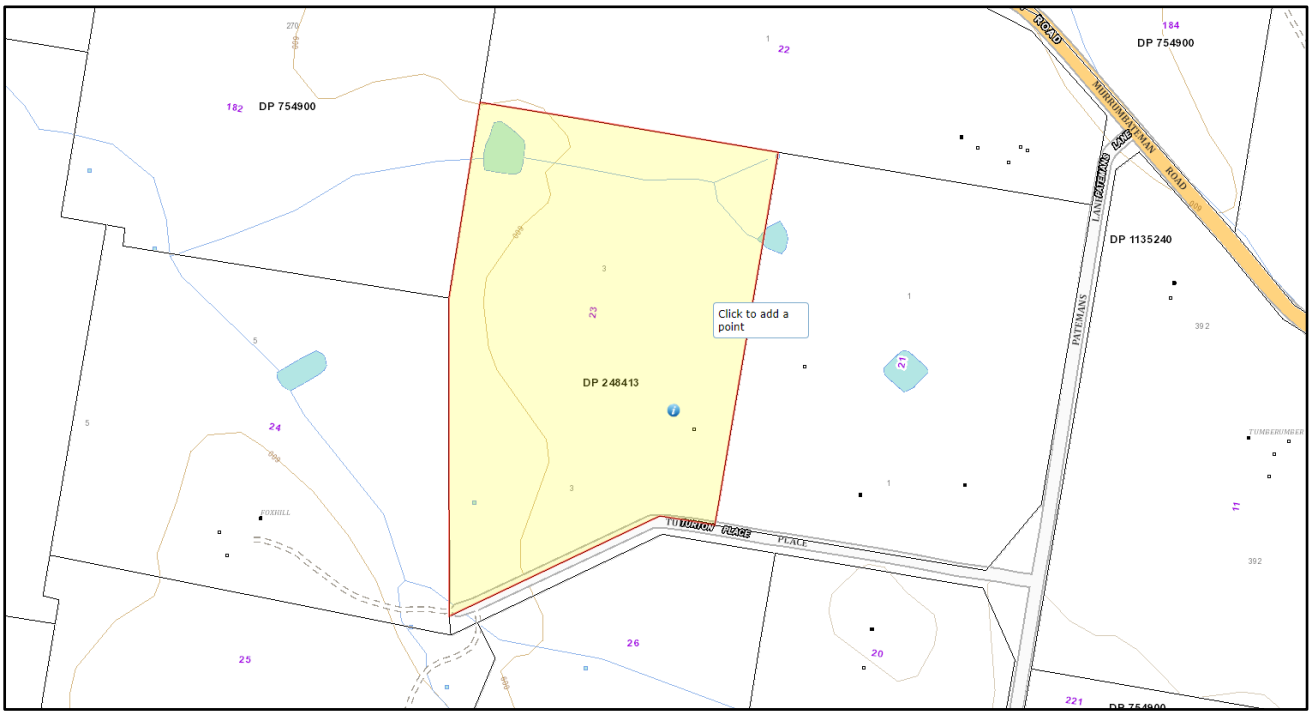

Figure 2: Property Area and Lot Boundaries (Source: SixMaps)

