



Gara Battery Energy Storage System

ENVIRONMENTAL IMPACT STATEMENT

ACEnergy Pty Ltd

Job No: P000974

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Premise

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CERTIFICATION

For submission of an environmental impact statement (EIS) under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979*

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Description of Proposed Development	
ACEnergy Pty Ltd (The Applicant) is proposing to develop an approximately 400 MW/1,760 MWh Battery Energy Storage System (BESS) on land known as 86 Woodlands Road, Armidale.	
Land to be developed	
> Lot 1 DP246878 > Lot 1 DP573787 > Lot 144 DP755826 > Lot 145 DP755826 > Lot 153 DP755826 > Unconstructed crown road reserve located between Lots 144 and 145 DP755826 > Waterfall Way (Grafton Road) road reserve > Lot 7003 DP1060212 (travelling stock reserve) > Lot 7009 DP1060213 (travelling stock reserve)	
Declaration by Registered Environmental Assessment Practitioner	
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Organisation registered with	Planning Institute of Australia
The undersigned declares that this EIS: > has been prepared in accordance with Division 5 of the <i>Environmental Planning and Assessment Regulation 2021</i>; > contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates; > does not contain information that is false or misleading;	

- > addresses the Planning Secretary's Environmental Assessment Requirements (SEARs) for the project;
- > identifies and addresses the relevant statutory requirements for the project, including any relevant matters for consideration in environmental planning instruments;
- > has been prepared having regard to the Department's State Significant Development Guidelines - Preparing an Environmental Impact Statement;
- > contains a simple and easy to understand summary of the project as a whole, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development;
- > contains a consolidated description of the project in a single chapter of the EIS;
- > contains an accurate summary of the findings of any community engagement; and
- > contains an accurate summary of the detailed technical assessment of the impacts of the project as a whole.

**DAVID WALKER****B. Urban and Regional Planning (MPIA)****9/07/25**

ABBREVIATIONS

Abbreviation	Abbreviated term
ACHAR	Aboriginal Cultural Heritage Assessment Report
AHIMS	Aboriginal Heritage Information Management System
ANL	Acceptable Noise Levels
BAR	Bushfire Assessment Report
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
BSAL	Biophysical Strategic Agricultural Land
CEMP	Construction Environmental Management Plan
CSEP	Community and Stakeholder Engagement Plan
DA	Development Application
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
DPHI	NSW Department of Planning, Housing and Infrastructure
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EOR	Engagement Outcomes Report
EPA	NSW Environment Protection Authority
ESD	Ecologically Sustainable Development
FRGA	Flood Risk and Groundwater Assessment
FRNSW	Fire and Rescue New South Wales
ICNG	Interim Construction Noise Guideline (2009)
INP	<i>Noise Policy for Industry 2017</i>
IPP	Industry Participation Plan
LEP	Local Environmental Plan
LGA	Local Government Area
LPI	NSW Land and Property Information
LUCRA	Land Use Conflict Risk Assessment

Abbreviation	Abbreviated term
NIA	Noise Impact Assessment
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
OEH	NSW Office Environment and Heritage
PSI	Preliminary Site Investigation
RFS	NSW Rural Fire Service
RMS	NSW Roads and Maritime Service
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SIA	Social Impact Assessment
SSD	State Significant Development
TfNSW	Transport for New South Wales
TIA	Traffic Impact Assessment
VIA	Visual Assessment Report
Units of measure	
°C	degrees Celsius
dB(A)	A-weighted decibel
ha	Hectare
m	Metres
m/s	Metres per second
ML	Megalitre
MW	Megawatt
MWh	Megawatt hour

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EXECUTIVE SUMMARY

Introduction

ACEnergy Pty Ltd seeks to develop an approximately 400 Megawatt_{AC} (MW_{AC})/1,760 Megawatt hours (MWh) Battery Energy Storage System (BESS) on Lot 1 DP246878 and Lot 1 DP573787, also known as 86 Woodlands Road, Armidale, NSW within the Armidale Regional Local Government Area (LGA). The project is to be known as the Gara BESS. The site is the land the subject of the development application and is defined by the red boundary in **Figure 4**. The site is located across the following land parcels:

- > Lot 1 DP246878
- > Lot 1 DP573787
- > Lot 144 DP755826
- > Lot 145 DP755826
- > Lot 153 DP755826
- > Unconstructed crown road reserve located between Lots 144 and 145 DP755826
- > Waterfall Way (Grafton Road) road reserve
- > Lot 7003 DP1060212 (travelling stock reserve)
- > Lot 7009 DP1060213 (travelling stock reserve)

The development footprint for the Gara BESS is all areas where physical impacts are proposed and assessed, and is defined by the yellow boundary in **Figure 4**. The development footprint includes the BESS infrastructure, an upgraded property access and internal driveway, a connecting electricity transmission line and screening vegetation.

The site has an area of approximately 35.24 hectares (ha), while the development footprint has an area of approximately 22.43 ha.

The proposed development is characterised as State Significant Development ('SSD') as the proposal is for the purpose of electricity generating works with an estimated development cost ('EDC') of more than \$30 million, pursuant to Section 20 of Schedule 1 of *State Environmental Planning Policy (Planning Systems) 2021*.

Proposal

The Gara BESS project comprises a BESS with capacity of 400 MW/1,760 MWh and includes the following key infrastructure:

- > Enclosed lithium-ion batteries;
- > Power conversion systems including associated transformers;
- > Underground power and fibre optic cabling interconnecting the equipment;
- > Grid connection equipment including switchgear, protection and control equipment, metering, reactive power equipment, filtering equipment, transformers and enclosures/buildings for housing equipment;
- > An overhead transmission line of up to approximately one (1) kilometre long to connect the BESS to the nearby 330 kV power lines;

- > Earthing and lightning protection systems;
- > Storage area/enclosure, internal access tracks, on-site parking, security fencing, CCTV, and temporary construction laydown area;
- > Vegetation screening;
- > Upgrade of the existing site access from Waterfall Way (Grafton Road) in the south-east.

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

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

Environmental issues

An analysis of site constraints via an environmental risk assessment process has identified the following key environmental issues which it was deemed warranted quantitative assessment:

- > Biodiversity;
- > Heritage;
- > Land;
- > Visual;
- > Noise and vibration;
- > Traffic, access and transport;
- > Water;
- > Hazards;
- > Social and economic; and
- > Waste.

Comprehensive engagement has been completed with the community, agencies and other relevant stakeholders to ensure that the project objectives are clearly understood and so that any feedback on the project can be considered and incorporated where necessary.

Mitigation measures outlined in relation to each of the above matters would be addressed in a construction environmental management plan or operational environmental management plan as appropriate sitting beneath an overarching Environmental Management Strategy.

A summary of the outcomes of quantitative analysis for key impact areas is provided in the following sections.

BIODIVERSITY

A Biodiversity Development Assessment Report (BDAR) has been prepared by Habitat Environmental Services and is provided in **Appendix J**.

A number of detailed vegetation and habitat surveys were undertaken including surveys between April and November of 2024. These surveys identified one plant community types (PCT) which occurs across the study area. The following PCT will be impacted by the proposed development:

- > PCT 3359 New England Hills Stringybark-Box Woodland in patches throughout the central north of the site

The vegetation identified as PCT 3359 is considered to meet the criteria of the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community (CEEC) and is considered a Threatened Ecological Community (TECs) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in accordance with the Commonwealth Conservation Advice.

Due to this, the Gara BESS was referred to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW Cth) due to its potential for impacts on Matters of National Environmental Significance (MNES), to determine whether it constitutes a controlled action. On 1 April 2025, DCCEEW Cth determined that the Gara BESS is a controlled action (EPBC 2025/10102). The Gara BESS will be assessed under the bilateral agreement between the Commonwealth and New South Wales. Supplementary SEARs were issued for the project on the 29 April 2025.

The Gara BESS is expected to result in direct impacts to the White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland. These impacts require biodiversity offsets comprising 223 credits for TEC and 13 credits for non-TEC.

Mitigation measures have also been recommended to ensure that impacts are mitigated and avoided where possible. A range of mitigation measures to address residual impacts have been identified in the BDAR and these are summarised in **Appendix E**.

HERITAGE

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared by Premise and is provided in **Appendix N**. A review of the Aboriginal Heritage Information Management System (AHIMS) online database identified one (1) previously recorded Aboriginal sites located with close proximity to the Gara BESS site. A pedestrian archaeological survey of the development footprint was undertaken to confirm the presence of the previously recorded Aboriginal heritage site and the presence of any additional, previously unrecorded Aboriginal heritage sites. While the recorded site could not be re-identified, mitigation measures will be implemented to prevent any potential impacts.

Through the implementation of appropriate mitigation measures, significant impacts are not expected.

In the context of historic heritage, Premise have undertaken an assessment with regards to the SEARs requirements. The site is not mapped as containing any items of heritage significance and is not located in or adjacent to a heritage conservation area. It is concluded that the proposed development will not result in physical impacts to a heritage item. It is considered that mitigation measures including an unexpected finds protocol and visual vegetation screening will be sufficient to address residual impacts.

LAND

A Land Use Conflict Risk Assessment (LUCRA) has been prepared by Premise and is provided in **Appendix M**, and an Agricultural Land Utility Assessment (ALUA) has been prepared by Cadeema (2024) and is provided in **Appendix L**.

The site is located within an area comprising Yellow Podzolic Soils, which are and are Kurosol. These soils comprise brown silty loam surface soils, with bright yellow-brown medium clay subsoils.

While not mapped within the BSAL mapping, the site is partially located within the draft state significant agricultural land map. The ALUA concludes that soils within the site are marginal for agricultural production and have low agricultural productivity potential.

In terms of cumulative impacts of the project on adjoining land uses, the LUCRA concludes that impacts can be managed through ongoing consultation with developers of nearby projects and via the implementation of recommended management and mitigation measures. This would allow for project timelines to consider surrounding projects, ensuring that cumulative impacts such as construction noise and traffic, can be appropriately managed.

The LUCRA concludes that while there was a total of 40 potential land use conflicts identified, revised risk rankings reduced the value for all identified land use risks to a value of less than 11, consistent with the LUCRA objective to lower the revised risk ranking to 10 or below. The LUCRA concludes an average risk rating of 7.05, which is low risk. Notwithstanding, effective implementation of management strategies identified in Appendix M is likely to further minimise the risk of potential land use conflicts.

VISUAL

A Visual Impact Assessment (VIA) has been prepared by IRIS and is attached in **Appendix O**. The proposed development is located in a rural landscape, which the VIA identifies as having a limited visual catchment due to the surrounding landform and vegetation. Potential visual catchments generally extend to the north, north-west, and west to rural properties along Burying Ground Creek valley, east 500 m to the paddocks and rural properties, and south to across the paddocks to Waterfall Way (Grafton Road).

It is anticipated that during construction there will be some minor impact on views due to cranes and other construction equipment being present on site. These impacts are considered short term and to have a generally minimal overall visual impact.

The VIA assessment considered three viewpoints within the public domain. The visual impacts from these viewpoints ranged from negligible to low impact. It is considered that with vegetation screening, these impacts will be further reduced to negligible impacts.

Visual impacts to night views are also expected to be negligible, with lighting on site expected to be minimal and managed through mitigation measures.

Visual impacts to two surrounding dwellings were considered and found to be low impact with no mitigation measures, and negligibly impacted when vegetation screening was included.

NOISE AND VIBRATION

The Noise Impact Assessment (NIA) has been prepared by Assured Environmental and is provided in **Appendix Q**. The NIA includes an assessment of construction noise, operational noise, road traffic noise and vibration impacts. The NIA concludes that during the loudest stages of construction the nearby receivers would exceed the Noise Affected criteria of 50 dB(A) but would not exceed the Highly Noise Affected criteria of 75 dB(A). For the operational phase of the project, adverse amenity impacts are

considered unlikely and compliance with applicable criteria is expected to be achieved provided the recommended acoustic barrier is implemented.

The NIA concludes that the road traffic noise during the operational phase will be negligible, subject to mitigation. Whilst traffic will be greater during the construction phase, predicted noise levels are compliant with relevant standards. Predicted vibration impacts are also compliant with the relevant standards during the construction and operation phase.

Mitigation measures have been recommended in relation to ongoing communication with sensitive receivers and construction of a noise barrier.

TRAFFIC, ACCESS AND TRANSPORT

A Traffic Impact Assessment (TIA) has been prepared by The Transport Planning Partnership (tpp) and is provided in **Appendix G**. The assessment includes the existing traffic environment and a traffic assessment considering traffic generation and distribution; cumulative traffic impacts; a route assessment prepared by Ares Group; and an intersection assessment. The TIA also provides a strategic intersection design for the proposed site access upgrade works.

Access to the site is directly from Waterfall Way (Grafton Road) utilising an existing site access, upgraded to meet appropriate standards.

During construction, traffic volumes are anticipated to total up to 8 shuttle bus movements, 48 light vehicle movements and 75 heavy vehicle movements per day with an AM and PM peak hour number of 4 shuttle buses, 48 light vehicles and 11 heavy vehicles each. Operational traffic is expected to be negligible with an expected total of up to four (4) vehicle movements per day.

The route assessment focuses on high risk over-dimensional movements that will travel to the site from the Port of Newcastle, consistent with many of the approved and proposed renewable projects in the New England Renewable Energy Zone (REZ). The route assessment demonstrates that the transport of the OSOM components to the Gara BESS site will be feasible. Bridge assessments have completed along the proposed transport route that confirm the adequacy of infrastructure in relation to the proposed loads.

A range of mitigation measures have been recommended including upgrade of the access point to satisfy current Austroads intersection treatment standards based on the relevant traffic warrants, and preparation and implementation of a project traffic management plan including a driver code of conduct. The relevant site access upgrade will require a Works Authorisation Deed from TfNSW due to Waterfall Way being a classified road. The proposed site access treatment satisfies safe sight distance requirements subject to some minor vegetation clearing, and the impacts of this have been assessed in the BDAR.

WATER

A Groundwater Assessment has been prepared by Engeny (2024) and is provided in **Appendix R**, and a Surface Water Assessment Report has been prepared by Water Technology (2024) and is provided in **Appendix S**. These assessments included desktop review of groundwater resources, review of riverine flood risks and mitigation measures.

The proposed development will involve minimal ground disturbance and is unlikely to impact on recharge patterns or cause drawdown to the groundwater table. While contamination of groundwater may occur from leaks or spills during construction and operation, appropriate mitigation measures have been recommended to mitigate the risk.

The proposed development will have very low to negligible impacts on flood behaviour and is not considered a risk to people or vehicles in the event of a flood event.

Mitigation measures have been recommended in the assessment reports to manage the risks of flooding and groundwater in relation to the development.

HAZARDS

A Preliminary Hazard Analysis (PHA) has been prepared by Riskcon Engineering is attached in **Appendix K**. It provides an assessment of potential hazards including Li-ion battery fault, thermal runaway and fire, Li-ion battery fire and toxic gas dispersion, electrical equipment failure and fire, transformer internal arcing, oil spill, ignition and bund fire, transformer electrical surge protection failure and explosion and electromagnetic field impacts. It concludes that the risks at the site boundary are not considered to exceed the acceptable risk criteria; hence, the project would only be classified as potentially hazardous. Mitigation measures were recommended to further reduce residual impacts.

A Preliminary Site Investigation (PSI) has been prepared by Cadeema and is provided in **Appendix T**. The PSI included a review of historical site land uses, an assessment of environmental factors on and around the site, review of public records, review of historical imagery, a detailed site inspection, soil sample collection, soil laboratory analysis, and a subsequent assessment of whether there was a risk of contamination onsite. The PSI concluded that the site has a negligible risk on contamination and that no further investigations were recommended. As such, no mitigation measures are recommended in this instance.

A Bushfire Assessment Report (BAR) has been prepared by Peak Land Management and is provided in **Appendix U**. The site is located on bushfire prone land and contains vegetation types that may facilitate grassfires. Mitigation measures have been recommended to manage fuel loads, reduce the bushfire threat and ensure fires can be appropriately managed.

SOCIAL

A Social Impact Assessment (SIA) has been prepared by bd infrastructure Pty Ltd and is provided in **Appendix V**. The SIA provides an assessment of the social impacts of the proposed development during the construction and operation (including cumulative), categorised as *way of life, community, accessibility, culture, health and wellbeing, surroundings* and *livelihoods* impacts. The SIA concludes that social impact significance of non-enhanced positive and unmitigated negative impacts ranged from low to medium significance. The SIA includes several mitigation measures that will have the effect of improving non-enhanced positive impacts and reduce unmitigated negative impacts.

ECONOMIC

Premise has conducted an assessment of the economic impacts of the development. The key impacts identified included increased employment, investment in the local economy, and pressure on local services including accommodation. The development is anticipated to generate up to 80 construction jobs. Once operational, the project would provide up to 5 full time jobs. Mitigation measures including

an Industry Participation Plan (IPP) which would engage local businesses to provide for the demands of the construction of the project.

WASTE

Premise has conducted a review of likely waste impacts associated with the construction and operation of the project. Waste generated through the construction phase would be managed in accordance with an adopted waste management plan, with materials recycled where possible, and taken to a waste disposal site where necessary.

Operational waste would be minimal and limited general waste of onsite staff.

Justification

The NSW Government has recognised that the NSW electricity system needs to change, acknowledging that traditional generators are ageing, and the State's transmission system is congested. Further, electricity prices are putting pressure on households and businesses. These factors have informed the preparation of Government policies and documents, the provisions of which have filtered to the local scale and informed local plan making.

The project will contribute to the provision of renewable energy in NSW and facilitate private investment in the state's electricity system over the next decade and beyond, a key consideration of the NSW Electricity Strategy. The BESS has an anticipated lifespan of up to 23 years and will contribute to the NSW Government's three objectives for the electricity system: reliability, affordability and sustainability.

The project would support the electricity supply market shift from a centralised power generation system, overly reliant on fossil fuels, to a dispersed and smaller scale system. The project provides firming capacity to the market by filling supply gaps when renewable energy sources are not producing.

The project is contributing to the delivery of the New England Renewable Energy Zone through the provision and operation of the BESS, which will serve to balance the grid and support the performance and future uptake of renewable energy. The project seeks to invest in and contribute to the local economy through the creation of jobs and provision of affordable electricity.

The project has been sited and designed to minimise environmental impacts. Where impacts cannot be avoided, mitigation measures have been proposed.

Conclusion

The assessments presented in the EIS indicate that the proposed Gara BESS should be approved on the basis that it provides a range of benefits to the region, the state and the country, in the context of meeting renewable energy targets.

The technical studies supporting the EIS confirm that the proposed development would not lead to any significant or detrimental impacts to the environment and that residential impacts are manageable through the implementation of standard measures.

The project is consistent with the objects and matters for consideration in the EP&A Act and with the principles of Ecologically Sustainable Development.

The EIS concludes that the project would not significantly affect environmental, cultural, social and economic values at the local or regional scale and is therefore considered to be in the public interest.

1. INTRODUCTION

1.1 The applicant

ACEnergy Pty Ltd (ACEnergy) was founded out of the growing demand for renewable energy developments across Australia. ACEnergy's goal is to develop high quality utility-scale Solar Farm and Battery Energy Storage Systems (BESS) projects which will work towards a future of decarbonization.

ACEnergy have experience and capabilities in development of land and site acquisition, project planning and management, grid connections, design and engineering, offtake agreements and financial services. ACEnergy is based in Melbourne, Victoria, its head office is located at Level 3, 689 Burke Road, Camberwell, 3124, VIC and its ABN is 628 883 447.

1.1.1 ENVIRONMENTAL RECORD OF APPLICANT

ACEnergy has a strong and consistent record of responsible environmental management. The company has never been subject to any proceedings under Commonwealth, State, or Territory legislation concerning environmental protection or the conservation and sustainable use of natural resources.

As a corporate proponent, ACEnergy applies a structured and integrated environmental policy and planning framework to ensure responsible development of renewable energy infrastructure.

The environmental policy and planning framework is built on the following pillars:

- > Regulatory Alignment and Environmental Risk Management - ACEnergy comply with all relevant Commonwealth, State, and Territory laws, undertaking thorough due diligence, including environmental impact assessments, biodiversity reporting, and risk mitigation planning for each project.
- > Site-Specific Environmental Stewardship - Environmental planning is tailored to each project's context, addressing local biodiversity, land use, and cultural considerations. Our approved projects — such as Apsley BESS (NSW), Pine Lodge BESS (VIC), Glenbrae BESS (VIC), and Joel Joel BESS (VIC)—demonstrate their commitment to integrating environmental safeguards into project design and delivery.
- > Stakeholder Engagement and Transparency - ACEnergy prioritise early and meaningful consultation with local communities, Traditional Owners, and government agencies to ensure that environmental concerns are addressed and incorporated into project development.
- > Expert Collaboration and Best Practice Integration - ACEnergy partners with experienced environmental and planning consultants to ensure that the latest regulatory guidance and industry best practices are reflected in our work.
- > Sustainability and Continuous Improvement - Beyond compliance, their approach supports Australia's broader climate and energy objectives. ACEnergy strive to minimise impacts, restore habitat where possible, and build long-term environmental resilience into each development.