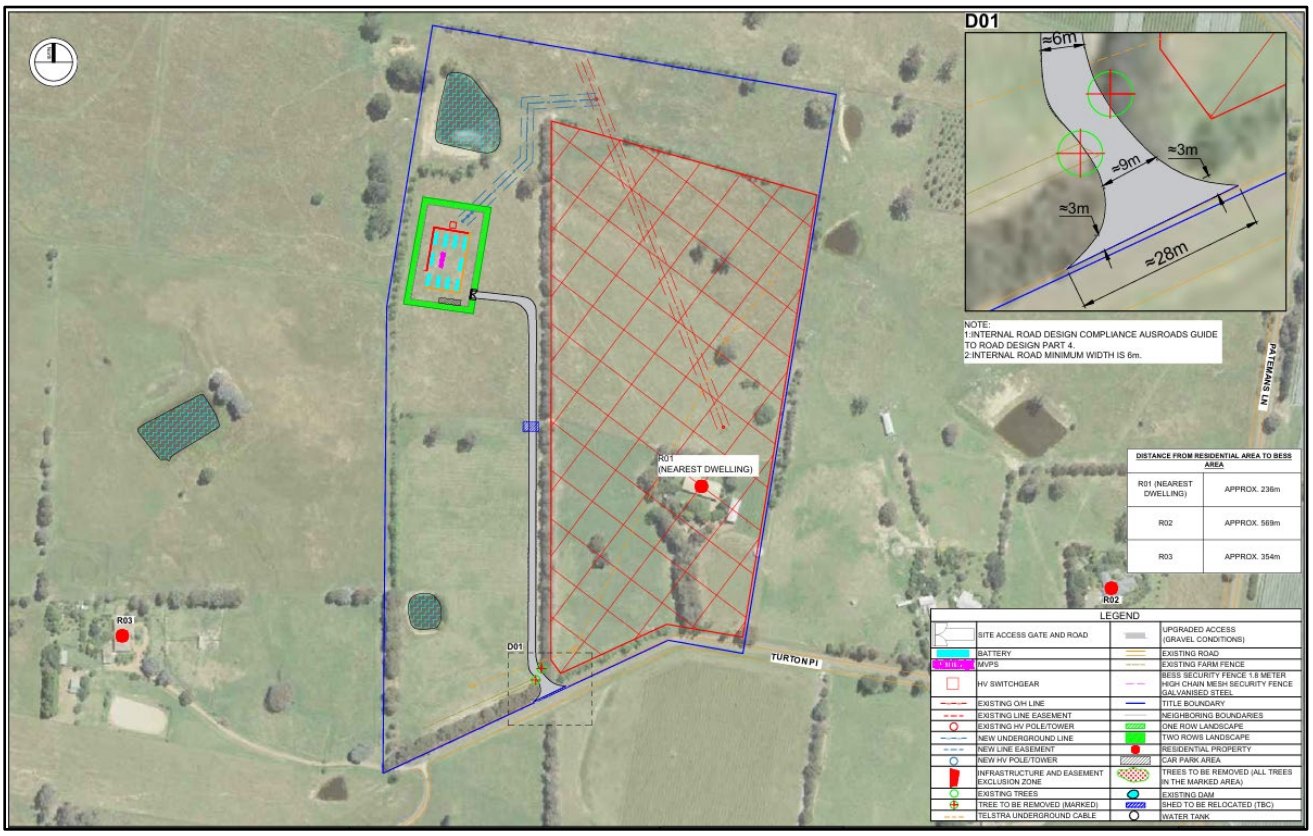

Figure 3: Proposed Development Plans (Source: ACENERGY)

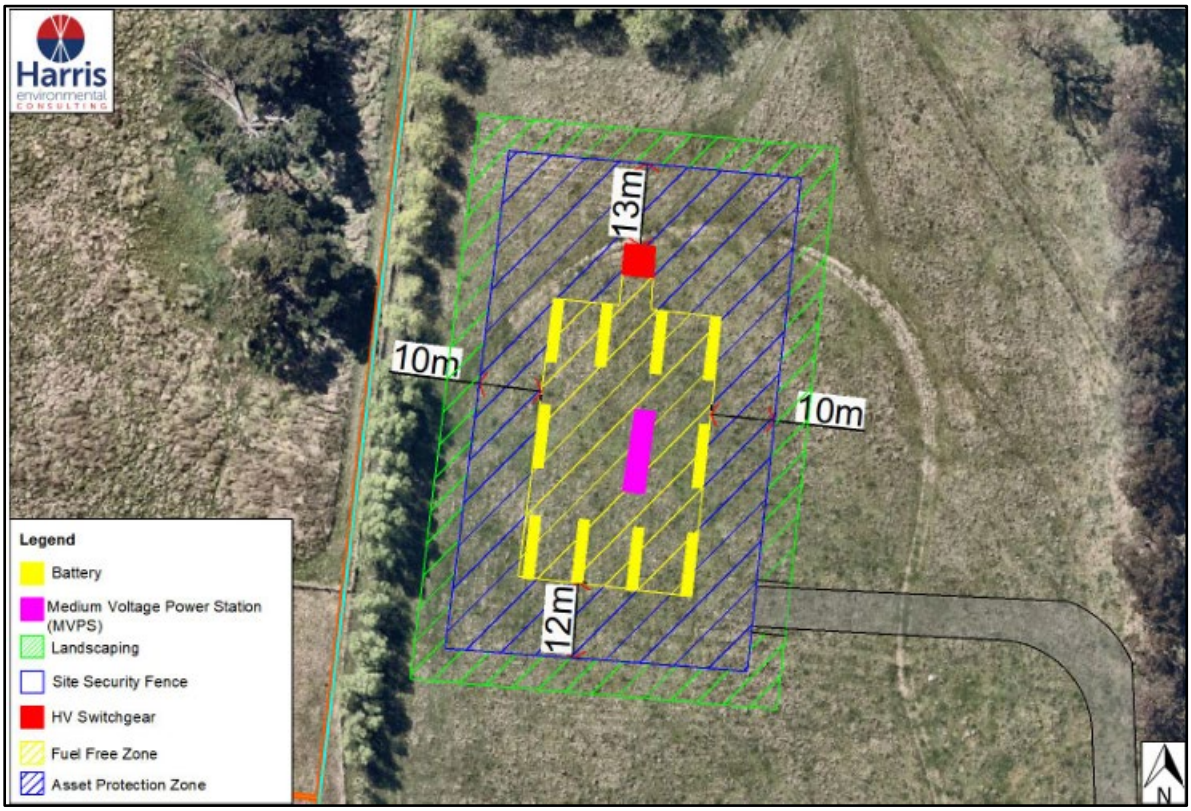

Figure 4: Asset Protection Zone (Harris Environmental Consulting, 2024)

Figure 5: The list as viewed on the Biodiversity Values Map (Source: SEED)

Figure 6: The site as viewed on the draft Regulatory Native Vegetation Map (Source: NSW Government)

Figure 7: Area to be cleared (Source: NearMaps)

1.4. Legislative context

Table 2: Legislative Framework reviewed in this report (Commonwealth, State and Local)