ACEnergy's environmental policy ensures that environmental responsibility is not just a legal obligation, but a core value embedded throughout their organisation and operations.

1.2 Simple project description

ACEnergy Pty Ltd (The Applicant) is proposing to develop an approximately 400 MW_{AC}/1,760 MWh Battery Energy Storage System (BESS) on Lot 1 DP246878 and Lot 1 DP573787, also known as 86 Woodland Road, Armidale, NSW. The proposed development is to be known as the Gara BESS.

Ancillary aspects of the Gara BESS include an upgraded access treatment which will impact other land including the road reserve of Waterfall Way (Grafton Road) and two (2) lots in use as travelling stock routes (Lot 7003 DP1060212 and Lot 7009 DP1060213). The proposed overhead ETL will cross an unconstructed Crown road reserve located between Lots 144 and 145 DP755826, and also traverse 144, 145 and 153 DP755826 requiring an easement. A licence will be sought from Crown Lands for the passage of the ETL.

The land identified by the red line boundary shown in **Figure 4** is the subject of the application, and hereafter referred to as the 'site'. The 'development footprint' is the land to be impacted by the construction of the project and is defined by the yellow line boundary identified in **Figure 4**. The site is located across seven lots (Lot 1 DP246878, Lot 1 DP573787, Lots 144, 145 and 153 DP755826, Lot 7003 DP1060212, and Lot 7009 DP1060213), an unconstructed Crown road reserve and the Waterfall Way (Grafton Road) road reserve.

The site is located in the Armidale Regional Council (ARC) Local Government Area (LGA), and sits within the New England Renewable Energy Zone (REZ).

The site has a total area of approximately 35.24 hectares (ha), while the development footprint has a total area of 22.43 ha. The BESS and ancillary infrastructure components are located within the development footprint and are predominantly located towards the northern boundary of Lot 1 DP246878 and Lot 1 DP573787. The site is currently used for the purposes of primary production and road infrastructure.

The proposed Gara BESS includes:

- > Installation of containerised lithium-ion batteries with a capacity of up to approximately 400 MW_{AC} and 1,760 MWh, with inverter stations, and grid connection facilities;
- > An overhead transmission line to connect the BESS to the existing 330 kV powerlines located to the north of the BESS;
- > Storage area, internal access tracks, on-site parking, security fencing, and temporary construction laydown area; and
- > Upgrade of the existing site access from Waterfall Way (Grafton Road).

The local and regional context are shown **Figure 1** and **Figure 2**.

The development footprint, including the proposed BESS and associated infrastructure, will align with, and be contained within, the site shown in **Figure 4**.

A conceptual layout of the BESS and associated infrastructure is included in **Figure 5**.

The Gara BESS was referred to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW Cth) due to its potential for impacts on Matters of National Environmental Significance (MNES). On 1 April 2025, DCCEEW Cth determined that the Gara BESS is a controlled action (EPBC 2025/10102). The Gara BESS will be assessed under the bilateral agreement between the

Commonwealth and New South Wales. Supplementary SEARs were issued for the project on the 29 April 2025. This is further discussed in **Section 6.1**.

1.3 Background

The Gara BESS is designed to provide grid flexibility services and will support the efficiency of the existing electrical network. The BESS would cycle in response to pricing signals, typically charging when prices are low and discharging during peak periods. Through regulating the availability of energy, the development will have the capacity to store unutilised energy during low demand and enhance the total supply of energy during high demand. This will benefit the existing electrical grid, improving the efficiency of electrical generation and provide consumers with a more consistent and reliable supply of energy.

A range of strategies have been employed through project conception, development and delivery, with the aim of avoiding, minimising and offsetting residual impacts associated with the project. In this context, the following is noted:

- > Site selection has included identifying a site that is immediately adjacent to an existing high voltage overhead electricity transmission line, well separated from residential zoned land, separated from non-associated dwellings and located wholly on land zoned RU1 – Primary Production, with suitable existing access arrangements;
- > The project has been refined to respond to the outcomes of technical studies, including:
 - Installation of a noise barrier to provide noise attenuation to non-associated receivers located to the east; and
 - Establishment of landscaped screening to mitigate visual impacts.

1.4 Related development

A review of the ARC DA tracker in June 2025 for the site address of 86 Woodlands Road, Armidale returned no search results for past development applications on the site. The applicant is not aware of any existing development consents related to the site.

1.5 Restrictions or covenants

A review of the land titles for the site confirms the following restrictions and easements:

- > Lot 1 DP246878
 - 1 Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
 - 2 DP649687 easement for pipeline 2 wide affecting the part(s) shown so burdened in DP649687
 - 3 AK259106 mortgage to Greater Bank Limited
 - notations-----
 - NOTE: this folio may be associated with a Crown tenure which is subject to payment of an annual rent. for further details contact Crown lands.
 - Unregistered dealings: nil

- > Lot 1 DP573787
 - 1 Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
 - 2 X943590 easement for transmission line affecting the part of the land within described shown in DP639829 2012497 easement vested in New South Wales Electricity Transmission Authority
 - 3 DP860147 right of carriageway variable width affecting the part(s) shown so burdened in DP860147
 - 4 L298467 easement for transmission line 45.72 wide affecting the part of the land shown in plan marked b in DP939930 3415544 easement now vested in NEW SOUTH WALES ELECTRICITY TRANSMISSION AUTHORITY
 - 5 AK259106 mortgage to Greater Bank Limited
 - * 6 AT724759 caveat by Acenergy Pty Ltd
 - note: this folio may be associated with a crown tenure which is subject to payment of an annual rent. for further details contact crown lands.
 - unregistered dealings: nil
- > Lot 7003 DP1060212
 - The land is a reserve within the meaning of part 5 of the *Crown Lands Act 1989* and there are restrictions on transfer and other dealings in the land under that act, which may require consent of the Minister.
 - Limited title. limitation pursuant to section 28t(4) of the *Real Property Act, 1900*. the boundaries of the land comprised herein have not been investigated by the Registrar General.
 - The plan defining the land in this folio which was prepared for identification purposes is now suitable for title issue. it is not a current plan in terms of section 7a of the *Conveyancing Act 1919*.
- > Lot 7009 DP1060213
 - The land is a reserve within the meaning of part 5 of the *Crown Lands Act 1989* and there are restrictions on transfer and other dealings in the land under that act, which may require consent of the Minister.
 - Limited title. limitation pursuant to section 28t(4) of the *Real Property Act, 1900*. the boundaries of the land comprised herein have not been investigated by the Registrar General.
 - The plan defining the land in this folio which was prepared for identification purposes is now suitable for title issue. it is not a current plan in terms of section 7a of the *Conveyancing Act 1919*.
- > Lot 144 DP755826
 - 1 Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
 - 2 L298467 easement for transmission line affecting the part of the lot 152 & lot 153 above described shown so burdened in vol 2002 fol 168 O896511 easement vested in New South Wales Electricity Transmission Authority
 - 3 AE707828 easement for energy transmission line affecting Lots 144 & 151 to 153 shown as "proposed easement 60 wide" in DP639301

- NOTE: This folio may be associated with a crown tenure which is subject to payment of an annual rent. for further details contact crown lands.
- Unregistered dealings: nil
- > Lot 145 DP755826
 - 1 Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
 - 2 X943590 easement for transmission line affecting the part of the land within described shown in DP639829 2012497 easement vested in New South Wales Electricity Transmission Authority
 - 3 DP860147 right of carriageway variable width affecting the part(s) shown so burdened in DP860147
 - 4 L298467 easement for transmission line 45.72 wide affecting the part of the land shown in plan marked b in DP939930 3415544 easement now vested in New South Wales Electricity Transmission Authority
 - 5 AK259106 mortgage to greater bank limited * 6 AT724759 caveat by Acenergy Pty Ltd
 - note: this folio may be associated with a crown tenure which is subject to payment of an annual rent. for further details contact crown lands.
 - Unregistered dealings: nil
- > Lot 153 DP755826
 - 1 Land excludes minerals and is subject to reservations and conditions in favour of the Crown - see Crown grant(s)
 - 2 L298467 easement for transmission line affecting the part of the lot 152 & lot 153 above described shown so burdened in vol 2002 fol 168 o896511 easement vested in New South Wales Electricity Transmission Authority
 - 3 AE707828 easement for energy transmission line affecting Lots 144 & 151 to 153 shown as "proposed easement 60 wide" in DP639301
 - NOTE: This folio may be associated with a crown tenure which is subject to payment of an annual rent. for further details contact crown lands.
 - Unregistered dealings: nil

The above restrictions or covenants are not a barrier to the project proceeding.

1.6 Report structure

In accordance with the *State Significant Development Guidelines – Preparing an Environmental Impact Statement* (DPIE 2022), this EIS has been prepared and is provided in the following format.

- > **Section 1 (Introduction)** of this report sets the context for detailed assessment of the project in the following sections of the EIS and includes a description of the applicant, the project, the background to the project, any related development and any restrictions or covenants that apply to the site.
- > **Section 2 (Strategic Context)** of this report provides the strategic context and includes any supporting strategies, policies or plans, key features of the site and surrounds, likelihood of generating cumulative impacts any agreements entered into with other parties.

- > **Section 3 (Project Description)** outlines the proposed development, including the project area, physical layout and design, uses and activities and timing.
- > **Section 4 (Statutory Context)** details the statutory context relevant to the justification and evaluation of the project.
- > **Section 5 (Engagement)** identifies the key stakeholders for the project and describes what actions were taken with respect to community engagement in accordance with Undertaking Engagement Guidelines for State Significant Projects and SEARs.
- > **Section 6 (Assessment of impacts)** identifies the impacts of the proposed development, including the condition of the existing environment, the ability to avoid, mitigate and/or offset the impacts of the development, the scale and nature of the predicted impacts, key uncertainties associated with the assessment and proposed measures to deal with these uncertainties.
- > **Section 7 (Justification of the project)** provides the justification for the proposed development, including impact avoidance or minimisation measures, consistency with the strategic context, compliance with any relevant statutory requirements, outcomes of community engagement, the scale and nature of the impacts of the project, how compliance will be monitored and how key uncertainties will be addressed.



2. STRATEGIC CONTEXT

This section identifies key strategic considerations that are of relevance to the assessment of the project.

2.1 Key features of the site and surrounds

2.1.1 SITE DESCRIPTION

The 'site' is the land required to carry out the development and is defined by the red line boundary identified in **Figure 4**. The 'development footprint' is the extent of physical impacts to be impacted by the construction of the project and is defined by the yellow line boundary identified in **Figure 4**. Both the site and the development footprint are located across seven lots (Lot 1 DP246878, Lot 1 DP573787, Lots 144, 145 and 153 DP755826, Lot 7003 DP1060212, and Lot 7009 DP1060213), also known as 86 Woodlands Road, Armidale NSW and 67 Argyle-mining Vale Road, Metz NSW. The site is bound by Waterfall Way (Grafton Road) in the south, and agricultural lands in the west, north and east. The site is located on land zoned as RU1 - Primary Production under the *Armidale Regional Local Environmental Plan 2012* (ARLEP) (refer **Figure 3**), and is used primarily for agricultural activities such as dryland grazing. The site has an area of approximately 35.24 ha (of which the development footprint comprises approximately 22.43 ha).

The site is generally cleared of vegetation due to historic agricultural activities, with remaining vegetation comprising a mixture of exotic grassland and native vegetation. There is also planted vegetation located towards the north of the site, as well as along Waterfall Way (Grafton Road). The site does not contain any dwellings. There will be some impacts to exotic and native vegetation on site as assessed by the project biodiversity assessment. A number of environmental constraints apply to the land, including mapped bushfire prone land in the southern extent of Lot 1 DP246878 (refer **Figure 18**).

The site does not contain any mapped items of heritage significance and is not mapped as containing sensitive biodiversity. The site is not mapped as a flood planning area via the ARLEP.

Waterways in the area include Burying Ground Creek to the west of the site, Gara River to the east of the site, and Commissioners Waters running to the west and south of the site.

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

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

The site is located in an undulating, rural locality (refer **Figure 4**).

2.1.2 THE LOCALITY

The site is located approximately 12 km east of the CBD of Armidale in the Northern Tablelands of NSW (refer **Figure 2**). The site is in the Armidale Regional LGA and is within the New England REZ.

In 2021, Armidale had a total population of 23,967 people (Australian Bureau of Statistics). It is a regional centre and includes residential properties, schools, TAFE, a university, museums, sporting grounds, health services, and several business and retail properties as well as the Armidale Airport and train station.

Armidale is a major agricultural centre in the New England Region and is roughly halfway between Brisbane and Sydney. The University of New England (UNE) and the DPI Armidale Livestock Industries Centre are located approximately 14 km northwest of the site, with a focus on rural research and education.

Several nature reserves are situated around the site, including Gara Dam (2 km east of the site), Yina Nature Reserve (3 km northwest of the site), and Imbota Nature Reserve (5 km south east of the site). Waterways in the area include Burying Ground Creek to the west of the site, Gara River to the west of the site, and Commissioners Waters to the south of the site.

The Oxley solar farm (approved) is located to the south of the site across Waterfall Way (Grafton Road) and the site is not far from other solar projects including the Metz, New England, Petersons and Stringybark solar projects.

There are five (5) non-associated residential receivers located within 1km of the site. The closest zoned residential land is located approximately 6 km east of the site.

Receiver locations are depicted in **Figure 6**.

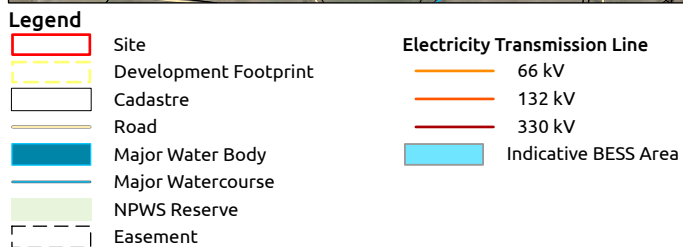
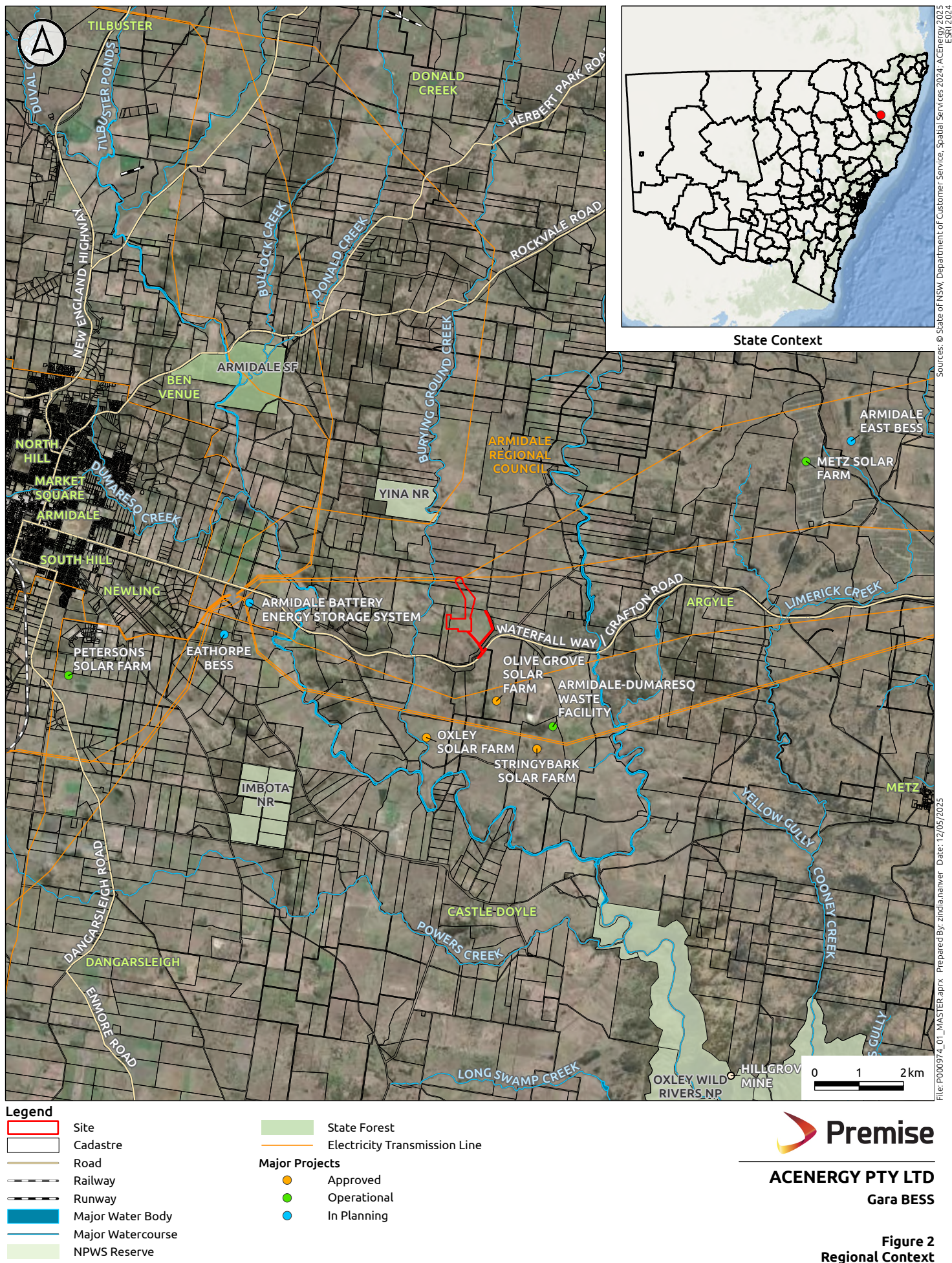


Figure 1
Local Context



Sources: © State of NSW, Department of Customer Service, Spatial Services 2024; ACENERGY 2025
 ESRI 2024
 File: P000974_01_MASTER.aprx Prepared By: zindiananver Date: 12/05/2025

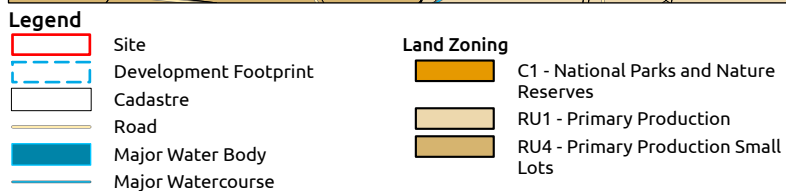
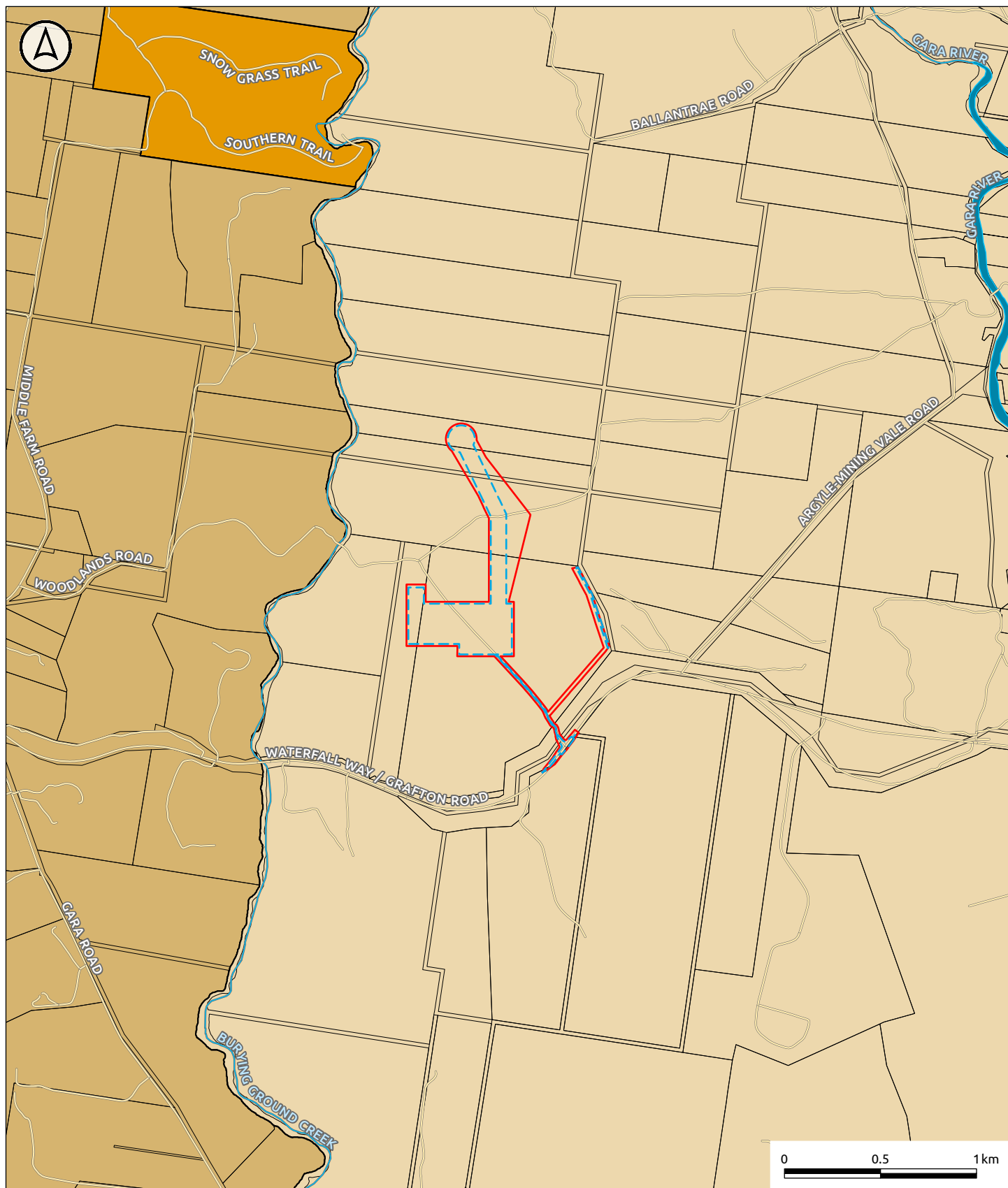


Figure 3
Land Zoning

2.2 Strategic justification

The NSW Government has recognised that the NSW electricity system needs to change, acknowledging that traditional generators are ageing, and the State's transmission system is congested. Further, electricity prices are putting pressure on households and businesses. This realisation has informed the preparation of Government policies and documents, the provisions of which have filtered to the local scale and informed local plan making.

The project supports the electricity supply market shift from a centralised power generation system, overly reliant on fossil fuels, to a dispersed and smaller scale system. The project provides firming capacity to the market by filling supply gaps when renewable energy sources are not producing

In the following sections is a discussion of the applicable state and local strategies, policies and plans and how the project is facilitating the objectives of each as they relate to the delivery of renewable energy.

2.2.1 NSW 2021 PLAN (NSW GOVERNMENT 2011) AND RENEWABLE ENERGY ACTION PLAN (NSW GOVERNMENT 2013)

The NSW 2021 plan, released in 2011, sets state-wide priorities for action and guides resource allocation. Goal 22 of this plan seeks to protect the natural environment and includes a specific target to increase renewable energy. The plan states:

"We will contribute to the national renewable energy target by promoting energy security through a more diverse energy mix, reducing coal dependence, increasing energy efficiency and moving to lower emission energy sources. Specific initiatives include:

- > *Building the Moree solar power plant in partnership with the Commonwealth Government under the Solar Flagship Program*
- > *Establishing a Joint Industry Government Taskforce to develop a Renewable Energy Action Plan for NSW to identify opportunities for investment in renewable energy sources."*

Since release of the 2021 plan, the NSW Government has overseen the development of the NSW Renewable Energy Action Plan (REAP). The vision of the plan is a 'secure, affordable and clean future for NSW'. Goal 1 of the REAP is to attract renewable energy investment, including to 'support mid-scale solar PV to enable an uptake of solar technologies where they are most cost effective'.

The proposed BESS sits comfortably within this state-led objective and is consistent with the goal and intent of the REAP. Large scale battery systems represent a fundamental component of the REAP, facilitating greater flexibility in electrical generation and stabilising the grid such that further deployment of renewables can be made possible.

Through assisting the expansion of renewable forms of electrical generation, the proposed BESS further supports the *NSW Government's Climate Change Policy Framework* (NSW, 2016). This framework is committed to effective action on climate change, outlining long term objectives to achieve net-zero emissions by 2050 and to make New South Wales more resilient to a changing climate. The achievement of net zero emissions by 2050 is reliant on transitions towards more sustainable and renewable forms of electrical production.

The project supports this objective by improving the reliability and stability of the electrical grid. The ability of the proposed BESS system to balance electrical demand and supply assists the management of variations in electrical demand and supply which are expected to increase with transitions to more sustainable and renewable forms of electrical production. The proposed development is consequently consistent with the objective of the *NSW Government's Climate Change Policy Framework* (NSW, 2016), supporting transitions toward lower emissions and improving the resilience of NSW to a changing climate.

2.2.2 NSW ELECTRICITY STRATEGY & ELECTRICITY INFRASTRUCTURE ROADMAP

To address pressing matters around reliability, affordability and the fostering of a sustainable electricity future that supports a growing economy, the NSW Government has formed the NSW Electricity Strategy.

The NSW Electricity Strategy strives to:

- > Deliver Australia's first coordinated Renewable Energy Zone in the Central-West Orana region;
- > Save energy, especially at times of peak demand, via the Energy Security Safeguard;
- > Support the development of new electricity generators;
- > Set a target to bolster the state's energy resilience; and
- > Make it easier and more efficient to do energy business in NSW.

The strategy encourages new private investment in NSW's electricity system over the next decade to support an estimated 1200 jobs, primarily in regional NSW. The strategy closely aligns with the NSW Government's 'Net Zero Plan Stage 1: 2020–2030'.

In November 2020, the NSW Government released the Electricity Infrastructure Roadmap, enabled by the Electricity Infrastructure Investment Act 2020. The Roadmap builds on the foundations of the Electricity Strategy and is expected to attract up to \$32 billion of private investment in regional energy infrastructure by 2030 and support over 9000 jobs, mostly in regional NSW.

The NSW Electricity Strategy acknowledges that firmed renewables are now the most cost-competitive form of new generation and cost less than the current wholesale electricity price.

The project will contribute to the provision of renewable energy in NSW and facilitate private investment in the state's electricity system over the next decade and beyond, a key consideration of the NSW Electricity Strategy. The BESS has an anticipated lifespan in the order of 23 years and will contribute to the NSW Government's three objectives for the electricity system: reliability, affordability and sustainability.

Five Renewable Energy Zones (REZs) are at various stages of development including in the Central West-Orana, New England, South-West, Hunter-Central Coast and Illawarra, selected based on the availability of resources and existing connecting infrastructure. The site is located within the New England REZ and is considered to provide significant strategic value given the proximity to the town of Armidale and the development of nearby renewable energy projects in the locality.



2.2.3 ENERGY SECURITY SAFEGUARD (NSW GOVERNMENT 2020)

The Energy Security Safeguard (Safeguard) is part of the NSW Electricity Strategy and legislation to establish the Safeguard was passed by Parliament in May 2020 with an objective to improve the affordability, reliability and sustainability of energy through the creation of financial incentives for energy activities.

Under the *Electricity Supply Amendment (Peak Demand Reduction Scheme) Regulation 2021*, the Government will establish a new Peak Demand Reduction Scheme (PDRS) to support activities that reduce demand at peak times, including flexible demand response.

Coupled with the Energy Saving Scheme (ESS), the PDRS is expected to deliver a net economic benefit for New South Wales of \$1.2 billion.

The proposed BESS project supports the objectives of the Energy Security Safeguard by providing capacity to reduce peak demand during summer periods and assists NSW in meeting its peak demand reduction targets, especially with the scheduled closure of Liddell Power Station in 2023.

2.2.4 RENEWABLE ENERGY POLICY FRAMEWORK

The Renewable Energy Policy Framework was published by DPHI in November 2024 to help achieve the transition to renewable energy, support legislated net zero targets by 2050 and secure affordable supply of electricity for NSW. While the framework generally relates to solar energy, wind energy, hydrogen and transmission projects, it also accounts for both associated and stand-alone BESS projects, highlighting the need for two gigawatts of long-duration energy storage. The framework is relevant to stand-alone BESS projects in terms of benefit sharing to the local neighbourhoods and local community, and private agreements with landowners and adjacent landowners. As SEARs were issued prior to the 12th of November 2024, and this EIS will be lodged prior to 30 April 2025, this framework does not apply to the proposed BESS unless the applicant opts to apply the framework immediately. Negotiations will continue with ARC in relation to benefit sharing, with reference to the framework.

2.2.5 NEW ENGLAND NORTH WEST REGIONAL PLAN 2041

The New England North West Regional Plan 2041 (Regional Plan) is the NSW Government's strategy for guiding land use planning decisions for the New England North West Region for the next 20 years. The Regional Plan acknowledges the following key renewable energy focussed outcomes:

Objective 9 of this plan is "Lead renewable energy technology and investment" (p.43), with the New England REZ identified as a key initiative.

The proposed BESS project supports objective 9 and intended renewable energy outcomes of the New England North West Regional Plan 2041 by providing capacity to reduce the Region's reliance on fossil fuels and increase electricity storage for reuse during peak consumption periods.

2.2.6 ADVANCING OUR REGION: TOWARD 50,000 LOCAL STRATEGIC PLANNING STATEMENT

The ARC Advancing our region: Toward 50,000: Local Strategic Planning Statement (LSPS) was adopted by Council in April 2024. The LSPS sets the vision and priorities of ARC for next 20 year, directs further investigations to how identify where and how future growth will be managed, identifies where further strategic land use planning is required and explains the planning priorities and related actions.

The LSPS acknowledges the opportunities provided by the New England REZ, taking advantage of natural endowments like high solar exposure. Renewable energy is recognised as driving growth in the region, with the New England REZ expected to deliver approximately eight gigawatts of network capacity, which will in turn generate approximately 210 permanent/direct jobs and 140 indirect jobs. This is in addition to construction jobs

Objective 9 of the regional plan seeks to support a sustainable and resilient region.

A review of relevant planning priorities within the LSPS identifies the following:

- > Planning priority A2 relies on renewable energy as an 'engine industry' that will drive demand for employment in the short to medium term, noting the anticipated 350 jobs anticipated to be delivered by renewable energy projects;
- > Planning priority A5 seeks to ensure that the region achieves water security, particularly in the context of delivering renewable energy projects;
- > Planning priority C3 seeks to improve resilience and improve climate change preparedness, including implementing the actions of the Council's Renewable Energy Action Plan;
- > Planning priority C4 relates to the role of the New England region will play in supporting and playing a key role in achieving Australia carbon targets. Through delivery of approximately 8 gigawatts of renewable energy, the New England REZ will offset the emissions for more than 500,000 people.

The development is consistent with the vision of planning priorities A2, A5, C3 and C4 of the Armidale LSPS.

2.2.7 COMMUNITY STRATEGIC PLAN 2017-2027

The ARC Community Strategic Plan 2017-2027 (CSP) seeks to deliver the following community vision:

We want a harmonious region which celebrates the diversity and uniqueness of our communities, provides opportunities for all people to reach their potential, encourages engagement with our environment, cultures and lifestyles, while supporting growth, opportunity and innovation.

The four strategic directions to deliver the vision are:

- *Environment and Infrastructure*
- *Growth, Prosperity and Economic Development*
- *Leadership for the Region*
- *Our People and Community*

Relevant to this project is community outcome 2 under strategic direction environment and infrastructure, which seeks to provide for cost effective access to renewable energy for local businesses and community.

The proposed Gara BESS is not inconsistent with the vision and strategic directions of the CSP, and will directly assist to respond to community outcome 2 in relation to environment and infrastructure.

2.2.8 ARMIDALE RENEWABLE ENERGY COMMUNITY BENEFIT FRAMEWORK 2024

The framework was adopted by Council in May 2024. The framework seeks to promote benefit sharing strategies associated with the development of state and regionally significant renewable energy projects.

For battery projects, Council seek to secure community benefits of \$850 MW of capacity per annum. Capacity is not defined in the policy. The basis for this policy appears to be the DPHI Draft Energy Policy Framework and the draft Benefit Sharing Policy. However the draft framework and policy did not directly address energy storage projects. These drafts have now been superseded by the adopted framework – refer **Section 2.2.4**.

2.3 Relationship to National Electricity Market

The Australian Energy Market Operator (AEMO) operates the National Electricity Market (NEM) within NSW and surrounding states and territories. The AEMO has published the 2023 System Strength, Inertia and NSCAS Reports which identifies existing shortfalls and system strength nodes within the NEM. While there are no shortfalls identified within NSW generally, or the New England region specifically, the reports do demonstrate the increase in declared security need over the past decade as the NEM transitions from retiring coal generation to renewable generation. The AEMO highlights that technologies such as “batteries, solar and wind farms connected to the system with advanced inverters” will help in meeting these needs.

The proposed development comprises a battery energy storage system within an identified REZ, within 5 kilometres of the Armidale Transgrid Substation. This strategic location is expected to provide opportunities for energy storage to support system strength and stability during and after disturbances to the NEM.

2.4 Analysis of feasible alternatives to the project

This section provides an analysis of feasible alternatives to the project, having regard to the objectives of the development, including the consequences of not carrying out the development.

Table 1 – Development Options

Alternatives		Description
Option 1	Base Case, Do Nothing	Option 1 would involve not installing and operating a BESS at the site or elsewhere.
Option 2	Alternative Site	Option 2 would involve installing and operating a BESS at an alternative site.
Option 3	BESS Technology and Provider Alternatives	Option 3 would involve using alternative technology at the site.
Option 4	BESS at 86 Woodlands Road, Armidale	Option 4 would involve the installation and operation of a BESS at the site.

Of the above, Option 4 is the preferred option, and this is discussed in further detail in the following sections.

2.4.1 OPTION 1

Option 4 is preferred over Option 1 on the grounds that the latter is:

- > Inconsistent with the strategic context set by State and local policy, including:
 - Goal 22 of the NSW 2021 Plan (NSW Government 2011) which seeks to “promote energy security through a more diverse energy mix, reduce coal dependence, increase energy efficiency and move to lower emission energy sources”;
 - Goal 1 of the *NSW REAP* (NSW Government 2013) which seeks to attract renewable energy investment;
 - Objectives of the Energy Security Safeguard legislation to improve the affordability, reliability and sustainability of energy by addressing the shortfall in firm capacity during times of peak demand;

2.4.2 OPTION 2

Option 4 is preferred over Option 2 as the latter would result in increased costs and environmental impacts associated with the acquisition of a suitable property. It would also entail the construction of increased lengths of connecting infrastructure (likely to include earthworks and vegetation removal). By comparison to the site of the proposed development, the length of connecting infrastructure is expected to be minimal due to the proximity to the existing network infrastructure.

By locating the BESS project adjacent to existing transmission network infrastructure, the project is also sympathetic to the existing power infrastructure setting and the current use of the land.

2.4.3 OPTION 3

Option 4 is preferred over Option 3 as:

- > Option 4 provides the most reliable way, using current technology, to regulate electricity supply in a network which is expected to become increasingly variable due to the transition from traditional to more sustainable, renewable sources in the region; and
- > Option 3 may not be suitable to the site due to its limited area or other reasons, requiring the seeking out and acquisition of an alternative site and construction of connecting infrastructure.

2.5 Existing agreements

To date, the applicant has not entered into any agreements with other parties in relation to voluntary planning agreements, negotiated landowner agreements, or benefit-sharing schemes.

3. PROJECT DESCRIPTION

3.1 Project Overview

The Gara BESS project comprises a BESS with a delivery capacity of approximately 400 MW_{AC}/1,760 MWh, incorporating on-site energy storage containers, MVPS containers, and a connection station including control rooms and switch rooms. The BESS will connect to the nearby 330 kV Transgrid overhead electricity transmission line (ETL) located in the north of the site via a proposed approximately one kilometre overhead ETL. The site will have an area of approximately 35.24 ha, of which the development footprint occupies an area of 22.43 ha.

The Gara BESS will comprise of the following key components:

- > Enclosed lithium-ion batteries;
- > Power conversion systems including associated transformers;
- > Underground power and fibre optic cabling interconnecting the equipment;
- > Grid connection equipment including switchgear, protection and control equipment, metering, reactive power equipment, filtering equipment, auxiliary transformers and enclosures/buildings for housing equipment;
- > An overhead transmission line to connect the BESS to the Transgrid 330 kV ETL in the north of the site. A summary of the connection works within electricity easement is as follows:
 - Cut-in to the existing 330kV line through installation of interface structures to replace the existing tower.
 - Loop-in, loop-out 330kV overhead lines connecting the line interface to the new switching station with approximately 1km length and supported by a dual-circuit tower structure.
- > Earthing and lightning protection systems;
- > Storage area/enclosure, internal access tracks, on-site parking, security fencing, CCTV, and temporary construction laydown area;
- > Vegetation screening; and
- > Upgrade of the existing site access from Waterfall Way (Grafton Road) in the south-east.

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

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

Key features of the project are summarised in **Table 2** and shown in **Figure 5**.

As the proposed development comprises a BESS with a capacity of greater than 30 MW, the development represents designated development by reference to Section 7 of Schedule 3 of the EP&A Regulations. However, Section 4.10(2) of the EP&A Act provides that state significant development is not designated development.

The proposed development has been refined to ensure potential impacts are mitigated. Refinements to the proposed development include:

- > Location of the development footprint within the site has been selected to minimise impacts on biodiversity.
- > Access to the site has been selected with consideration of sightlines on Waterfall Way (Grafton Road) and upgrade requirements.
- > The site has been recessed on the south-western corner and extended on the north-western corner to reduce the impact on native vegetation
- > The proposed transmission connection design has been refined to reduce the area of direct impact to native vegetation and threatened species habitat
- > The development proposes to use fauna friendly security fencing as opposed to barbed wire fencing to prevent animal injuries via accidental access
- > Additional landscape has been proposed to border the north-eastern boundary of Lot 1 DP246878 to minimise visual impacts.