Instrument	Consideration	Context
Commonwealth		
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Matters of National Environmental Significance	An action will require approval from the Minister if the action has, will have, or is likely to have, a significant impact on a matter of national environmental significance.
State (New South Wales)		
Biosecurity Act 2015	Priority Weeds	Describes the state and regional priorities for weeds in New South Wales
Environmental Planning and Assessment Act 1979 (EP&A Act)	Part 4 – Development Assessment and Consent	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of proposals.
Biodiversity Conservation Act 2016 (BBC Act)	Part 7 – Biodiversity Assessment and Approvals under the Planning Act	Section 7.3 provides the test for determining whether proposed development or activity is likely to significantly affect threatened species or ecological communities, or their habitats.
Biodiversity Conservation Regulation 2017 (BC Reg)	Part 7.1	Establishes that a proposed development triggers the biodiversity offset scheme if it involves the clearing of native vegetation on land included on the Biodiversity Values Map.
Local Land Services Act 2013	Part 5A Land Management – Native Vegetation	60B – Meaning of 'native vegetation' 60D – Other definitions **'Category 1 – Exempt Land'** refers to areas of the state which is mapped as blue on the Native Vegetation Regulatory Map. Areas mapped as 'Category 1 – Exempt Land' is land where native vegetation can be cleared without approval from Local Land Services. **'Category 2 – Regulated Land'** refers to areas of the state which is mapped as yellow on the Native Vegetation Regulatory Map. Areas mapped as 'Category 2 – Regulated Land' is land that is not 'Vulnerable' or 'Sensitive' regulated land. Authorisation from Local Land Services is required to clear native vegetation in this category. There are also a range of allowable activities which can be carried out without needing authorisation.
Local Government		
Yass Valley Local Environmental Plan 2013 (Yass Valley LEP 2013)		In accordance with the Yass Valley LEP 2013, the study area is zoned as RU4 – Primary Production Small Lots. The proposed development is permissible with consent under the Yass Valley LEP.

1.5. Biodiversity offsets Scheme

The BC Act and its regulations stipulate native vegetation clearing 'area threshold' values that determine whether a development is required to be assessed in accordance with the 'Biodiversity Offset Scheme' (BOS). Minimum entry thresholds for native vegetation clearing depend on the minimum lot size (shown in the Lot Size Maps made under the relevant Local Environmental Plan [LEP]), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

Developments that trigger the BOS may require a 'Biodiversity Development Assessment Report' (BDAR) that addresses the Biodiversity Assessment Method (BAM) and the purchasing of Biodiversity Credits.

For a local development under Part 4 of the EP&A Act, the BOS and BAM may be triggered by the following means:

- Exceeding the area clearing threshold associated with the minimum lot size for the property will trigger entry into the BOS (**Table 3**).
- Whether the impacts occur on an area mapped on the Biodiversity Values Map (BVM).

The minimum lot size for the subject site is '1-40ha', with over 0.5ha (approximately 0.72ha) of vegetation to be cleared as part of the proposed development (see **Section 1.3**).

The site is not mapped on the Biodiversity Values Map (see **Figure 6**) and is also mapped on the current draft version of the NSW Native Vegetation Regulatory Map as Category 1 – Exempt Land (see **Figure 5**). Therefore, under these conditions, the BOS is not triggered and a BDAR is not required.

Table 3: BOS Area Clearing Threshold

Minimum lot size associated with the property	Threshold for clearing native vegetation, above which the BAM and offsets scheme apply
Less than 1 ha	0.25 ha or more
1 ha to less than 40 ha	0.5 ha or more
40ha to less than 1000 ha	1 ha or more
1000 ha or more	2 ha or more

2. Methodology

2.1. Literature and database review

A site-specific literature and database review was undertaken prior to the field survey and the preparation of this report. This included desktop analysis of aerial photography and review of regional scale information from the following sources:

- Biodiversity Values Map (DPE 2024a)
- Yass Valley Local Environmental Plan (LEP) 2013
- NSW BioNet Atlas (OEH 2024a)
- NSW BioNet Vegetation Classification (OEH 2024b)
- NSW ePlanning spatial viewer (DPE 2024c)
- EPBC Act Protected Matters Search Tool (DCCEEW 2024)
- Six Maps (LPI 2022)

Searches using NSW Wildlife Atlas (BioNet, DPE 2023b) and the Commonwealth Protected Matters Search Tool (PMST) were conducted to identify threatened flora and fauna, as well as migratory fauna records within a 10km x 10km cell search area centred on the study area using the coordinates-34.993194,149.051084. This data was used to establish the likelihood of any ecological values as occurring on or adjacent to the study area.

Vegetation communities were assessed against described Threatened Ecological Communities (TECs) listed under the EPBC Act and/or the BC Act.

2.2. Likelihood Assessment

The likelihood and occurrence of threatened species, populations and migratory species, previously recorded within 5km of the study area was assessed by:

- Reviewing the location and date of recent (<5 years) and historical (>5-20 years) records
- Reviewing available habitat within the study area and surrounding areas
- Applying expert knowledge of each species' ecology.

Following a review of available habitat within the study area, the potential for each threatened species, population and/or migratory species to occur was assessed. The potential for species to occur within the study area was assessed as either:

- 'Recent record' = species has been recorded in the study area withing the past 5 years
- 'High' = species has previously been recorded in the study area (>5 years ago) or in proximity to (for mobile species), and/or habitat is present that is likely to be used by a local population
- Moderate" = suitable habitat for a species is present onsite but no evidence of a species detected and relatively high number of recorded (5-20 years) within 5 km of the study area or species is highly mobile
- "Low" = suitable habitat for a species is present onsite but limited or highly degraded, no evidence of a species detected and relatively low number of recent records within 5 km of the study area
- "Not present" = suitable habitat for the species is not present on site or adequate survey has determined species does not occur in the study area.

2.3. Field Survey

A site survey was conducted on 12 April 2024, by Principal Ecologist, Melanie Allan. The weather conditions on the day of the survey were fine and sunny (**Table 3**).

Table 4: Survey Weather Conditions

Date	Temp (C°)		Rainfall (mm)	Wind	
	Min	Max		Direction	Speed (km/h)
12/04/2024	6.3	21.1	0	NW	39

Traverses were undertaken across the study area, whilst recording visible flora species and identifying potential habitat for threatened species. Areas that were more likely to resemble intact, resilient vegetation were surveyed more extensively than degraded areas of the site. Photographs taken during the field survey are presented in **Appendix A**.

An opportunistic fauna survey was undertaken for birds, amphibians, reptiles and mammals, which included observations along with signs of direct and indirect occupancy (i.e., scats, owl pellets, fur, bones, tracks, bark scratches, foliage chew marks etc.).

Fauna habitat searches were conducted for potential foraging, roosting, breeding or nesting habitat of nocturnal and diurnal species. This included tree hollows, stags, bird nests, possum dreys, decorticating bark, mature/old growth trees, food trees (e.g., winter-flowering eucalypts, etc.), culverts, dens, dams, riparian areas and refuge habitats.

2.4. Survey Limitations

The flora survey aimed to record as many species as possible. However, a definitive list of the flora within the study area cannot be gathered without systematic traverses and surveys across several seasons. Additional species may be recorded during a longer survey over various seasons. However, the techniques used in this investigation are considered adequate to gather the data necessary to validate the vegetation communities and vegetation condition in the study area and assess the likelihood of occurrence of any threatened flora species.

A full fauna survey following Threatened Species Survey and Assessment Guidelines (OEH 2020) was not undertaken as sufficient detail to determine the likelihood of occurrence of threatened and migratory species for the purpose of this report was achieved through opportunistic surveys and habitat assessment during the field survey. Further detailed targeted threatened flora and fauna surveys were not considered necessary for this assessment.

Considering the habitat available on site, the condition of the vegetation and the proposed impacts, the survey effort was deemed satisfactory for the purposes of this assessment.

3. Results

This section outlines the results of the desktop assessment and field survey.

3.1. Literature and Database Review

A review of the NSW BioNet Atlas and EPBC Act PMST identified 15 threatened fauna species (including migratory species) that may occur within 5km of the study area. Many of the threatened fauna species excluded from further consideration are species that do not have suitable habitat in the study area, and thus are not likely to be affected by the proposed works. There have been no threatened flora species recorded within 5km of the study area in the last 20 years. The likelihood assessment is provided at **Appendix B**.

Based on current mapping, a small portion of the vegetation on site is mapped as follows:

- Vegetation Formation: Grassy Woodlands
- Vegetation Class: Southern Tablelands Grassy Woodlands
- Plant Community Type (PCT) name: Southern Tableland Grassy Box Woodland
- PCT Number: 3376