Table 2 – Project Summary

Project Element	Summary of the Project
Site	All land to which the application relates - 35.24 ha
Development footprint	All land physical impacted by the construction of the project – 22.43 ha
Site details	> 86 Woodlands Road, Armidale (part Lot 1 DP146878, part Lot 1 DP573787, and part Lot 145 DP755826) > Part Lot 7003 DP1060212 (travelling stock reserve) > Part Lot 7009 DP1062013 (travelling stock reserve) > The transmission easement would impact Lot 1 DP246878 and Lots 144, 145 and 153 DP755826. > Crown Road located between Lots 144 and 145 DP755826 > Waterfall Way (Grafton Road) road reserve
Battery storage capacity	400 MW/1,760 MWh
BESS Lifespan	Up to 23 years, with the possibility of upgrades to extend the operational life
Infrastructure	> An approximately 400 MW/1,760 MWh BESS occupies the development footprint; > Underground cabling connecting BESS and MVPS; > A 33/330kV substation; > An overhead transmission line of up to approximately one (1) kilometre long connecting the BESS substation to the Transgrid 330 kV ETL (which is located within Lots 144 and 153 DP755826); > Temporary construction compound including material laydown areas, site offices, vehicle parking, and amenities;

Project Element	Summary of the Project
	> Upgrade of the existing site access from Waterfall Way (Grafton Road) including vegetation clearing for sufficient sight distance; > Fauna friendly security fence up to 1.8 metres in height; and > Specific native vegetation screening from identified visual impact locations.
Site Access	Existing site access from Waterfall Way (Grafton Road) - subject to upgrades as per the strategic design provided in Appendix G
Access route	Vehicles would access the site via New England Highway and Waterfall Way (Grafton Road), utilising the existing (upgraded) access location. It is anticipated that project infrastructure would be delivered from Port of Newcastle and transported to the site via roads approved for heavy vehicle use and then the existing (upgraded) access driveway (refer Appendix H).
Construction	Construction is expected to commence in mid to late 2026 and occur over a 14 months period, including a peak period of 4 months.
Operations and maintenance	The project would be operated remotely with occasional maintenance activities generally be undertaken by up to five (5) personnel.
Decommissioning and rehabilitation	The site would be progressively rehabilitated during the decommissioning period, including removal of the temporary construction facilities. At the end of operational life, components above ground and below ground (with depth subject to agreement with landowner) would be removed and land rehabilitated to pre-development conditions.
Workforce	Up to 80 construction jobs and 5 operational jobs
Hours of Operation	24 hours, 7 days a week



Legend

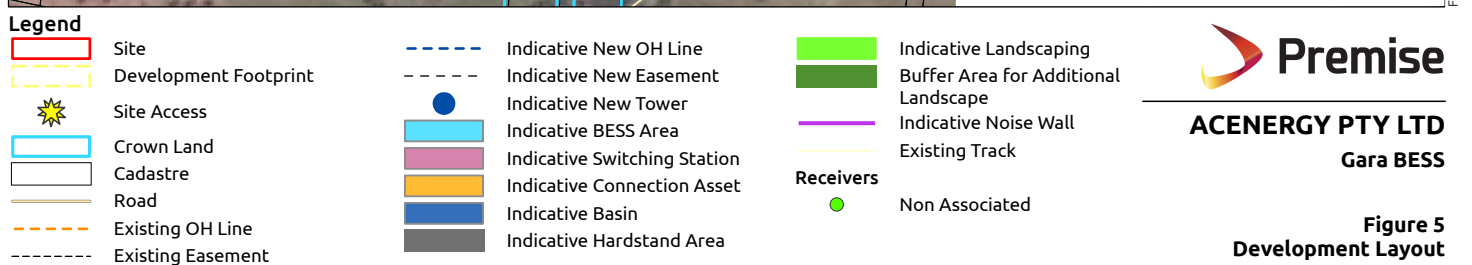
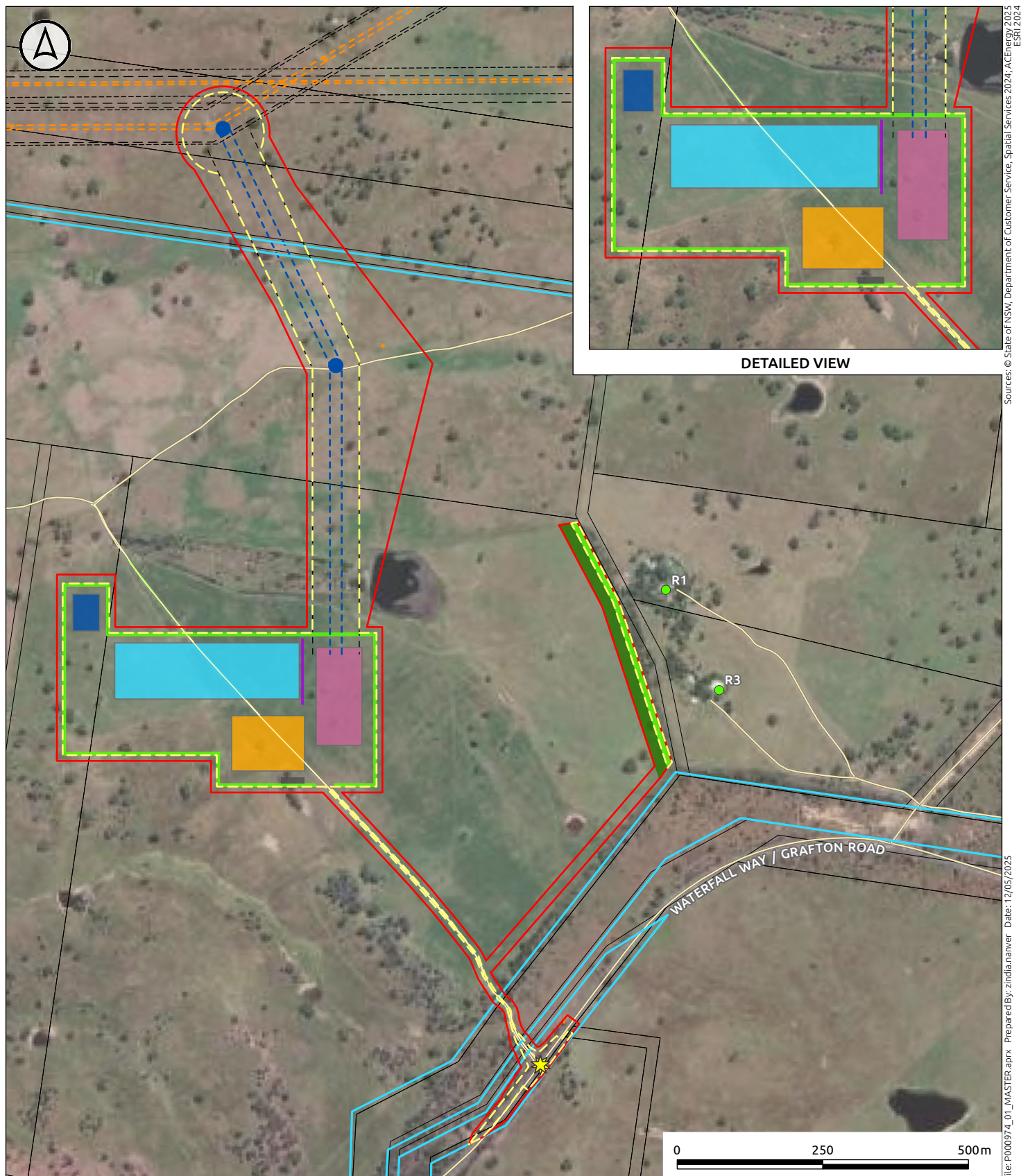
- Site
- Development Footprint
- Crown Land
- Site Access
- Cadastre
- Road
- Major Watercourse
- Existing OH Line

- Existing Easement
- Indicative New OH Line
- Indicative New Easement
- Indicative New Tower
- Indicative BESS Area
- Indicative Switching Station
- Indicative Connection Asset
- Indicative Basin

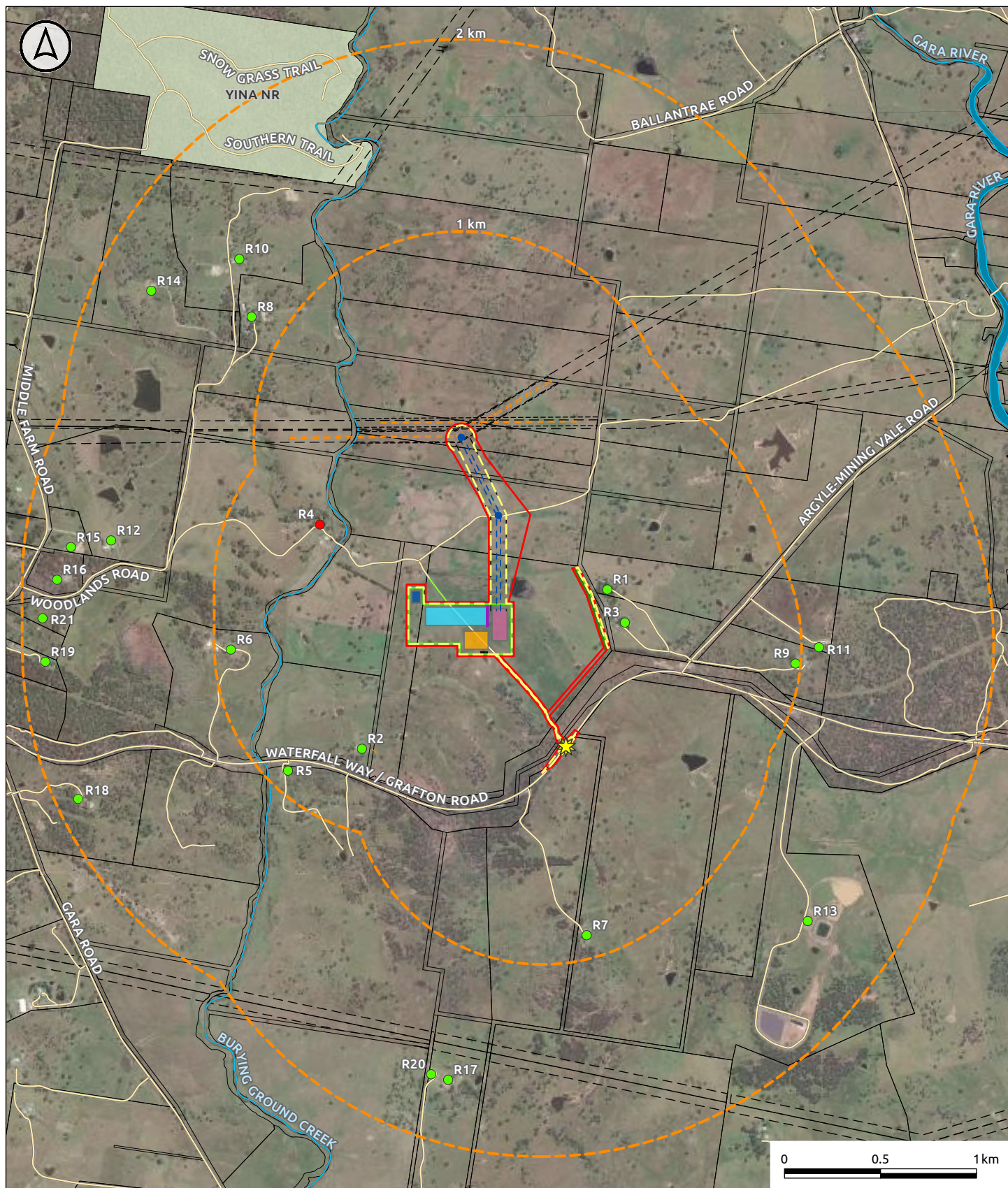
- Indicative Hardstand Area
- Indicative Landscaping
- Buffer Area for Additional Landscape
- Indicative Noise Wall
- Receivers
 - Associated
 - Non Associated

Premise
ACENERGY PTY LTD
 Gara BESS

Figure 4
The Site



Sources: © State of NSW, Department of Customer Service, Spatial Services 2024; ACENERGY 2025
ESRI 2024
File: P000974_01_MASTER.aprx Prepared By: zindiananar Date: 12/05/2025



Legend

- Site
- Development Footprint
- Site Buffers
- ✦ Site Access
- Cadastre
- Road
- Major Water Body
- Major Watercourse

- NPWS Reserve
- Existing OH Line
- Easement
- Indicative BESS Area
- Indicative Switching Station
- Indicative Connection Asset
- Indicative Basin
- Indicative Landscaping

- Buffer Area for Additional Landscape
- Indicative Hardstand Area
- Indicative New Tower
- Indicative New OH Line
- Indicative New Easement
- Receivers**
- Associated
- Non Associated



ACENERGY PTY LTD
Gara BESS

Figure 6
Receiver

3.2 Uses and Activities

The project comprises the development of electricity generating works, meaning:

a building or place used for the purpose of making or generating electricity, or electricity storage.

The Gara BESS will operate to manage and store electricity generated by the Transgrid network. This will positively contribute to the system security needs of the NEM.

Upon the commencement of operation, the only time personnel will be required on the site is for maintenance works. Personnel will access the site via the upgraded site access from Waterfall Way (Grafton Road) in standard sized vehicles and occasionally a heavy vehicle may need to access the site for maintenance.

Specific project elements are discussed in the following sections.

3.2.1 BATTERIES

The proposed BESS contains enclosed lithium-ion type batteries which will be manufactured offsite and delivered to the site for installation. The number and exact layout of battery modules would be confirmed during detailed design. However, the location of this equipment would be limited to the areas shown on **Figure 5** and the siting of this equipment has formed the basis of the technical assessments that support this EIS.

For the purposes of the assessment of the BESS, a conservative approach was taken, whereby the maximum area and quantities of this infrastructure was considered, subject to this infrastructure being located wholly within the identified areas.

3.2.2 UNDERGROUND CABLING

Underground cabling and fibre optic cabling interconnecting equipment would be designed in accordance with the relevant Australian and international standards and manufacturer's specifications and installed in trenches. The cabling would be installed surrounded by thermally controlled bedding mix (such as sand, cement or similar) and backfilled with fill obtained on site.

3.2.3 TRANSMISSION LINE

The electrical connection from the BESS to the nearby Transgrid 330 kV ETL would be via an approximately one kilometre long 330 kV overhead powerline crossing Lots 144, 145 and 153 DP755826 and an unconstructed road reserve.

A summary of the connection works within electricity easement is as follows:

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

The approximate location of the sub-transmission line and structures has been identified but would be subject to detailed design considerations in consultation with Transgrid.

Conservatism has been applied in assessing the potential corridor to allow for refinement during the detailed design stage.

3.2.4 INVERTERS, TRANSFORMERS AND SWITCHGEAR

Inverter stations would be installed adjacent to the batteries. Each would contain an inverter, switchgear and a step up transformer. The inverter stations would resemble 20 foot containers.

3.2.5 ACCESS AND INTERNAL TRACKS

Within the site, access tracks are limited to a gravel, all weather connection from the property entrance to the site compound/operations and maintenance buildings.

3.2.6 ANCILLARY TEMPORARY FACILITIES AND CONSTRUCTION COMPOUND

Ancillary facilities include:

- > Material laydown areas, storage areas/enclosures;
- > Site office;
- > Internal access tracks
- > Car parking areas for construction workers' transportation;
- > Parking for staff and visitors.

3.2.7 SECURITY

The development footprint will be secured by fauna friendly security fencing surrounding the perimeter, with a height of up to 1.8 metres and access via security access gates. A CCTV system will also be installed throughout the site.

3.2.8 ACOUSTIC BARRIER

A permanent acoustic barrier would be installed within the site to mitigate acoustic impacts of the operational BESS. An approximately 110 metre long, 3.15 m high barrier is proposed along the south-western side of the batteries and an approximately 110 metre long, 4m high barrier on the eastern side of the battery. The barrier is to be free of gaps and must be constructed of a material with a mass density of 12 kg/m² excluding structural components. Detailed design will confirm the final location, length and height of the acoustic barrier to meet the project criteria.

3.2.9 VEGETATION SCREENING

Native vegetation screening will be established along the outer side of the perimeter fence and close to the north-eastern boundary of Lot 1 DP246878. The screening will be installed to satisfy the recommendations of the visual impact assessment to ensure any residual visual impacts are mitigated.

3.3 Project Phases

3.3.1 CONSTRUCTION PHASE

The construction period is estimated to be 14 months and is expected to commence early 2026. Duration of peak construction period is approximately 4 months.

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

A security fence will be installed on the development footprint boundary and access tracks will be constructed. Construction will require the use of water trucks, graders, flatbed trucks, skid steers, front end loaders, roller compactors, trenchers, backhoes, gravel trucks and aerial lifts.

Batteries required for the development would be manufactured offsite and delivered for installation following completion of concrete footing installation. Deliveries of other equipment will be made via flatbed trucks on the approved route and via the approved site entrance. Heavy vehicle deliveries would use approved routes between Newcastle and the site, e.g. New England Highway and through Armidale via Uralla Road and Kentucky Street, then via either Dangar Street, Taylor Street or Long Swamp Road and Canambe Street to Barney Street. It is noted that other approved routes for B-doubles are also available and may be used by Project delivery vehicles.

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

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

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

- > Off-site manufacture of the BESS equipment.
- > Vegetation clearing to provide a constructable site.
- > Installation of fencing and gates to secure the development footprint, connection station and BESS area.
- > Levelling the development footprint as needed.
- > Installation of concrete footings and steel platforms on which to install the BESS, MVPS containers and switching station.
- > Delivery and installation of BESS.
- > Underground cabling and construction of earthing system.
- > Auxiliary power protection, indication and control systems.
- > Outdoor security lighting and lighting inside BESS and MVPS containers to provide illumination for operation and/or maintenance, when needed, at night.
- > Control rooms and connection station.
- > Ancillary high voltage equipment, such as circuit breakers, switching equipment, filters, transformers, and other electrical protection equipment.
- > Connection of the BESS to existing transmission network.
- > Testing and commissioning.

The project is expected to generate up to 80 Full Time Equivalent (FTE) jobs during construction.

3.3.2 OPERATIONAL PHASE

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

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

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

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

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

3.3.3 DECOMMISSIONING PHASE

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

- > BESS and associated infrastructure would be unbolted from concrete slabs and removed by crane onto transporters. All site infrastructure would be taken away from site for resale or to an appropriate recycling or waste facility;
- > Underground services would be cut back to below ground level and capped, with the agreement of landowners; and
- > The site would then be landscaped to a safe, clean, and stable state enabling it to return to an unhindered use for agricultural or other permissible purpose.

It is possible that the infrastructure may be upgraded rather than decommissioned and the lifespan extended, subject to necessary approvals and agreements with landowners.

4. STATUTORY CONTEXT

4.1 Summary

In accordance with Section 3.5 of the *State Significant Development Guidelines – Preparing an Environmental Impact Statement* (DPIE 2022), the statutory requirements for the development are set out in **Table 3**.

Further discussion around statutory requirements and pre-conditions to approval are discussed in **Table 3**.

Table 3 – Statutory Requirements

Category:	Assessment
Power to grant approval	Section 4.5 of the EP&A Act provides that the consent authority is the Independent Planning Commission or the Minister based on the development type. Section 4.36(2) of the EP&A Act provides that a State Environmental Planning Policy may declare any development, or any class or description of development, to be State significant development. The proposed development is for the purposes of electricity generating works that has an estimated development cost of more than \$30 million and is therefore declared to be State significant in accordance with Section 20 of Schedule 1 of the SEPP. On this basis the consent authority for the proposed development is likely to be the Minister. However it is noted that if any of the following occurs the consent authority will become the Independent Planning Commission in accordance with Section 2.7(1) of the <i>State Environmental Planning Policy (Planning Systems) 2021</i> (Systems SEPP): > The council of the area in which the development is to be carried out (ARC) has duly made a submission by way of objection under the mandatory requirements for community participation in Schedule 1 of the EP&A Act; > At least 50 unique submissions (other than from a council) have duly been made by way of objection under the mandatory requirements for community participation in Schedule 1 to the Act; and > The development application is made by a person who has disclosed a reportable political donation under section 10.4 to the Act in connection with the development application.
Permissibility	Electricity generating works are prohibited in the RU1 Primary Production zone which applies to the subject land. Notwithstanding, the development is permitted with consent on the following grounds: > The proposed development satisfies Section 2.6(1)(a) of the Systems SEPP as electricity generating works are permitted with consent within prescribed rural zones under Section 2.36(1)(b) of the <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> (Infrastructure SEPP). Under Section 2.35 of the Infrastructure SEPP, prescribed rural zones include the RU1 Primary Production zone which applies to the site under the ARLEP.

Category:	Assessment
Other approvals	> The proposed development satisfies Section 2.6(1)(b) of the Systems SEPP on the grounds that it is for the purposes of electricity generating works which have an estimated cost of development of more than \$30 million in accordance with Section 20, Schedule 1 of the Systems SEPP.
	An approval under section 138 of the <i>Roads Act 1993</i> will be required due to site access upgrades and work proposed within the road corridor Commonwealth approvals may be required for the following reasons: > A review of the National Native Title Tribunal's Native Title Register did not identify any Native Title claims or applications, or Indigenous Land Use Agreements applying to the site under the <i>Commonwealth Native Title Act 1993</i> (the Native Title Act). Commonwealth approval will be required under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). The Gara BESS was referred to the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW Cth) due to its potential for impacts on Matters of National Environmental Significance (MNES), to determine whether it constitutes a controlled action. On 1 April 2025, DCCEEW Cth determined that the Gara BESS is a controlled action (EPBC 2025/10102). As a result, the proposal will require assessment and approval under the EPBC Act before it may proceed. The Gara BESS will be assessed under the bilateral agreement between the Commonwealth and New South Wales. Supplementary SEARs for the project were issued on the 29 April 2025, This is further discussed in Section 6.1.
Pre-condition to exercising the power to grant approval	Pre-conditions to approval include consideration of the following: > Consideration as to whether the site is suitable in its contaminated state - or will be suitable, after remediation - for the purpose for which the development is proposed to be carried out > Consideration as to whether the project represents potentially hazardous or offensive development. > Consideration of impacts associated with development with a frontage to a classified road. > Consideration of impacts associated with earthworks. > Consideration of impacts on land identified as biodiversity.
Mandatory matters for consideration	Pursuant to Section 4.15 of the EP&A Act, the following mandatory matters for consideration apply: > Relevant environmental planning instruments, including: – <i>State Environmental Planning Policy (Resilience and Hazards) 2021</i> (the Hazards SEPP): Chapter 3 Hazardous and offensive development; and Chapter 4 Remediation of land. – <i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i> (the Infrastructure SEPP): Chapter 2 Infrastructure. – <i>State Environmental Planning Policy (Planning Systems) 2021</i> (the Systems SEPP): Chapter 2 State and regional development.