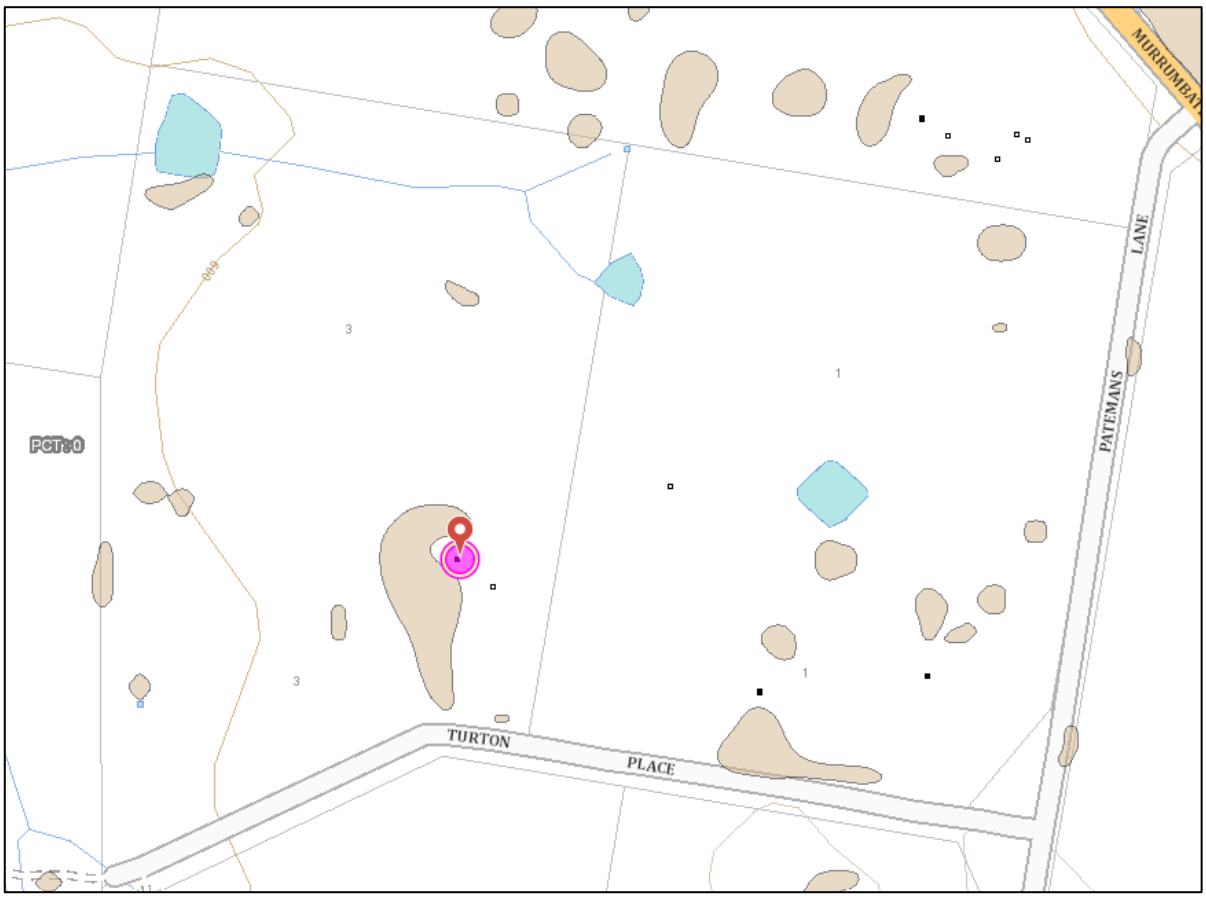

Figure 8: Plant Community Types mapped on the site (Source: SEED)

This PCT consists of tall sclerophyll woodland with a dry shrub layer that is patchy to absent and a mid-dense, grassy groundcover and is not considered a Threatened Ecological Community (TEC). It is common throughout the low hills of the drier part of the Southern Tablelands between Bedbo and Rylstone in NSW.

The canopy layer almost always includes box eucalypts (*Eucalyptus melliodora* or *Eucalyptus bridgesiana*). The shrub layer is sparse to absent with occasional scattered *Melichrus erceolatus*, *Lissanthe strigose* or *Acacia* species. The mid-dense ground layer consists of grasses, forbs and graminoids, including *Hydrocotyle laxiflora*, *Austrostipa scabra* and *Lomandra filiformis*. The PCT occurs on granite, volcanic and sedimentary substrates in cold, dry environments, with a mean annual rainfall below 760mm. This PCT commonly grades into other similar grassy eucalypt woodlands in the Southern Tablelands of NSW.

3.2. Field Survey

3.2.1. Vegetation

The study area consisted of several large, grassed paddocks utilised for agricultural purposes, surrounding a single dwelling, as noted in Section 1.2. Native vegetation boarders the driveway and some of the paddock boundaries. This vegetation is mapped as PCT 3376: Southern Tableland Grassy Box Woodland (see Section 3.1 above). The vegetation across the study area is estimated to contain less than 5% tree cover and has been classified as grassland in accordance with the PBP 2019.

The study area is mapped as category 1 and category 2 land under the NSW Draft Native Vegetation Regulatory Map. The majority of the subject land is mapped as category 1 with pockets of category 2. The field survey determined that these categories are appropriate with the development footprint predominantly covered with exotic pasture. It is estimated that the proportion of native groundcover is less than 30% within the development footprint. Vegetation within the area mapped as 'category 1' is not included in any area clearing calculations for the BOS.

3.2.2. Threatened flora species

No threatened flora species were recorded within the study area during the survey, and none have been recorded within 5km of the study area in the last 20 years. Furthermore, no suitable habitat was considered to be present for any threatened flora species due to the level of vegetation modification, and disturbance within the study area. Hence no further assessment is required under Section 7.3 of the BC Act for threatened flora species.

The majority of the study area is not mapped by NSW OEH (2024b) and was found to mainly consist of native and exotic plantings and exotic grassland.

3.2.3. Threatened Ecological Communities

No Threatened Ecological Communities are listed as being present on the site, as per the Protected Matters Search Tool (DCCEEW, 2023). Two TECs are however recognised within a 5km radius of the site:

- Natural Temperate Grassland of the Southeastern Highlands; and
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

Both TECs are listed as 'Critically Endangered' with their presence listed as '*Community likely to occur within area*', referring to the buffer area applied to the site.

The survey confirmed that neither of these TECs are present within the study area.

3.2.4 Threatened fauna and fauna habitat

No threatened fauna species were recorded during the field survey. Some fauna habitat features exist within the study area, including mature hollow bearing trees, fallen timber and groundcover. These features provide potential foraging, roosting, breeding and nesting resources (Table 4).

No hollow bearing trees will be impacted by the proposed development and the groundcover to be removed is considered to be of low ecological value. The species likely to use the study area are highly mobile and the amount of habitat to be impacted is negligible in comparison to the availability of similar habitat in the adjacent landscape and locality. Hence no further assessment is required under Section 7.3 of the BC Act for threatened fauna species.