Category:	Assessment
	– <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i> (the Biodiversity SEPP): Chapter 3 Koala habitat protection 2020 – ARLEP 2012. > The relevant Development Control Plan (DCP) (the Armidale Dumaresq DCP 2012). It should be noted that the application of a DCP is excluded from SSD under Section 2.10 of the Systems SEPP. > The likely impacts of the development including environmental impacts on natural and built environments and social and economic impacts in the locality. > The suitability of the site for the development. > The public interest.

4.2 Pre-conditions to approval

Statutory reference	Pre-condition	Assessment
<i>State Environmental Planning Policy (Resilience and Hazards) – section 4.6(1)(b)</i>	A consent authority must be satisfied that the land is suitable in its contaminated state - or will be suitable, after remediation - for the purpose for which the development is proposed to be carried out.	A preliminary site investigation prepared by Cadeema (2024) concluded that there is no evidence of potentially land contaminating activities having occurred on the site other than for agricultural purposes. Therefore it was concluded that there is a negligible risk of contamination on the site, and no further investigations were recommended.
<i>State Environmental Planning Policy (Resilience and Hazards) – Chapter 3</i>	Section 3.7 of the Hazards SEPP requires consideration of relevant circulars and guidelines in consideration of whether a proposed development represents potentially hazardous or offensive development. Where a conclusion is reached that a project is either, or both, a potentially hazardous or offensive development, must prepare a PHA in relation to the project.	Whilst the project is not assessed as representing potentially hazardous or offensive development, by response to the SEARs, a PHA has been provided – refer to Section 6.9 and Appendix K .
<i>State Environmental Planning Policy (Transport and Infrastructure) 2021 – Section 2.119</i>	Development with frontage to a classified road	Waterfall Way (Grafton Road) is a classified road. An assessment of traffic impacts is provided in Section 6.7 and Appendix G . The DA will be referred to TfNSW for comment and DPPI must take consideration of comments received.

Statutory reference	Pre-condition	Assessment
<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021 – Chapter 3</i>	The SEPP requires consideration of core koala habitat.	While the project is located within the Northern Tablelands koala management area, the BDAR provided in Appendix J confirms that the site does not comprise core koala habitat.
<i>Armidale Regional Local Environmental Plan 2012</i>	The ARLEP sets up the environmental planning provisions applicable to the Armidale LGA and is administered by the Armidale Regional Council.	The project is wholly located within the RU1 Primary Production zone, which prohibits electricity generating works. Notwithstanding, the project is not inconsistent with the objectives of the zone, and is particularly consistent with the following objectives: > To minimise the fragmentation and alienation of resource lands. > To minimise conflict between land uses within this zone and land uses within adjoining zones. > To allow for non-agricultural land uses that will not restrict the use of other land in the locality for agricultural purposes. The Agricultural Land Utility Assessment (ALUA) (Appendix L) concludes that the site as low agricultural suitability, and that removing 22.43 ha from agricultural production will not significantly impact on agricultural production. The Land Use Conflict Risk Assessment (LUCRA) considers the impacts of the project on adjoining land uses – refer Section 6.4 and Appendix M.
	Section 6.1 of the LEP requires consideration of a range of factors prior to the grant of consent for earthworks.	Earthworks are required to provide a level development footprint to accommodate the proposed battery arrangement and install ancillary elements. Relevant heads of consideration are discussed in Section 6.4.3.5 .
	Section 6.6 of the LEP requires consideration of access to essential services.	The proposed development will have suitable access to essential services as required and relevant.

4.3 Environmental Planning and Assessment Act 1979

4.3.1 OBJECTS OF THE EP&A ACT

In New South Wales (NSW), the relevant planning legislation is the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EP&A Act instituted a system of environmental planning and assessment in NSW and is administered by the Department of Planning, Housing and Infrastructure (DPHI). The objects of the EP&A Act are:

- (a) *To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,*
- (b) *To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,*
- (c) *To promote the orderly and economic use and development of land,*
- (d) *To promote the delivery and maintenance of affordable housing,*
- (e) *To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,*
- (f) *To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),*
- (g) *To promote good design and amenity of the built environment,*
- (h) *To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,*
- (i) *To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,*
- (j) *To provide increased opportunity for community participation in environmental planning and assessment.*

The proposed development is not considered to be antipathetic to the above objects.

4.4 Other environmental planning instruments

4.4.1 ARMIDALE REGIONAL LOCAL ENVIRONMENTAL PLAN 2012

Section 1.2 sets out the aims of the Armidale Regional LEP. The project is not antipathetic to the aims of the LEP and is particularly aligned with the aims 2(a), (c), (d), and (e) on the basis that:

- > As outlined in **Appendix L**, the use of the site for electricity generating works is not anticipated to detrimentally impact the opportunity for the land to return to agricultural uses if the project is decommissioned. The project will preserve the agricultural values of the land to enable future opportunities for all forms of primary production.
- > The project will generate both construction and operational jobs, contributing to the ongoing economic growth and development of the Armidale area, as well as the state and country.

- > As outlined in **Section 7.9**, the project is aligned with the principles of ecologically sustainable development (ESD).

By reference to the assessment within this EIS, the project is not antipathetic to the aims and objectives of the LEP, and the RU1 zone specifically, and provides adequate consideration of relevant pre-conditions to approval to demonstrate that the development can be achieved without resulting in significant or detrimental impacts to the locality or region. Taken in the round, the assessment at **Section 6** of this EIS confirms that the range of impacts are acceptable, and any residual impacts are adequately managed via recommended mitigation measures.



5. ENGAGEMENT

5.1 Introduction

This chapter provides an outline of the consultation and engagement activities carried out for the Gara BESS project. It identifies who has been consulted, how the consultation was carried out, the feedback received and how the feedback has been addressed. The overarching objective for community engagement was to build relationships of trust that provided opportunities for the community to understand the project and to provide feedback about impacts and benefits that could be fed into project development and assessment.

This chapter outlines additional consultation and engagement activities for the development of the Environmental Impact Statement (EIS).

5.2 Secretary's environmental assessment requirements

The Secretary's Environmental Assessment Requirements (SEARs) for the preparation of the EIS were provided for the project on 19 July 2024. SEARs relevant to community and stakeholder engagement are outlined in **Table 4**.

Table 4 – Response to SEARs

SEARs item	Project response
During the preparation of the EIS, you should consult with relevant local, State or Commonwealth Government authorities, infrastructure and service providers, community groups, affected landowners and any exploration licence and/or mineral title holders. In particular, you must undertake detailed consultation with affected landowners surrounding the development, relevant government agencies and the relevant local Council(s).	Refer to Section 5.3 for information on how stakeholders were identified and the list of relevant stakeholders consulted during the development of the EIS. No consultation was conducted with exploration licence mineral holders, none were present in the area. Key stakeholders, including affected landowners, government agencies, and the local council, are detailed in Table 5 for detailed consultation.
The EIS must detail how engagement undertaken was consistent with the <i>Undertaking Engagement Guidelines for State Significant Projects</i> (DPIE, 2022).	ACEnergy delivered an engagement program consistent with NSW Department of Planning, Housing and Infrastructure (DPHI) expectations around early and effective engagement for State Significant Projects. ACEnergy approach addressed the core principles of the (now updated) <i>Undertaking Engagement Guidelines for State Significant Projects</i> (2024) and aimed to connect with the relevant local and state government authorities, relevant agencies and community stakeholders. ACEnergy achieved this through a transparent approach, that:

SEARs item	Project response
	> Helped the local community understand the project benefits, development approval process and how they could participate in the process. > Undertook responsive engagement, by collecting and presenting information and outlining an engagement approach that demonstrated appropriate effort under relevant guidelines. > Responded to community feedback by making relevant changes to the project and including appropriate mitigation measures in the EIS. This is addressed in further detail in Section 5.3.
The EIS must describe the consultation process and the issues raised and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, an explanation should be provided.	The consultation process and issues raised during the EIS development are detailed in Table 5 . The table also outlines changes made to the project design in response to issues raised and explains instances where no changes were made.

5.3 Community and stakeholder engagement

In February 2024, ACEnergy and bd infrastructure developed a Community and Stakeholder Engagement Plan (CSEP) for the planning process. The primary goal was to build relationships of trust by providing the community with opportunities to understand the proposal and offer feedback on its impacts and benefits, which could be incorporated into development and assessment. The CSEP guided the identification of stakeholders, assessed their level of interest, and outlined how consultation would take place. It was used throughout the scoping and EIS phase to ensure consistency in engagement during the planning process.

5.3.1 PURPOSE OF ENGAGEMENT

bd infrastructure supported ACEnergy to undertake community and stakeholder engagement during the EIS phase. The engagement process aimed to:

1. Provide an update and inform community and stakeholder members about the proposal, its impacts and benefits
2. Use quality engagement to develop relationships with the community and understand values relevant to the drafting of the Scoping Report
3. Help the local community understand the potential benefits, development approval process and how they can participate in the process
4. Demonstrate ACEnergy's commitment to appropriate and responsive engagement, by collecting and presenting information and outlining an engagement approach that demonstrates appropriate effort under relevant guidelines
5. Respond to community feedback by making relevant changes to the proposal

6. Enable authentic conversations through all stages of the Scoping phase by using quality engagement and communications materials that enabled community members and stakeholders to provide informed feedback.

Engagement undertaken to date and the engagement principles that were followed during preparation of the Scoping Report were undertaken in accordance with the following guidelines:

- > Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024)
- > Social Impact Assessment Guideline for State Significant Projects (DPIE, 2021e) (SIA Guideline)

Alongside the guidelines, the approach to engagement is informed by the principles by the International Association of Public Participation (IAP2).

5.3.2 STAKEHOLDERS

Several considerations determined the identification of stakeholders, including the site location within an agricultural area, the limited number of sensitive receivers and that assembly of the batteries is completed off-site.

Stakeholders were identified through various methods, including:

- > inclusion of all stakeholders referenced in the SEARs
- > review of Scoping Report to capture stakeholders and community from early engagement
- > consideration of the local and wider community including:
 - the development's location and proximity to the township of Armidale
 - the potential direct operation and construction impacts of the development limited to the towns
 - the potential indirect impacts and operational benefits contributing to the Armidale area.
- > networking with different individuals and community organisations
- > discussions with Armidale Regional Council

Stakeholders are categorised based on their impact and/or interest and grouped into four main categories.

Table 5 – Stakeholder categorisation

Stakeholder group	Individual subcategory	stakeholder	Key focus
Community	> Affected surrounding development > Surrounding residential landowners on roads within a 500m radius, specifically: – Middle Farm Road – Grafton Road – Waterfall Way – Argyle-Mining Vale Road	landowners the	> Impacts during construction and operation including visual, noise, traffic and vibration. > Social and environmental impacts and benefits associated with the project.

Stakeholder group	Individual stakeholder subcategory	Key focus
	– Gara Road	
	> Local business and community groups – Armidale Local Aboriginal Land Council – Southern New England Land Care – Pathfinders Ltd. – Business New England – Sustainable Living Armidale – New England Climate Action Group – Country Women's Association – Armidale branch > The University of New England	> Direct and indirect environmental and social impacts of the project. > Operational benefits such as Voluntary Planning Agreements, benefit schemes, and employment opportunities.
	> Aboriginal stakeholders > Armidale Aboriginal Land Council (LALC)	> Cultural significance or connection to Country impacted by the project.
	> Broader community > Armidale township	> Environment, benefit sharing, energy supply, general impacts on the town
Elected representatives	> Member for New England, Hon Barnby Joyce > Minister for Climate Change, Minister for Energy, Minister for the Environment, and Minister for Heritage, Hon Penny Gail Sharpe > Member for Northern Tablelands, Mr Brendan Moylan MP	> Direct and indirect environmental and social impacts of the proposal. > Operational benefits such as investment value and employment opportunities.
Government authorities	> Armidale Regional Council > Department of Planning, Housing and Infrastructure (DPHI)	> Direct impacts on Council assets and constituents during construction, operation and decommissioning. > Interest in Voluntary Planning Agreements and community benefits. > Regulatory compliance and impact assessment.

Stakeholder group	Individual subcategory	stakeholder	Key focus
Relevant government agencies	> Crown Lands > Heritage NSW > DPE Water > DPI Agriculture > NSW Department of Climate Change, Energy, the Environment and Water.		> Regulatory compliance and feedback on social and environmental impacts of the project
Infrastructure and service providers	> Transgrid		> Connection to the relevant electricity infrastructure and connection capacity > Impacts to Transgrid infrastructure

5.4 Community and consultation summary

Community engagement resumed in September 2024, utilising both in-person and online methods to reach a broad audience and accommodate individual communication preferences. This effort built on engagement activities in early 2024 during the scoping report development. A variety of communication channels and activities were employed to enhance community and stakeholder participation and feedback relevant to the project's scale and impact, including:

- > mailed-out and emailed project update newsletters
- > a toll free 1800 phone number, project email address and dedicated website
- > digital and print advertising in The Armidale Express
- > online and in-person community information sessions
- > key stakeholder briefings, along with ongoing email and phone communication
- > community feedback survey.

Further details of engagement activities and issues raised with each stakeholder group are outlined in **Table 6**.

Table 6 – Consultation summary

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
Community	Affected landowners surrounding the development (2km from the site)	Ongoing email and phone communications have been conducted with affected landowners between 10 September and 18 March 2025.	Noise impacts During the community info sessions, two landowners noted noise during construction and operation. Two residents noted that the winds that move across their property's would carry noise directly towards them. They were receptive to the proposed noise wall and suggested a taller noise wall would be welcomed. They also queried if the length of the proposed noise walls would be adequate to block the operational noise. They asked if ongoing noise monitoring would be undertaken during operations.	The Social Impact Assessment addresses the key themes raised and proposes relevant mitigation strategies. ACEnergy will continue to reach out to affected landowners surrounding the development throughout the planning process.
		Phone calls to six receivers regarding construction noise exceedance took place between 11 and 18 March 2025.	One landowner wanted to know the decibel range the development had to comply with. One survey response was very concerned about operational impacts, including noise.	
		A community newsletter was distributed to 20 properties on the week of 14 October 2024. The community newsletter outlined updates to the project and invited feedback via a mobile number, project email address and a survey. Another community newsletter is scheduled to be distributed in March 2025. It is designed to provide an update on project refinements, updates to technical studies and to notify local residents about the drop-in session scheduled for 2 April 2025.	Two landowners queried what kind of noise the BESS emitted during operations, the frequency of the noise	

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		Print and digital advertisements ran in <i>The Armidale Express</i> between 13-27 September 2024. It provided information on the online and in-person community information sessions, as well as contact details of the project team. An online community information session was held on Tuesday 1 October 2024. It was attended by two landowners from the same property. An in-person community information session was held on 16 October 2024 at Kent House, 141 Faulkner Street, Armidale. It was attended by two landowners from the same property and one community member. A further community drop-in session is scheduled for 2 April at the same venue	and whether noise would be emitted at night. Construction Noise During phone calls with impacted receivers, they noted concerns about noise travelling due to the winds that move across their properties. One resident noted that there were less trees between them and the site due to a storm around three years ago. Three landowners queried the level of noise the BESS emitted during operations, the frequency of the noise and whether noise would be emitted at night. One receiver asked about screening trees and planting along their property boundary. The receiver was also concerned but understanding of construction noise – particularly the safety sounds (beeping) emitted by	

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		An online survey was developed to identify social and economic impacts associated with the Project. It was distributed in the newsletter, on the website, advertised during both community information sessions and emailed to close neighbours. The survey was open from 30 September 2024 until 20 October 2024. It received 1 response. The survey responder valued the lifestyle, natural environment and health and wellbeing of their area. Further concerns raised are included in the 'Issues raised' column.	machinery - and noted their concerns of the area becoming industrialised and impacting on their amenity. Another resident echoed the concerns of the area becoming industrialised and the impact on amenity. Another landowner was interested in the different levels of noise during the different phases of construction.	
			Visual impacts Three landowners noted visual impact concerns. Residents agreed with the boundary screening proposed and advised which local nurseries to utilise. Residents had questions relating to the positioning of the BESS and how tall the associated infrastructure would be. Two landowners agreed with the proposed noise wall colours. One survey response was very concerned about the visual impact of the BESS once operational.	This information was used to guide decision making about the location of proposed visual screening.
			Construction impacts One survey response noted they were very concerned about construction impacts, specifically noise, traffic, and	ACEnergy is conscious of the need to manage the construction of the project in a manner that minimises impacts

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
			effects on the environment. One survey response noted no concerns about workforce size or construction impacts on Aboriginal heritage.	to locality. Appropriate measures have been developed throughout Section 6 to address these matters and applicant is committed to implementing these measures.
			Access Two landowners had concerns about access to the property and whether Middle Farm Road would be used to access the project site.	Access arrangements have been carefully considered to minimise disruption to the community and the travelling public, and to ensure that all activities occur in a safe manner. A number of access treatment options were considered and the approach adopted is considered to represent a good outcome for the project and community.
			Biodiversity concerns One landowner had concerns relating to the construction footprint and its impact on native biodiversity of the area.	The site impacts have been minimised where possible through refined design whilst at the same time ensuring that assessments are conservative enough to ensure that any residual impacts are appropriately offset.
			Fire hazard concerns Two landowners and one community member had concerns regarding the	Site selection and BESS position within the site have been cognisant of bushfire risk and

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
			fire risk of the project. Residents had questions about the composition of the batteries and what preventative measures would be taken to reduce the risk of fire. One landowner had concerns regarding the risk of battery explosion. One survey response was very concerned about the safety hazard risk of the BESS once operational.	this has influenced project design. The measures outlined in the bushfire report are sufficient mitigate residual risks.
			Operating hours Two landowners had questions relating to the operating hours of the BESS and whether it would be manned at night.	The BESS is largely an un-manned facility so this has not impacted the project.
			Transmission One landowner wanted further clarification on who would be building the substation and whether it would be included in this development application. One landowner queried where the energy is coming from.	The substation forms part of the application. The BESS will charge from the electricity network in periods of low power demand and release back into the network in periods of high demand. This adds firming capacity to the network.
			Property prices Two directly adjoining landowners raised concerns regarding property devaluation of their properties due to the project.	Through the careful evaluation of impacts and the imposition of mitigation measures, offsite impacts that could result in

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
				property price impacts are considered to be low risk.
			Other One landowner wanted to know how the project had been received by other landowners. They commented on the transparency of the process. One landowner queried why ACenergy was using only a portion of the site. Two residents had questions if ACenergy were considering solar on the site. All landowners had several technical questions relating to the purpose of the batteries. One landowner wanted to know if the BESS would reduce electricity prices. One landowner was curious about Electromagnetic Fields (EMF). One survey response highlighted very significant concerns about project decommissioning. One survey response indicated that they did not find supporting investment in renewables or community benefit-sharing schemes to be "at all important."	The application relates to a BESS project only. Options for the use of the remainder of the site will be considered by ACenergy in the context of the approvals framework and permissible uses. No other developments are currently planned or proposed (beyond the possibility that some of the land may be gifted to the RFS for a new fire shed).

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		bd infrastructure, on behalf of Premise, also held informal discussions with neighbouring landowners near the project site for the Land Use Conflict Risk Assessment (LUCRA). Between 17 September 2024, and 18 October 2024, three rounds of emails, two rounds of phone calls and one in-person conversation were made to the adjacent landholders to gather information about their current and future land use plans.	To date, we have received five LUCRA responses. Most neighbours have used or plan to use the land for agricultural and grazing purposes. Most neighbours undertake this activity all year round and believe that was all the land was ever used for. Some hope to shift to tourism purposes. Key concerns raised included the risk of fire from the BESS spreading to adjacent properties, as well as potential changes to the landscape, noise, property devaluation and issues related to land use during decommissioning.	The information gained has been considered in finalising the LUCRA assessment.
	Community groups and peak bodies	Continued email correspondence has been maintained with community groups and peak bodies following the Scoping Phase. On 10 October, a project update, newsletter, and briefing offer were sent out via email to all identified community groups and peak bodies (refer Table 5).	No responses have been received by community groups and peak bodies.	ACEnergy will continue to reach out to the broader Armidale community throughout the planning process.
	Registered Aboriginal Parties (RAPs) and Armidale LALC.	Project newsletter and an offer of a briefing was emailed on 10	ACEnergy were made aware that Armidale ALC had a new CEO	ACEnergy will continue to reach out to Armidale LALC

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		October 2024 to the Armidale Local Aboriginal Land Council. ACEnergy sent project information and a request for feedback to the CEO of Armidale LALC on 24th January 2025 via email.	appointed in November 2024, and will continue to engage with the LALC. ACEnergy is awaiting a response from Armidale LALC after the introduction and enquiry made in January 2025.	throughout the planning process.
Elected representatives	Member for New England, Hon Barnaby Joyce Minister for Climate Change, Minister for Energy, Minister for the Environment, and Minister for Heritage, Hon Penny Gail Sharpe Member for Northern Tablelands, Mr Brendan Moylan MP	The newsletter and an offer of a briefing was emailed to identified MPs on 10 October 2024.	A briefing with the Member for Northern Tablelands, Mr. Brendan Moylan MP, was held on 15 November 2024 at NSW Parliament House. During the briefing, Mr. Moylan raised several queries regarding the engagement efforts undertaken to date, community sentiment, and the impacts on directly affected neighbours. He also had technical questions about the details of the BESS and associated infrastructure. Mr. Moylan emphasised the importance of maintaining ongoing engagement and ensuring that all impacted stakeholders were reached. He commended ACE for its approach to stakeholder engagement thus far, acknowledging the thoroughness and responsiveness of the efforts.	ACEnergy will continue to reach out to affected landowners and members of the community throughout the planning process.
Government authorities	Armidale Council Regional	On 17 October 2024, a briefing with the council, ACenergy, and bd infrastructure provided a project	Council had no comments regarding the engagement undertaken to date.	None

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		update, discussed engagement efforts, and sought guidance on the Voluntary Planning Agreement (VPA), proposed access upgrade design and TIA. A detailed response to matters raised by Council during the scoping stage was provided via the Major Projects portal on the 6 November 2024. ACEnergy held further discussions regarding the VPA offer with Council. On 26 February 2025, Council accepted the latest VPA offer by ACEnergy.	Council wanted more clarification on the noise walls for the project and what level of noise necessitated them. Council outlined its VPA requirements, and emphasized the need for intergenerational benefits. Council provided feedback on ACEnergy's questions regarding the proposed access upgrade and TIA. No response to the portal consultation has been received to date. ACEnergy's VPA offer is accepted by Council, and is awaiting formalisation from Council.	
	DPHI	Ongoing engagement throughout the EIS preparation period.	None to note	None
Relevant regulators, agencies, and service providers	Crown Lands	Ongoing engagement throughout the EIS preparation period, including via the Major Projects portal on 29 October 2024.	Crown Lands initially advised of two approval pathways including: Authorisation through section 75 (of the <i>Local Land Services Act 2013</i> by the Northern Tablelands Local Land Services Certain Occupiers of Land to Have a Right of Access Over Travelling Stock Reserves); or	ACEnergy will continue to work with relevant regulators, agencies and service providers throughout the planning process.

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
			Crown Lands can authorise as a licence under the <i>Crown Lands Management Act 2016</i>. It was also noted that the proposed transmission line will cross Crown road. Crown lands advised that authorisation could be issued as a section 138 authorisation notice under the Roads Act 1993. Subsequent advice was received confirming that Crown Lands consent as a landowner is no longer required pursuant to Section 69A of the Crown Lands Management Regulation.	
	Heritage NSW (ACH)	Engagement was undertaken via the Major Projects Portal on 29 October 2024 to discuss potential impacts and seek guidance.	Heritage NSW responded on 12 November 2024 to confirm that they have no comments at this time and will respond during the EIS exhibition phase	
	Fire and Rescue NSW	Engagement was undertaken via the Major Projects Portal on 29 October 2024 to discuss potential impacts and seek guidance.	F&RNSW responded on 15 November 2024 to confirm that they have no comments at this time and will respond during the EIS exhibition phase	
	Rural Fire Service (RFS)	Engagement was undertaken via the Major Projects Portal on 29	The investigations are ongoing. The local district manager has expressed	

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		October 2024 to discuss potential impacts and seek guidance. ACEnergy is in discussions with the Armidale Regional RFS about how ACEnergy could assist the local chapter through the donation of land for a local Metz fire shed.	his support to the idea, with a site visit planned for Q1 2025.	
	Biodiversity Conservation Science and	Engagement was undertaken via the Major Projects Portal on 22 November 2024 to discuss potential impacts and seek guidance.	No response has been received at the time of writing.	ACEnergy will continue to engage with BCS.
	Transgrid	ACEnergy has been in continuous discussion with Transgrid regarding grid connection feasibility, connection infrastructure scope and design.	None to note.	ACEnergy will continue to work with Transgrid throughout the planning process.
	NSW DCCEEW Water	Engagement was undertaken via the Major Projects Portal on 29 October 2024 to discuss potential impacts and seek guidance.	DPE Water responded on 8 November 2024 to confirm that they have no comments at this time and will respond during the EIS exhibition phase	
	Regional NSW – Mining, Exploration & Geoscience	Engagement was undertaken via the Major Projects Portal on 29 October 2024 to discuss potential impacts and seek guidance,	MEG responded on 20 November 2024 to confirm they will engage outside of the portal. Information has been supplied with respect to the application for an exploration licence	

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
		particularly in relation to the recently granted ELA6821.	affecting the land. ACenergy continue to pursue engagement with the licence applicant.	
	Transport for NSW	Engagement was undertaken via the Major Projects Portal on 29 October 2024 to discuss potential impacts and seek guidance.	TfNSW responded via the Major Projects portal to confirm that no detailed response could be provided without all information requested during the SEARs stage. The strategic intersection design is required to address all the requirements within the TfNSW – Strategic Design Requirements for DAs Factsheet – August 2024. A route assessment is required for OSOM vehicles transporting to site. The EIS is to be referred to TfNSW via the Major Projects Portal when submitted.	
	Telstra	Email communications were sent on 8th of October 2024 to discuss potential impacts on their asset/s and seek guidance on requirements for the detailed design stage. Correspondence was received on 18 October 2024.	Email responses have been received in regard to construction requirements and processes involved for asset relocation in relation to works on or around Telstra assets for the proposed access upgrade and works on or around Grafton Road/ Waterfall Way. Responses received during the EIS Phase.	

Stakeholder category	Individual stakeholder subcategory	Consultation summary	Issues raised	Project response
Applicant of Mining Exploration License	Obscure Minerals Pty Ltd, Aurora Tenements	ACEnergy first made contact with Aurora Tenements on the 18th November 2024 to inform them of the potential overlap of interests on 86 Woodlands Road, Armidale, NSW and get information on Exploration Licence Application 6821 (Act 1992) (ELA 6821) held by Obscure Minerals . ACEnergy was advised by Aurora Tenements to contact Trigg Minerals Limited (Trigg) directly. ACellergy sent emails to Trigg seeking details of proposed mining exploration activities via email on 6th February 2025.	A director at Aurora Tenements passed on ACE's request for information to their client, Obscure Minerals Pty Ltd, stating that Obscure Minerals would get in touch. Aurora Tenement were unable to supply contact details for direct contact. On the 2nd December, after no response from Obscure Minerals, a follow up call was made to Aurora Tenements to discuss the status of the RFI. Aurora Tenements were able to confirm that the application was in early stage, and no investigation or contact had been made with the landowner of 86 Woodlands Road, NSW. ACEnergy is awaiting a response from Trigg after sending enquiry to Trigg in February 2025.	ACEnergy will continue to engage with Obscure Minerals, Trigg and/or Aurora Tenements

5.5 Future community engagement

ACEnergy is committed to building ongoing relationships with the local community and impacted neighbours. This commitment to appropriate and responsive engagement will continue through all stages of the project.

The next stage of planning is the public display of this EIS. To engage with the community during this phase, ACEnergy, in collaboration with bd infrastructure, will:

- > distribute a newsletter addressing key community insights;
- > host in-person information sessions for community members, organisations, and representatives, local residents, advertised in local media outlets;
- > conduct ongoing consultation with regulatory agencies to address issues raised during the EIS exhibition phase and in preparation for the Response to Submissions (RTS);
- > monitor a dedicated community phone line and email for complaints and feedback;
- > maintain the project website and social media channels; and
- > proactively engage with the media to raise awareness about the project within the community.

bd infrastructure will ensure that the community is informed about the outcomes of the EIS exhibition, responses to submissions, and the next steps for the project.

By maintaining open lines of communication with stakeholders, we aim to address and mitigate any identified impacts from the project planning stage and maximise the benefits of the project for all involved.

6. ASSESSMENT OF IMPACTS

This section provides a detailed summary of the findings of the assessment of the potential impacts of the project. The scale and nature of the impacts of the project on each matter has informed the following table which ranks the matters based on the potential impacts generated by the project; from significant impacts ('high impact matters') through to those with minimal impacts ('low impact matters').

Table 7 – Impact assessment level

High Impact Matters	Medium Impact Matters	Low Impact Matters
Noise	Biodiversity	Historic heritage
Transport, traffic and access	Aboriginal heritage	Water
Bushfire	Land	Contamination
Visual	Hazards	Waste
	Social	Economic
	Cumulative	

6.1 Biodiversity

6.1.1 INTRODUCTION

A Biodiversity Development Assessment Report (BDAR; Habitat Environmental Services, 2024) has been provided in **Appendix J**. The assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method (BAM) (DPIE 2020a) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Regulation). The BDAR has been prepared to quantify the impacts of the proposed development upon biodiversity values based upon the methods of the BAM.

Additionally, the Gara BESS was referred to the DCCEEW Cth due to its potential for impacts on MNES. On 1 April 2025, DCCEEW Cth determined that the Gara BESS is a controlled action (EPBC 2025/10102). On this basis, the BDAR has also been prepared in accordance with the requirements of the EPBC Act, Schedule 4 of the *Environment Protection and Biodiversity Conservation Regulations 2000*, and the supplementary SEARs issued on 29 April 2025. Gara BESS will be assessed in accordance with the bilateral agreement between the Commonwealth and New South Wales.

The BDAR includes the following:

- > Stage 1 – A biodiversity assessment, including mapping plant community types (PCTs), including Endangered Ecological Communities (EECs), and an assessment of the potential occurrence of threatened species, and assessment of potential candidate threatened species returned by the BAM Calculator (BAM-C).
- > Stage 2 – An impact assessment, including identification of potential impacts of the proposed development, avoidance and mitigation measures, and biodiversity offset requirements.

A summary of the BDAR is provided in the following sections and includes a summary of the recommended mitigation measures.

6.1.1 EXISTING ENVIRONMENT

The site is located within the New England Tableland Interim Biogeographical Regionalisation of Australia (IBRA) bioregion, and within the Armidale Plateau Sub Region. The site and surrounding lands have been subject to clearing activities for agricultural land use. There are no areas of outstanding biodiversity value mapped within the Gara BESS study area.

The study area occurs within the Great Eastern Tablelands Corridor for northeast NSW, situated in an area fragmented by agricultural clearing, with only small areas of remnant vegetation where minimal habitat connectivity is likely to occur.

The Mitchell Landscape data maps the site as Dingo Spur Meta-sediments, which comprises quaternary steep ranges and hills, intersected by dendritic drainage patterns, leading into gorges with high waterfalls on the Great Escarpment. Geological formations in this location are characterised by mudstone, lithic sandstone, slate, tuff, hornfels and some schist, which produce a complex vegetation environment encompassing coasted closed forests, dry hardwood forests as well as cold high plateau components. There are no areas of geological significance or acid sulphate soils.

The site falls predominately within the Middle Earth soil landscape which is characterised by extensively cleared to partially cleared open woodlands with deep yellow podzolic soils transitioning to yellow chromosols and mottled-mesonatric in drainage depressions and poorly drained areas. However the northern part of the proposed connection route is located within the Argyle soil landscape which is characterised by rolling low hills with minor rock outcrops and partially cleared open woodlands with shallow well drained lithosols subject to high erosion risks.

The site and surrounding lands contain several unnamed waterways, two of which are first order streams which traverse the northern portion of the site, running in an east to west direction, under the proposed overhead connection route. However, these waterways are most likely historical overland flows, lacking key habitat features for native aquatic species. There are no local wetlands located within the site.

Habitat notes that the percentage of native vegetation cover constitutes 33% (500 ha) of the 1,500 landscape buffer (1,496 ha). Native Vegetation Cover is classed as >30-70%.

6.1.1.1 Native vegetation assessment

Habitat ecologists completed several detailed vegetation surveys across the study area in April, August and September of 2024. The vegetation mapping was completed through rapid data points, walking transects and aerial photo interpretation. These survey identified three (3) plant community types (PCT) which occur across the study area:

- > PCT 3352 Armidale Quartz Hills Stringybark Forest in the southern portion of the site along Waterfall Way
- > PCT 3359 New England Hills Stringybark-Box Woodland in patches throughout the central north of the site
- > PCT 3344 New England Ribbon Gum Grassy Forest in patches in the north and western portion of the site.

The remainder of the site is mapped as unclassified vegetation.

Based on these PCTs, vegetation zones (VZ) were delineated into the zones described below:

- > VZ 01 PCT3359 Good Condition Woodland – VZ01
- > VZ 02 PCT 3359 Moderate Condition Woodland – VZ02
- > VZ 03 PCT 3359 Moderate Condition Grasslands – VZ03
- > VZ 04 PCT 3359 Low Condition Woodland – VZ04
- > VZ 05 PCT 3359 Planted Vegetation – VZ05
- > Non-native Vegetation

Figure 7 below shows the areas of the PCTs and non-native vegetation identified via the detailed vegetation surveys completed by Habitat.

A moderate to high density of plant species were recorded during the assessment, a summary of which is provided below:

- > A total of 154 plant species were recorded during field surveys, comprised of 101 native species and 53 exotic species.
- > The majority of native plant species recorded were in areas containing woodland vegetation or in areas with native grassland. Most native species were comprised of groundcover species such as grasses, sedges and forbs.
- > The majority of the 53 exotic plant species identified were groundcover species (most introduced perennial grasses and forbs).
- > Nine (9) of the weed species identified were high threat weeds, four (4) were priority weeds and three (3) are listed as Weed of National Significance.
- > One (1) Commonwealth EPBC Act listed species, the *Callistemon pungens*, was identified within the road reserve adjacent to Waterfall Way (Grafton Road) study area. The proposed development has been positioned to avoid identified areas containing the species.
- > No NSW BC Act listed species were identified.

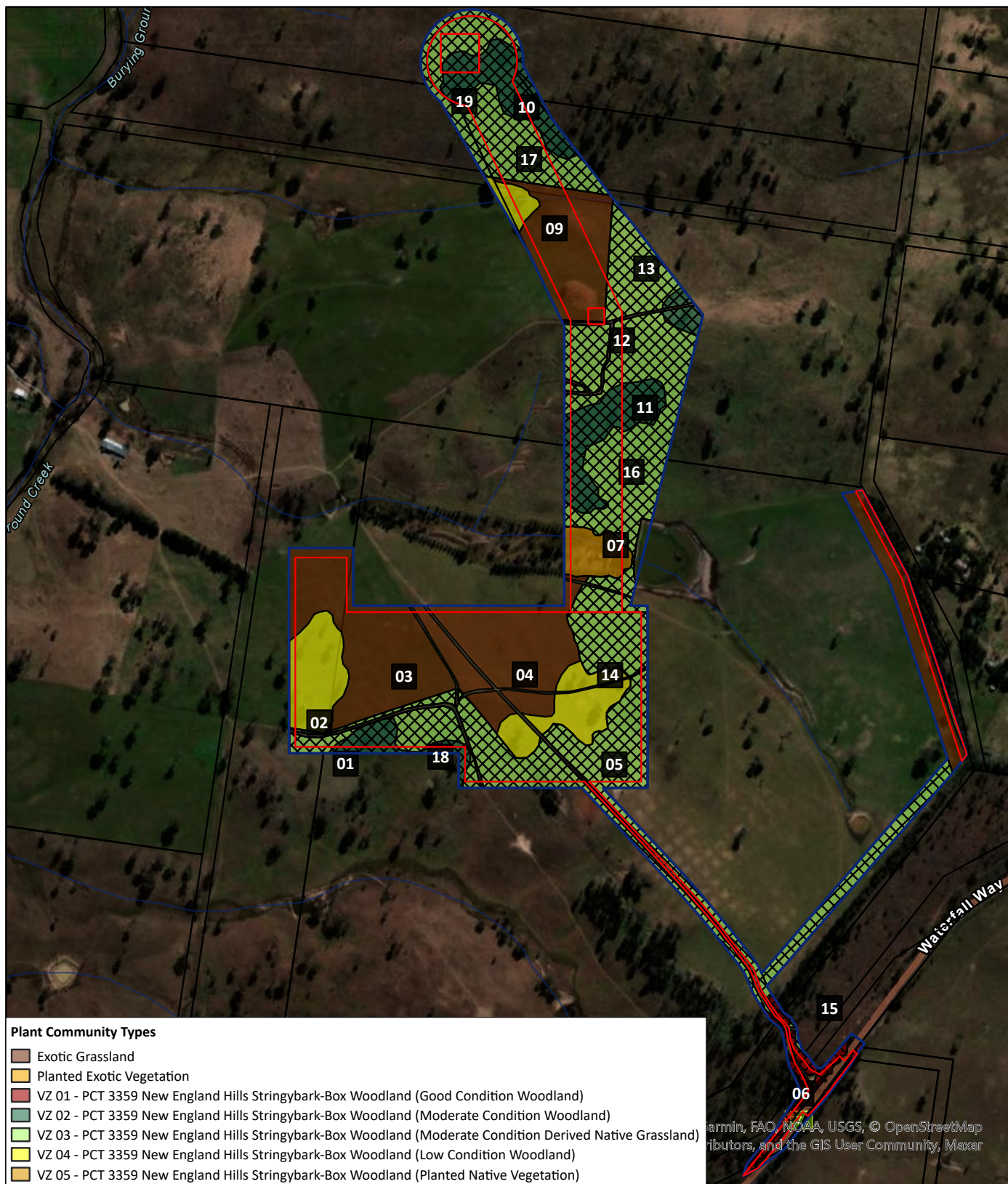
One (1) threatened ecological community (TEC) listed as critically endangered, listed under the NSW BC Act was identified:

- > White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions.

This TEC occurs in all identified vegetation zones however VZ01, VZ02, and VZ03 are somewhat degraded due to long term agricultural uses, whereas VZ04 and VZ05 are considered low condition and comprise predominantly exotic groundcover, likely a result of intensive agriculture. Despite the degradation of the vegetation zones VZ01, VZ02, and VZ03, the BDAR notes that cessation of agricultural land management on the site will likely allow for the natural regeneration of existing native plant species. Vegetation zones VZ01, VZ02, and VZ03 are considered to meet the listing criteria for the TEC.

One Critically Endangered Ecological Community (CEEC) under the EPBC Act was also identified as White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Vegetation zones VZ01, VZ02, and VZ03 were identified to contain key diagnostic canopy species, as well as woodlands and native grasslands, typical of the CEEC. A review of the condition criteria concluded vegetation zones to meet the criteria of the CEEC.

As the criteria for CEEC was met, the Gara BESS was referred to DCCEEW Cth. On 1 April 2025, DCCEEW Cth determined that the Gara BESS is a controlled action (EPBC 2025/10102). Gara BESS will be assessed in accordance with the bilateral agreement between the Commonwealth and New South Wales.



6.1.1.2 Threatened species assessment

To determine the presence of threatened species a search of BioNet Atlas was undertaken, as well as on site habitat assessments. Habitat ecologists completed several habitat assessments during April and July of 2024.

A total of 11 hollow-bearing trees and two stags were recorded within the study area. Although the hollows are low in abundance and limited in the diversity of hollow size, they may provide habitat for small to medium sized hollow-dependent fauna species including microbats, gliders and possums. The large hollow associated with the dead stag represents suitable breeding habitat for various species of large forest owls.

The BDAR identifies that the poor condition of the study area as a result of historical grazing, sparse shrub layers, scattered mature trees and the introduction of exotic grasslands has resulted in a low habitat suitability for all threatened flora species known to occur locally. It is noted that derived native grassland and scattered woodland areas within VZ01, VZ02, VZ03, VZ04 are subject to grazing, however, are in better condition than the exotic grasslands.

The BDAR identifies candidate threatened flora species considered to have a moderate likelihood of occurring within the vegetation zones VZ01, VZ02, VZ03, VZ04 include:

- > *Dichanthium setosum* (Bluegrass) - listed as a vulnerable species (BC Act and EPBC Act)
- > *Thesium australe* (Austrole Toadflax) - listed as a vulnerable species (BC Act and EPBC Act)
- > *Callistemon pungens* - listed as a vulnerable species (EPBC Act).

One candidate threatened flora species was identified during targeted surveys:

- > *Callistemon pungens* (EPBC Act listed species) - Four individuals were identified within the study area and would not be directly impacted by the project.
 - Three individuals were recorded within the road reserve adjacent to Waterfall Way (VZ 01), and one individual was identified within a row of non-native plantings near the eastern boundary of the study area.