Table 5: Fauna Habitat Features Within the Site

Habitat features	Fauna species
Mature trees	Arboreal mammals, birds, and megachiropteran bats
Grassland areas	Diurnal birds, reptiles, ground mammals

4. Impact Assessment

Both direct and indirect impacts for the proposed works have been considered in the impact assessment below.

4.1. Direct Impacts

Direct impacts are those impacts that directly affect habitat and individuals. Direct impacts considered for this assessment are vegetation and habitat removal. As per the development plans provided by the client, the proposed works will result in the removal of several smaller trees along the property's southern boundary, to allow for access to Turton Place. These trees were identified as not hollow-bearing and are considered to be of low to moderate ecological retention value (refer **Photograph 10**). Hollow-bearing trees are present within the study area but will not be impacted by the proposed development.

The proposed development will require the removal of approximately 0.72ha of agricultural grasslands, which has been historically cleared for livestock grazing. The vegetation consists predominantly of exotic grass species. This vegetation/habitat is considered to be of low ecological value.

4.2. Indirect Impacts

Indirect impacts of the proposed development may include noise pollution, erosion, weed spread, stormwater runoff, and edge effects associated with construction.

Indirect impacts may include:

- Increase in surface water runoff, sedimentation and nutrients during and following construction.
- Increase in noise and disturbance to fauna in adjacent vegetation.
- Damage to native vegetation adjacent to the subject site.

Impacts are considered to be manageable through the development of a Construction Environmental Management Plan (CEMP) and adherence to the recommendations listed in **Section 5**.

5. Recommendations

All applications to Council for development or clearing approvals must set out how impacts on biodiversity will be avoided and minimised. This includes applications that do not trigger entry into the Biodiversity Offset Scheme.

Recommendations considered necessary to ensure that any significant impacts are avoided or minimised are provided below:

- A Construction Environmental Management Plan (CEMP) should be developed with relevant mitigation measures to ameliorate potential impacts to biodiversity values outside of the development area. The CEMP should address pollution and contamination issues such as silt control and oil/fuel/chemical-storage/spill management that could arise during construction.
- Construction fencing pre and during construction must be put in place to ensure that construction related impacts are contained within the construction areas.
- Areas of retained native vegetation adjacent to the site should be no-go zones for plant and equipment and be clearly delineated with construction fencing.
- All trees surrounding the development should be protected with appropriate tree protections to prevent damage during construction.
- Silt fences should be put in place around the construction site to limit the spread of sediment and weeds into adjacent vegetation.
- Erosion controls should be inspected regularly (daily during workdays) and after rainfall. Damaged controls should be fixed immediately. Accumulated sediment or waste material is to be removed from within the sediment controls regularly and disposed of at a licensed waste facility.
- Erosion and sediment controls are to be left in place until after the works are completed, including revegetation of any bare surfaces.
- The works should be scheduled outside of predicted heavy rain periods.
- Any exotic vegetation removed from the site should be disposed of at an approved facility.

6. Conclusions

This report provides an assessment of the ecological value of the flora and fauna within the study area and considers the impacts of the proposed development in relation to current environmental planning legislation.

No threatened flora or fauna species were recorded within the study area. The study area is unlikely to contain suitable habitat for threatened species. This is due to the property being historically cleared for agricultural purposes. Although present on the site, no hollow bearing trees will be directly impacted by the proposed development and the site is isolated from areas of intact significant native vegetation, removing the possibility of any further ecological fragmentation. As such, a significant impact under Section 7.3 of the BC Act for threatened species was considered unnecessary and a Test of Significance was not undertaken.

The proposed vegetation clearing is above the clearing threshold that triggers the Biodiversity Offset Scheme under the BC Act. However, the site is not mapped on the Biodiversity Values Map and is also mapped on the current draft version of the NSW Native Vegetation Regulatory Map as Category 1 – Exempt Land. Therefore, under these conditions, the BOS is not triggered and a BDAR is not required.

Potential impacts associated with the proposed works can minimised and mitigated through the recommendations listed in Section 5 of this report.

7. References

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Appendix A: Site Photographs

Photograph 1: View facing north along the proposed driveway.

Photograph 2: View facing south towards Turton Place from along the proposed driveway.

Photograph 3: View of the two larger eucalypt trees in the central west of the site, facing west. These trees will be unaffected by the proposed works.

Photograph 4: Closer view of the eucalypt located in the central west of the site, with grassed paddocks present in the background.

Photograph 5: Example of the grasses encountered throughout the site.

Photograph 6: View of the dam located in the northwest corner of the site.

Photograph 7: View of one of the larger eucalypts located in the central northern area of the site, with several hollows identified.

Photograph 8: A hollow identified in one of the larger central northern eucalypts.

Photograph 9: View of the southwestern paddocks and the vegetation utilised as wind barriers along its border.

Photograph 10: Example of the younger eucalypts located along the borders of the paddocks.

Appendix B: Flora and Fauna List and Likelihood Assessment

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
Litoria aurea Green and Golden Bell Frog	Amphibian	E1, P V	Formerly distributed from the NSW north coast near Brunswick Heads, southwards along the NSW coast to Victoria where it extends into east Gippsland. Records from west to Bathurst, Tumut and the ACT region. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations. These locations occur over the species' former range; however, they are widely separated and isolated. Large populations in NSW are located around the metropolitan areas of Sydney, Shoalhaven and mid north coast (one an island population). There is only one known population on the NSW Southern Tablelands.	1	1/3/2011 Northwest Murrumbateman	2011 Within 5km	**Moderate** No records within 10 years, older record occurred within a rural dam in Murrumbateman.	**No** This species was not detected in the subject site during surveys. Suitable habitat in the form of the two on-site dams are present, however will not be impact during the proposed works. The subject site is not considered important to the long-term survival of this species.
Artamus cyanopterus cyanopterus (Dusky Woodswallow)	Bird	V, P N/L	Dusky woodswallows are widespread in eastern, southern and southwestern Australia. The species occurs throughout most of New South Wales, but is sparsely scattered in, or largely absent from, much of the upper western region. Most breeding activity occurs on the western slopes of the Great Dividing Range. They primarily inhabit dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and	8	2020 Within 5km	2019 Within 1km	**Moderate** Records within 1km of study area in the last 5 years. Some suitable woodland foraging habitat present. No signs that the subject site is used for breeding by this species	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.					
Callocephalon fimbriatum (Gang-gang Cockatoo)	Bird	E V	In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee. Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.	1	2021 Within 5km	2021 Within 5km	**Moderate** Recent records (within 4 years). Some suitable habitat in study area, however sighting made as a wildlife rehabilitation.	**No** This species was not detected in the subject site during surveys. Suitable habitat is present but not limited in the locality. No hollow bearing trees will be impacted by the proposed works and impact to foraging habitat is marginal for this highly mobile species. The subject site is not considered important to the long-term survival of this species.
Circus assimilis Spotted Harrier	Bird	V, P N/L	The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population.	1	16/10/2013 North Murrumbateman	2013 Within 5km	**Moderate** No records within 10 years. Older record occurred along Barton Highway north of Murrumbateman.	**No** This species was not detected in the subject site during surveys. Some potential foraging habitat is present in the form of larger eucalypt trees and open grasslands. The subject site is not considered important for to the long-term survival of this species.
Climacteris picumnus victoriae (Brown Treecreeper	Bird	V V	Occupy dry open eucalypt forests and woodlands. The subspecies mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey. In New South Wales the	3	2019 Within 5km	2018 Within 5km	**Low** Recent records (within 5 years) within 5km of site.	**No** This species was not detected on the subject site during surveys. Minimal suitable habitat is present. Subject site

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
[south-eastern])			western boundary of the range runs approximately through Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell.				Minimal woodland habitat present. No signs that the subject site is used for breeding by this species.	is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.
Falco subniger (Black Falcon)	Bird	V, P N/L	The Black Falcon is widely, but sparsely, distributed in New South Wales, mostly occurring in inland regions. Some reports of 'Black Falcons' on the tablelands and coast of NSW are likely to be the Brown Falcon. In NSW there is assumed to be a single population that is continuous with a broader continental population, given that falcons are highly mobile. The Black Falcon occurs as solitary individuals, in pairs, or in family groups of parents and offspring.	1	2018 Within 5km	2018 Within 5km	**Low** One record within 5km in the last 10 years. Some suitable habitat on the study area, however no indications of species breeding.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this highly mobile species. No significant Impact on this species is anticipated as a result of the proposed development.
Hieraaetus morphnoides (Little Eagle)	Bird	V, P N/L	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. She Oak or Acacia woodlands and riparian woodlands of interior NSW are also used.	22	2020 Within 3km	2009 Within 2km	**Moderate** Several records within last 10 years within 5km of the site. Some suitable foraging habitat present. No signs to indicate site is used for breeding.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
								result of the proposed development.
Lophoictinia isura (Square-tailed Kite)	Bird	V, P N/L	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	1	2015 Within 5km	2015 Within 5km	**Low** 1 record within 5km of study are in the last 10 years. Some minor suitable woodland habitat present. No signs to indicate site used for breeding.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.
Petroica boodang (Scarlet Robin)	Bird	V, P N/L	The Scarlet Robin is found from southeast Queensland to southeast South Australia and also in Tasmania and south west Western Australia. In NSW, it occurs from the coast to the inland slopes. After breeding, some Scarlet Robins disperse to the lower valleys and plains of the tablelands and slopes. Some birds may appear as far west as the eastern edges of the inland plains in autumn and winter. The Scarlet Robin lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. Forages primarily in the canopy of open *Eucalyptus* Forest and woodland, yet also finds food in Angophora, *Melaleuca* and other tree species.	1	2018 Within 3km	2018 Within 3km	**Low** No records within the last 5 years within 5km of the site. Some suitable woodland foraging habitat present. No signs that the subject site is used for breeding by this species.	**No** This species was not detected on the subject site during surveys. Some suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.					
Petroica phoenicea (Flame Robin)	Bird	V, P N/L	Found throughout southeastern Australia from near the QLD boarder to southeast SA and in Tasmania. It breeds in upland areas and moves to inland slopes and plains in winter. It is thought there are two separate populations in NSW, one in the Northern Tablelands and one in the Central and Southern Tablelands.	2	2018 Within 3km	2015 Within 2km	**Moderate** Several records within last 10 years within 5km of the site. Some suitable foraging habitat present. No signs to indicate site is used for breeding.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.
Polytelis swainsonii (Superb Parrot)	Bird	V, P V	Found throughout eastern inland NSW, with breeding grounds between Cowra and Cootamundra. Birds are known to migrate north during the winter, towards the region of Upper Namoi and Gwydir Rivers. Also known to breed throughout the Riverina throughout riparian vegetation.	40	2020 Within 5km	2015 Within 2km	**Moderate** Several records within last 10 years within 5km of the site. Some suitable foraging habitat present. No signs to indicate site is used for breeding.	**No** This species was not detected in the subject site during surveys. Some potential foraging habitat is present in the form of larger eucalypt trees and open grasslands. The subject site is not considered important for to the long-term survival of this species.
Ninox strenua (Powerful Owl)	Bird	V, P N/L	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely	1	2018 Within 5km	2018 Within 5km	**Low** One record within 5km in the last 10 years.	**No** This species was not detected on the subject site during surveys. Some suitable habitat