Given that the associated habitat of all individuals will be retained following completion of the project, direct impacts to the species via habitat removal is not proposed. Potential indirect impacts such as the adverse effects of habitat degradation via the spread of weeds and other potential edge effects will be mitigated during the construction and operation of the project.

Limited biodiversity values are associated with the exotic grassland areas across the study area, due to the lack of key habitat features such as a complex vegetation structure, limited hollow-bearing trees, aquatic habitat, fallen logs and other forms of shelter or protection.

Higher biodiversity values exist in areas containing derived native grassland and scattered woodland vegetation (VZ01, VZ02, VZ03, VZ04) as they may provide foraging habitat for mobile threatened fauna, including arboreal mammals and woodland birds.

The large, constructed dam (likely to hold water on a semi-to permanent basis) may present a foraging habitat for waterbirds and for amphibians, however breeding habitat is unlikely for any locally occurring threatened amphibian species.

It is likely that mobile threatened fauna species may use the study area as part of a broader network of habitats within the locality.

Threatened fauna species that are considered to have a moderate likelihood of utilising the habitats present within the study area are identified in Appendix C of the BDAR (**Appendix J**) and listed below:

- > Brown Treecreeper (*Climacteris picumnus victoriae*) potential foraging habitat present - listed vulnerable under the BC Act and EPBC Act
- > Koala (*Phascolarctos cinereus*) potential foraging habitat present - listed endangered under the BC Act and the EPBC Act.
- > Grey-headed Flying-fox (*Pteropus poliocephalus*) potential foraging habitat present - listed vulnerable under the BC Act and the EPBC Act
- > Diamond Firetail (*Stagonopleura guttata*) potential foraging habitat present - listed vulnerable under the BC Act and the EPBC Act
- > Painted Honeyeater (*Grantiella picta*) potential foraging habitat present - listed vulnerable under the BC Act and the EPBC Act
- > South-eastern Hooded Robin (*Melanodryas cucullata cucullata*) potential foraging habitat present - migratory listed endangered under the BC Act and the EPBC Act
- > Southern Whiteface (*Aphelocephala leucopsis*) potential foraging habitat present - listed vulnerable under the BC Act and the EPBC Act
- > White-throated Needletail (*Hirundapus caudacutus*) potential foraging habitat present - migratory listed vulnerable under the BC Act and the EPBC Act

No threatened fauna species were identified within the study area during targeted surveys. Field surveys confirmed the presence of 33 common fauna species including 26 birds, three mammals, three amphibians and one reptile.

6.1.2 KOALA HABITAT

The study area is mapped as core koala habitat (as defined by the Armidale Strategy), however is not mapped as a koala corridor and does not contain core koala habitat as defined by the *State Environmental Planning Policy (Biodiversity and Conservation) 2021* – Chapter 3 Koala Habitat Protection 2020 (Koala SEPP 2020).

No koala use tree species, were recorded in the study area and native vegetation does not meet the definition of potential koala habitat under the Koala SEPP 2020. No koalas or resident population of is evident or identified through this assessment.

No koala habitat is proposed to be impacted as part of the proposed works and the development has been designed to mostly avoid the area of vegetation along the roadside. Limited impacts to the roadside vegetation will not further fragment or disconnect patches of vegetation and no impacts to important linkage corridors is proposed.

The implementation of koala exclusion fencing and escape mechanisms are proposed to limit the potential of koalas access the BESS infrastructure once active. Reducing speed limits will reduce the risk of impact strike along the access.

The development is unlikely to facilitate any other indirect impacts such as disease, bushfire risk, human induced climate change, dog attack, drownings in swimming pools or injuries from livestock.

6.1.3 ASSESSMENT IMPACTS

The BAM considers a project could result in either or both direct or indirect impacts. Impacts can also be either prescribed or uncertain, or serious and irreversible impacts. Each of these impacts is discussed in the following sections.

Overall, the BDAR states that the current project design for the Gara BESS has limited the potential for impact to native vegetation and threatened species habitat. The Gara BESS has been designed with consideration of biodiversity impacts, with the intention to avoid impacts to biodiversity values where possible. This was achieved through several meetings throughout the project development between the applicant and Habitat ecologists. Mitigation measures as detailed in **Section 6.1.4** would further minimise direct and indirect impacts to retained native vegetation and threatened species habitat within the site and the surrounding environment, including impacts to MNES.

6.1.3.1 Direct impacts

The proposed development will result in direct impacts to native vegetation with the clearing (or partial clearing) of 13.71 ha, commensurate with PCT3359 across five vegetation zones (VZ 1- VZ 5). Approximately 8 ha of native vegetation will be retained mostly in VZ 3 representing 5.78 ha (Moderate Condition Grassland) with negligible impacts for VZ 4 and VZ 5 (2.68 ha and 0.56 ha). Future vegetation integrity scores of vegetation zones VZ01, VZ04, and VZ05 will be zero, while VZ02 will have a score of zero for the BESS area and 14.3 for the powerline area, and VZ03 will have a score of zero for the BESS area and 13.2 for the powerline area.

Approximately 10.47 ha of native vegetation (VZ01, VZ02, and VZ03) that is commensurate with the NSW BC Act and Commonwealth EPBC Act listed critically endangered White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC would be cleared or partially cleared.

Direct impacts will also involve removal of three stick nests and four habitat trees containing three small hollows (< 5 cm in diameter) and one medium hollow (> 15 cm in diameter). Compensatory habitat in the form of nestboxes will be implemented at a ratio of 2:1 within the retained land.

6.1.3.2 Biodiversity offsets

Direct impacts on native vegetation will require biodiversity offsets totalling 223 credits for TEC (PCT 3359) as follows, 13 credits (VZ01), 55 credits (VZ02), 155 credits (VZ03). Direct impacts on native vegetation will require biodiversity offsets totalling 13 credits for non-TEC (PCT 3359) for VZ05.

The BDAR concludes that no direct impacts will occur to species credit species or associated habitats, therefore no species credit offsets are required.

The project would impact 13.71 ha of native vegetation and 8.09 ha of exotic grassland/planted exotic planted vegetation. Impacts to non-native vegetation and low condition vegetation (VZ 04) do not require biodiversity offsets under the BAM.

6.1.3.3 Indirect impacts

There is potential for indirect impacts to occur as a result of the proposed development. Indirect impacts that may occur during the construction or operational phase include:

- > Increased edge effects;
- > Introduction of rubbish and debris to adjoining native vegetation;
- > Increased weed invasion and potential spread or introduction of pathogens from the site to adjacent vegetation.
- > Accidental incursions during clearing or earthworks.
- > There is potential for mobilised sediments and contaminants to enter the waterways or downstream aquatic environments, particularly in the event of heavy rainfall during construction.
- > Increase in rubbish dumping and the potential for to flow into downstream aquatic environments.
- > Increased noise, vibration, light spill, and dust during construction activities which can cause negative changes to the structure and function of adjoining vegetation.
- > Changes to hydrological processes during and post earthworks and associated works to improve stormwater drainage along the boundaries of the site.

6.1.3.4 Prescribed impacts

The prescribed impacts to be considered under the BAM have been addressed in **Section 7.5** of **Appendix J**. The key considerations and conclusions have been listed below:

- > The construction and operation of the Gara BESS would not result in impacts to significant geological features, human-made structures and non-native vegetation that constitute threatened species habitat.
- > Due to the fragmented landscape which has predominantly been cleared for grazing activities, native vegetation occurs in a modified state, which indicates that habitat linkage is unlikely to be used to facilitate fauna movement. Minimal impacts will occur to the remnant woodland vegetation located along Waterfall Way within the road reserve which retains connectivity east and west.
- > Limited impact on the movement of threatened species in the local area will occur. While areas of native vegetation would be removed, important movement corridors and higher quality vegetation in the nearby National Parks would be retained.
- > The project has been designed to directly avoid the mapped waterways and the constructed dam. Mitigation measure have been implemented to ensure indirect impacts to water quality and surrounding aquatic/riparian habitats are avoided.
- > The development will result in an increase in vehicle movements to and from the site. However, separation of the project to areas of retained native vegetation would be retained. Mitigation measures will be implemented, to reduce potential for fauna vehicle strikes.

Overall, mitigation measures have been included to further mitigate indirect impacts.

6.1.3.5 Serious and Irreversible Impacts

The removal of 10.47 ha of various conditions (VZ01, VZ02, and VZ03) will impact on one entity at risk of serious and irreversible impacts (SAIIs) for CEEC:

- > White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

However, mitigation measures have been undertaken to minimise direct and indirect impact to the SAI. Approximately 9.14 ha of the CEEC would be retained. The design of the project was guided by the avoidance of key biodiversity values so as to avoid or minimise impacts on significant biodiversity conservation areas where indirect impacts to the species potential habitat do not occur.

6.1.4 MITIGATION MEASURES

The following measures are proposed in the BDAR to minimise and avoid potential impacts associated with the proposed development:

- > Avoid and minimise clearing impacts to native vegetation where possible.
- > Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent. This includes the installation of appropriate fencing along the eastern extent of the Subject Land. Fencing should prohibit entry into the retained vegetation area and minimise indirect impacts during construction such as the movement of dust and rubbish into the forest and wetland.
- > Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in proximity (5m) to, areas of native vegetation retained under the proposed development.
- > Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed surrounding the area of retained native vegetation and wetlands.
- > Clearly identify and communicate the location of any 'no go zones' in site inductions.
- > Tree protection measures will be implemented to protect retained trees surrounding the Subject Land. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009).
- > Limit removal of trees to that required within the Subject Land where possible.
- > Pre-clearance surveys will be undertaken to determine if any inhabiting fauna, or habitat features (i.e. nests or hollows) are present 24 hours prior to clearing.
- > A staged habitat removal process is required for removal of habitat (hollow-bearing trees and nests) to minimise direct impacts on fauna by providing them with an opportunity to vacate hollows and relocate naturally.
- > If possible, avoid clearing during breeding seasons for hollow-dependent fauna and nonhollow dependent fauna, specifically nesting birds.
- > Contact vets and wildlife carers before construction activities commence.
- > Ensure a licensed wildlife carer and/or ecologist is present during vegetation clearing/habitat removal.
- > Adopt a two staged habitat removal strategy, for example clearing non-habitat trees first (shrubs, regrowth, ground cover) followed by habitat trees. Allow at least 24 hours for fauna to vacate habitat before removing habitat trees.

- > Fell habitat trees carefully using equipment that allows habitat trees to be lowered to the ground with minimal impact (claw extension). Do not fell trees towards exclusion zones.
- > Ensure a wildlife carer and/or ecologist inspects trees before and after felling. Capture and relocate non-injured fauna that are found in any felled trees to pre-determined habitat identified for fauna release to be undertaken by a licensed ecologist or wildlife carer.
- > A Vegetation Management Plan (VMP) is to be prepared and implemented prior to construction of the project. The VMP is to specify:
 - Management of weeds
 - Monitoring of the retained and partially impacted CEEC Box Gum Grassy Woodland to ensure that the condition is not reduced
 - The maintenance regime for a period of five years
 - The process for certifying completion of works at critical stages of the process.
- > The implementation of compensatory measures prior to construction activities including:
 - Koala friendly fencing and signage around the BESS infrastructure
 - Replacement of hollows at a ratio of 2:1 in the retained land
- > Source controls such as sediment fences, mulching and jute matting will be utilized where appropriate, especially along the eastern boundary of the proposed development area that runs adjacent to a first-order stream.
- > Site-based vehicles will carry spill kits.
- > Erosion and sediment control will be required for the development in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction.
- > Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby watercourses/wetland areas.
- > Speed limits within the Subject Land should be limited to 40 km/hr.
- > This limit should be clearly signed at all entry points to site.
- > The Subject Land should be separated from vegetated areas throughout the construction and operational phases of the development. This separation should be achieved through physical barriers including fencing and appropriate signage.
- > The fungal pathogens *Phytophthora cinnamomi* and Myrtle Rust (*Puccinia psidii*) are known to occur along the entire east coast of NSW, however, it is unknown if they occur within the Subject Land. These pathogens can have devastating impacts on native plant communities and inhabiting fauna if not properly managed.
- > Appropriate washdown facilities will be available to clean vehicles and equipment prior to arrival on-site and prior to departure.
- > Ensure soil and seed material is not transferred
- > Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat.
- > Impacts from construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat.

- > Measures to mitigate impacts on flora and fauna from noise, vibration, waste, light and air pollution such as:
- > Enforce 'carry-out' policy regarding rubbish and waste materials generated onsite during construction to avoid waste materials entering adjacent vegetation.
- > Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction.
- > Fence sensitive areas to delineate 'no go' zones.
- > Levels of lighting associated with the proposed development (during construction and operation) will be reduced to a minimal level and directed away from retained vegetation areas to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. Lighting design and utilization during construction and operational phases of the development should be based on principles detailed in Appendix A of the National Light Pollution Guidelines for Wildlife (DEE 2020). This includes consideration of adaptive controls, and measures to reduce light intensity and inappropriate light spill into retained vegetation and fauna habitat.
- > Lighting should also comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.
- > Noise minimization practices in accordance with DPIE recommendations.
- > Dust control measures such as covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required, to control dust; rehabilitation through vegetation of surfaces to be left unsealed; and truck wheel washes or other dust removal measures.

Overall, the BDAR has concluded that the Gara BESS has limited the potential for impact to native vegetation and threatened species habitat.

6.2 Aboriginal heritage

6.2.1 INTRODUCTION

An Aboriginal Cultural Heritage Assessment Report (ACHAR) is provided in **Appendix N**. The objectives of the ACHAR were to:

- > Assess the Aboriginal cultural heritage values of the site, including archaeological and community cultural values, and the significance of identified values.
- > Identify Aboriginal cultural heritage values that may be impacted by the proposed work and implement measures to avoid significant impacts to these elements.
- > Ensure appropriate Aboriginal community consultation is undertaken through the assessment process.
- > Identify any recommended further investigations, mitigation and management measures required, should the proposed works proceed.

This assessment was undertaken in accordance with the following requirements and guidelines:

- > SEARs SSD-71680710;
- > *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010) (Consultation Requirements);
- > *Code of Practice for Archaeological Investigations of Aboriginal Objects in NSW* (Code of Practice; (Department of Environment, Climate Change & Water [DECCW] 2010);
- > *Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment & Heritage [OEH] 2011) (The ACHAR Guide); and
- > The Burra Charter (ICOMOS 2013).

6.2.2 EXISTING ENVIRONMENT

Aboriginal communities are based largely on varying language groups rather than the geographical boundaries of an area. It is likely that these boundaries in pre-European Aboriginal society were fluid and often intersected into different towns or regions. It is noted that the study area is historically associated with the 'Anaiwan/Nganyawana' Aboriginal people/s, however through the consultation process, other neighbouring groups such as Gumbaingarr have also expressed connections to Country in this area.

Previous archaeological assessments across Armidale has confirmed that a higher density of Aboriginal sites have been identified in woodland areas along the Gara River to the east of the study area. A second area of high density has been observed to the northwest of the study area in the Yina Nature Reserve, which is also characterised as a dense woodland area adjacent to Burying Ground Creek.

A review of the Aboriginal Heritage Information Management System (AHIMS) online database identified one (1) previously recorded Aboriginal site located south of the Gara BESS site at a distance of 145m and two other sites located along Grafton Road at a further distance. The AHIMS database results also identified an additional 38 Aboriginal sites in the broader locality. Aboriginal sites located in proximity to the Gara BESS site are identified in **Figure 8**.





Sources: © State of NSW, Department of Customer Service, Spatial Services 2024; ACENERGY 2025
ESRI 2024
File: P000374_01_MASTER.aprx Prepared By: zindiananar Date: 12/05/2025



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Figure 8
Previously Recorded Aboriginal Sites

6.2.3 ASSESSMENT IMPACTS

A pedestrian archaeological survey of the development footprint was undertaken to confirm the presence of the previously recorded Aboriginal heritage site and the presence of any additional, previously unrecorded Aboriginal heritage sites. This survey was undertaken by one (1) Archaeologist from Premise accompanied by a client and Registered Aboriginal Party (RAP) representative.

No archaeological sensitive areas were identified during the survey such as potential subsurface deposits and no new Aboriginal sites/objects were recorded. All mature trees and remnant woodland within the study area were checked for cultural modification. No specific cultural information was provided on the Gara BESS impact area during the site survey.

One previously recorded AHIMS site, is located immediately southwest of the study area on Lot 3 DP 786950. This site was inspected for context and is located outside of the study area at an approximate distance of 145 m off the proposed Waterfall Way access road upgrade. No impacts will occur to this site as part of the proposed BESS development.

Observation undertaken during the survey indicated that the development footprint consisted of undulating plains, currently used for stock grazing with moderate slopes in the northern extent of the site transitioning to lower slopes and flats on the eastern and western boundary. The surrounding landscape consists of low undulating hills, with remnant vegetation on surrounding hilltops and rural properties. A farm dam is located in the central portion of the site, with introduced plantings observed around drainage lines. It is noted that remnant woodland exists along Waterfall Way and on the slopes of Lots 144 and 153 DP 755826 and on the western boundary in Lot 1 DP573787.

The archaeological field survey indicates that the study area has been modified through historical agricultural use (grazing), with evidence of vegetation clearance and has been modified in the south through the construction of Waterfall Way, therefore indicating a low level of archaeological significance with some levels of disturbance of intact landforms.

Aboriginal people have however, occupied the landscape within the last 40,000 years indicative from recorded sites in the locality, background research, predictive modelling and consultation with the Aboriginal community. The immediate surrounds do show evidence that Aboriginal people utilised the landscape with evidence of culturally modified trees located south of the study area.

6.2.4 MITIGATION MEASURES

The following measures should be implemented to minimise impacts to Aboriginal heritage:

- > An unexpected finds/chance finds protocol should be developed as part of the Gara BESS CEMP.
- > If unanticipated Aboriginal objects are uncovered during works, all work in the vicinity should cease immediately. A qualified archaeologist should be contacted to assess the find and Heritage NSW and Armidale and District LALC and a RAP must be notified.
- > All impacts must remain within the assessed study area or further archaeological investigation may be required.

6.3 Historic heritage

6.3.1 INTRODUCTION

The project SEARs issued by DPHI on 28 February 2024 (refer to **Appendix A**) require an assessment of the impact on historic heritage with regard to the NSW Heritage Manual.

The below assessment has been undertaken in accordance with NSW Department of Planning and Environment (NSW DPE) *Assessing heritage significance 2023* guidelines for assessing places and objects against the Heritage Council of NSW criteria. Information from these guidelines has been drawn from documents written as part of the NSW Heritage Manual. These guidelines replace the previous documents within the NSW Heritage Manual.

6.3.2 EXISTING ENVIRONMENT

The broader area of Armidale has been utilised by European settlers from the 1830s for large pastoral properties. Stock grazing has been particularly prevalent across the region as well as cropping since European explorer, John Oxley's arrival to the region and his recommendation in 1818 that these lands were ideal for pastoral activities.

Historical aerial imagery available for the study area has identified that the land has been cleared of vegetation since at least 1991 (refer **Figure 10**). Historical imagery dating to 1956 (refer **Figure 9**) suggests that vegetation across the majority of the study area occurred between 1956 and 1991, with vegetation retained primarily along Waterfall Way. Vegetation also appears to have been planted on the northern boundary of Lot 1 DP 246878, which is associated with a farm dam and drainage lines between 1991 and present. Overall, the land appears to have been subject to grazing activities, however, does not show signs of cropping activities.

A review of the State Heritage Inventory (SHI), Schedule 5 of the LEP and of the NSW DCCEEW Australian Heritage Database has confirmed that the site is not a state or local heritage listed item.