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
			distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species.				Some suitable habitat on the study area, however no indications of species breeding.	is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development
Stagonopleura guttata (Diamond Firetail)	Bird	V, P V	Endemic to southeastern Australia, extending from Central Queensland to the Eyre Peninsula in South Australia. Widely distributed in central NSW, not commonly found in coastal areas.	1	2006 Within 5km	2006 Within 5km	**Low** One record in the last 20 years within 5km of the study area. Some suitable habitat on the study area, however no indications of species breeding.	**No** This species was not detected on the subject site during surveys. Some suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated.
Miniopterus orianae oceanensis (Large Bent-winged Bat)	Mammal	V, P N/L	Eastern Bent-winged bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures.	2	2018 Within 5km	2013 Within 3km	**Low** No records within last 5 years. Some suitable habitat present.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
								long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.
Phascolarctos cinereus (Koala)	Mammal	E1, P E	Fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In New South Wales, koala populations are found on the central and north coasts, southern highlands, southern and northern tablelands, Blue Mountains, southern coastal forests, with some smaller populations on the plains west of the Great Dividing Range.	1	2022 Within 5km	2022 Within 5km	**Low** Scattered suitable native feed trees species present and records within 5km of the study area in the last 2 years.	**No** This species was not detected on the subject site during the survey. No significant impact on this species is anticipated.
Pteropus poliocephalus (Grey-headed Flying-fox)	Mammal	V V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	8	2019 Within 5km	2015 Within 3km	**Moderate** Records within 3km of study area over the last 10 years. Some suitable foraging habitat present. No evidence of a camp was observed on the subject site or adjacent lands.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated.
Keyacris scurra	Insect	E1 E	Typically found in native grasslands and grassy woodlands throughout southeast NSW and into northern Victoria.	2	2022 Within 4km	2022 Within 4km	**Moderate** Recent records (within last 2	**No** This species was not detected on the subject site during

Scientific Name (Common Name)	Fauna/ flora type	BC Act Status EPBC Act Status,	Distribution and Habitat	Records within 5km of study area within the last 20 years	Most recent record and proximity	Closest record and date	Likelihood of occurrence (potential habitat to be disturbed)	Impact Assessment Required
Key's Matchstick Grasshopper							years), with suitable habitat present on the study area.	surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.
Synemon plana Golden Sun Moth	Insect	V V	Found throughout central southeastern NSW in natural temperate grasslands and grassy Box-Gum Woodlands.	56	2020 Within 3km	2020 Within 3km	**Moderate** Several records within the last 5 years. Suitable habitat present throughout the site.	**No** This species was not detected on the subject site during surveys. Suitable habitat is present but not limited in the locality. Subject site is not considered important to the long-term survival of this species. No significant impact on this species is anticipated as a result of the proposed development.

EPBC Act Key: M = migratory, CE = critically endangered, E = endangered, V = vulnerable, N/L = not listed.

BC Act key: E1 = endangered, E2= endangered population, E4 = Extinct, E4A = critically endangered, V = vulnerable, N/L = not listed.

Appendix C: Flora and Fauna List

Family	*Scientific Name*	Common Name	Native / Exotic
Asteraceae	*Calotis cuneata*	Mountain Burr-Daisy	N
Asteraceae	*Centaurea melitensis*	Maltese Cockspur	E
Asteraceae	*Hypochaeris radicata*	Catsear	
Asteraceae	*Sonchus asper*	Prickly Sowthistle	E
Fabaceae	*Trifolium campestre*	Hop clover	E
Juncaceae	*Juncus usitatus*	Common rush	N
Myrtaceae	*Eucalyptus camaldulensis*	River Red Gum	N
Myrtaceae	*Eucalyptus tereticornis*	Forest red gum	N
Myrtaceae	*Eucalyptus bridgesiana*	Apple box	N
Oxalidaceae	*Oxalis perennans*		N
Plantaginaceae	*Plantago lanceolata*	Lamb's tongues	E
Poaceae	*Nassella trichotoma*	Serrated tussock	E
Poaceae	*Dactylis glomerata*	Cocksfoot	E
Poaceae	*Aira caryophyllea*	Silvery Hairgrass	E
Poaceae	*Nassella neesiana*	Chilean needle grass	E
Salicaceae	*Salix humboldtiana*	Chilean pencil willow	E
Cacatuidae	*Cacatua roseicapilla*	Galah	N