The closest heritage site is the 'Garden, trees and hedge' (LEP #I120) located approximately 3 km west of the study area.¹

¹ SHI, 2014: <https://www.hms.heritage.nsw.gov.au/App/Item/ViewItem?itemId=1010257>

Figure 9 – Aerial Imagery 1956 (study area in red)

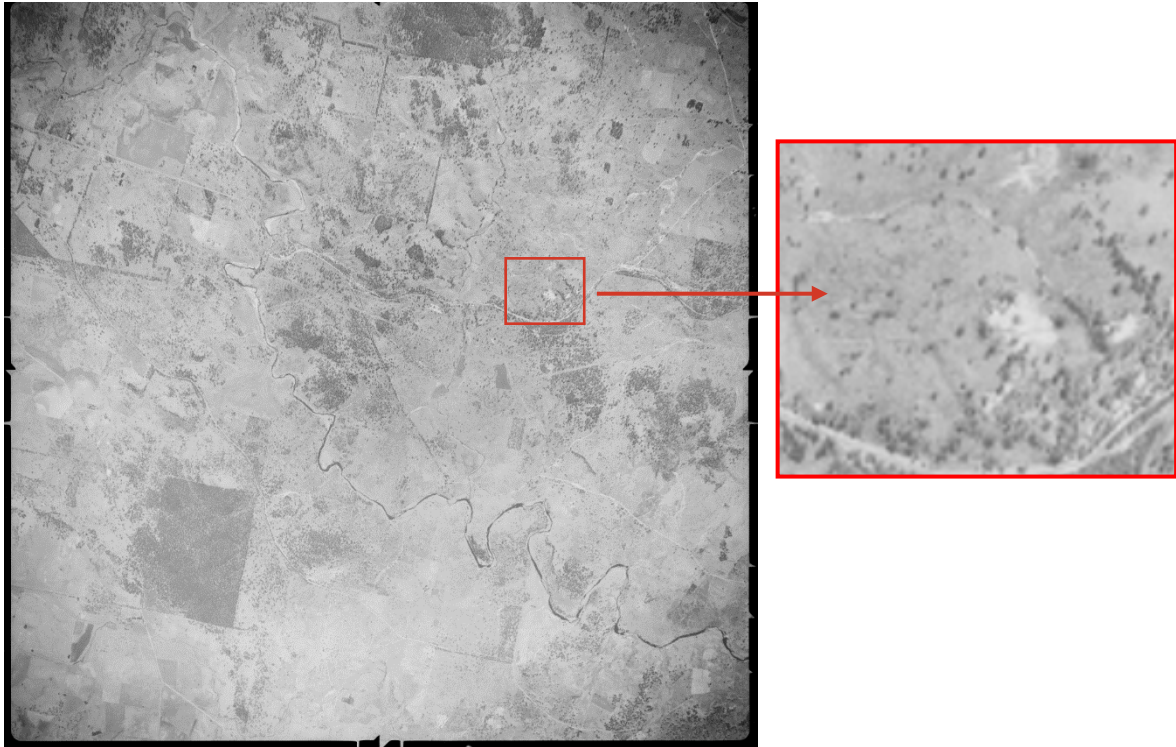
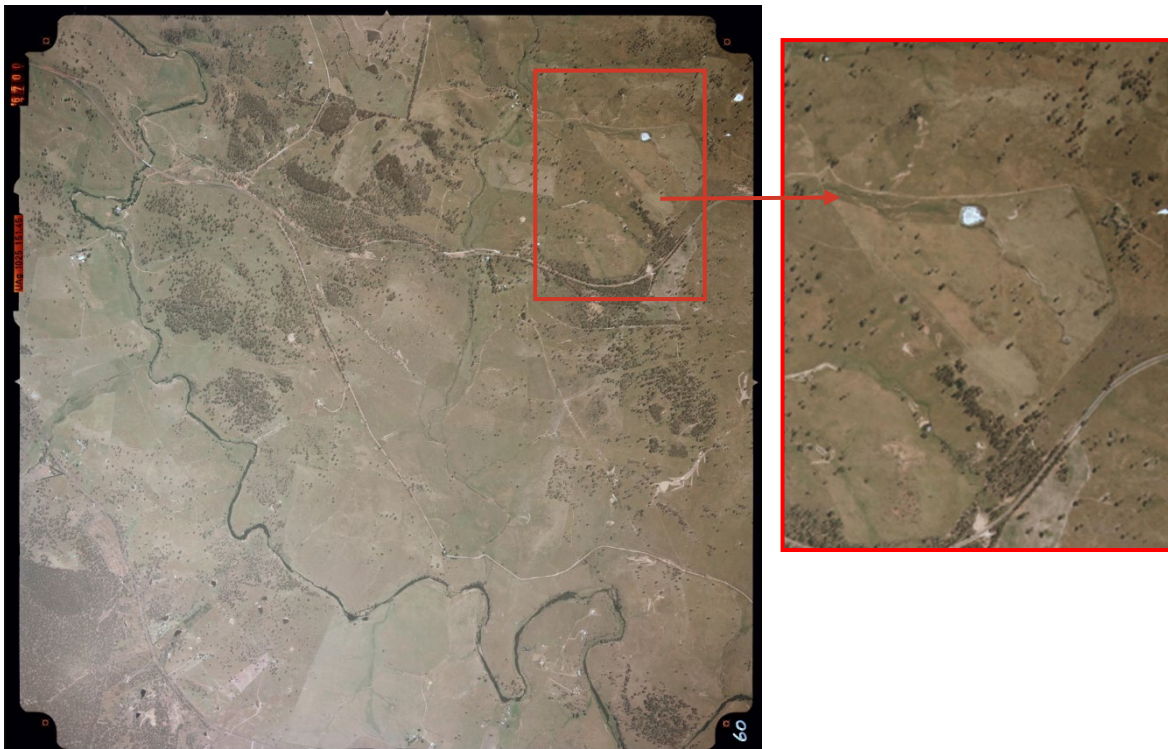
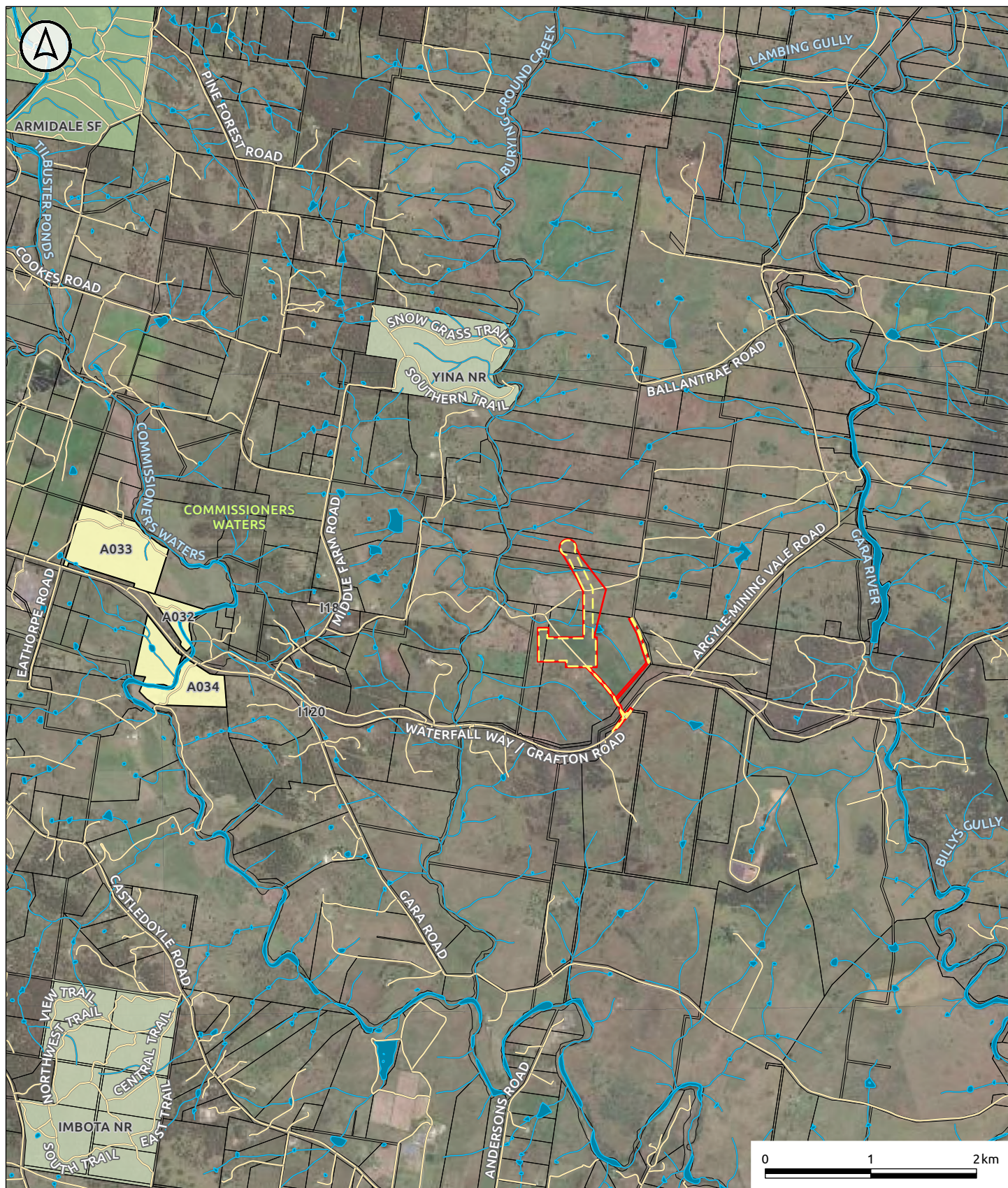


Figure 10 – Aerial Imagery 1991 (study area in red)





- Legend**
- Site
 - Development Footprint
 - Cadastre
 - Road
 - Water Body
 - Watercourse
 - State Forest
 - NPWS Reserve

- Local Heritage**
- Item - Archaeological
 - Item - General



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Figure 11
Historic Heritage

6.3.3 ASSESSMENT IMPACTS

Heritage significance is graded using the seven (7) criteria listed under the NSW DPE *Assessing heritage significance 2023* guidelines:

- > Historical significance;
- > Historical association;
- > Aesthetic/creative/technical achievement;
- > Social, cultural and spiritual;
- > Research potential;
- > Rare; and
- > Representative.

The site is not a heritage listed item nor does it fall within any of the above listed criterion. Overall, the proposed development will not result in adverse physical or visual impacts to a heritage item or conservation area. The addition of vegetative screening around the BESS will further mitigate potential impacts to the aesthetic and visual significance of the surrounding context.

6.3.4 MITIGATION MEASURES

Although no European heritage items have been identified in Gara BESS site through this assessment, there is potential for unknown archaeological remains to be discovered and encountered during the construction of the BESS. 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 in the form of an unexpected finds protocol.

6.4 Land

6.4.1 INTRODUCTION

A LUCRA has been prepared by Premise and is provided in **Appendix M**. Additionally, an ALUA has been prepared by Cadeema (2024) and is provided in **Appendix L**.

The LUCRA aims to identify and assess the potential for land conflicts between adjoining land uses, and has been prepared with reference to the relevant requirements of the SEARs.

The purpose of the ALUA is to determine farm, district and state impacts of the temporary reduction in useable arable agricultural land resulting from the BESS development. The ALUA also determines potential impacts to surrounding and district agricultural land use.

6.4.2 EXISTING ENVIRONMENT

The site is zoned as RU1 Primary Production Land and is predominantly mapped as the grazing native vegetation land use (refer **Figure 12**). The site comprises undulating land and consists of remnant native trees, a residential dwelling, agricultural shedding, farm fencing, farm dams and drainage lines.

The site adjoins land zoned as RU4 Primary Production Small Lots and RU1 Primary Production. The site predominantly consists of the grazing native vegetation land use. The managed resource protection land use is mapped within the transmission easement and the transport and communication land use

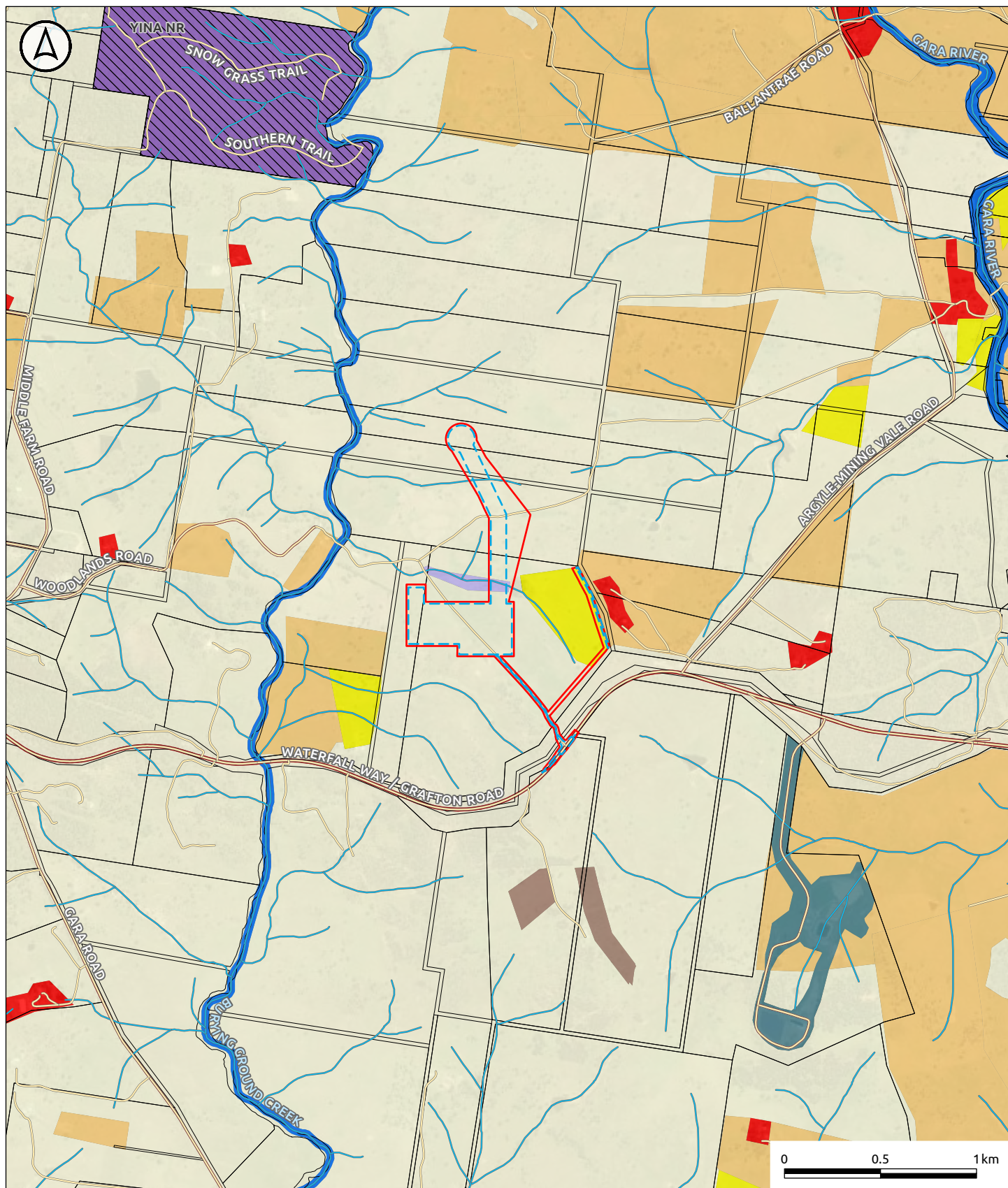
impacts the southern extent of the access arrangement. Other notable land uses in the locality include grazing of modified pastures, residential and farm infrastructure, cropping, perennial horticulture and river land uses.

Existing farming infrastructure within the site is limited to dams, fencing, access roads and landscaped areas. However, there are eight non-associated residential receivers located on adjoining properties.

The ALUA identifies a Land and Soil Capability of 5 (see which is described as having severe limitations capable of sustaining low impact land uses such as grazing, forestry and nature conservation requiring careful management to prevent land and environmental degradation. A detailed assessment of soil physical characteristics across the site was undertaken as part of the ALUA which confirmed that the soils across the site consist of Yellow Podzolic Soils (Great Soil Group) and are Kurosols (ASC). The soils across the site consist of approximately 10 -20 cm of a brown silty loam surface soil overlying dull to bright yellow-brown medium clay subsoils. In the elevated, rocky, skeletal areas across the site, rock fragments were found in the surface soil with shallower surface soil depths and lighter clay/rocky subsoil.

A soil chemistry analysis indicated that surface soils were acidic which can adversely impact agricultural production, whilst soil salinity levels were low which is advantageous in terms of agricultural production. Overall, these soil chemical characteristics indicate soils which are marginal for agricultural production and have low agricultural productivity potential.





Legend

- Site
- Development Footprint
- Cadastre
- Road
- Watercourse
- NPWS Reserve

NSW Landuse 2017 v1.5

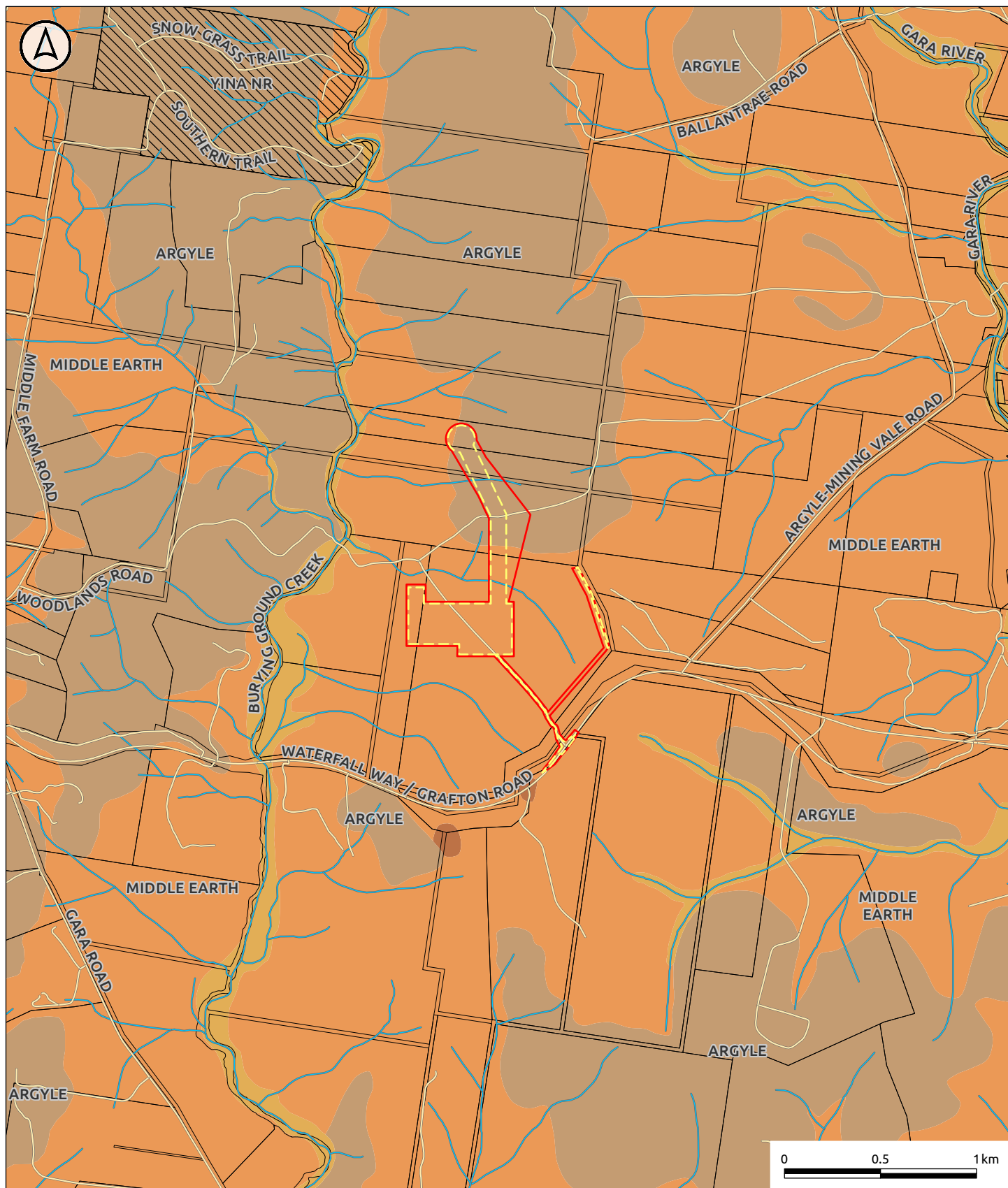
- 1.1.0 Nature conservation
- 1.2.0 Managed resource protection
- 2.1.0 Grazing native vegetation
- 3.2.0 Grazing modified pastures
- 3.3.0 Cropping
- 3.4.0 Perennial horticulture

- 5.4.0 Residential and farm infrastructure
- 5.7.0 Transport and communication
- 5.8.0 Mining
- 6.3.0 River



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Gara BESS

Figure 12
Surrounding Land Use



- Legend**
- Site
 - Development Footprint
 - Cadastre
 - Road
 - Watercourse
 - NPWS Reserve

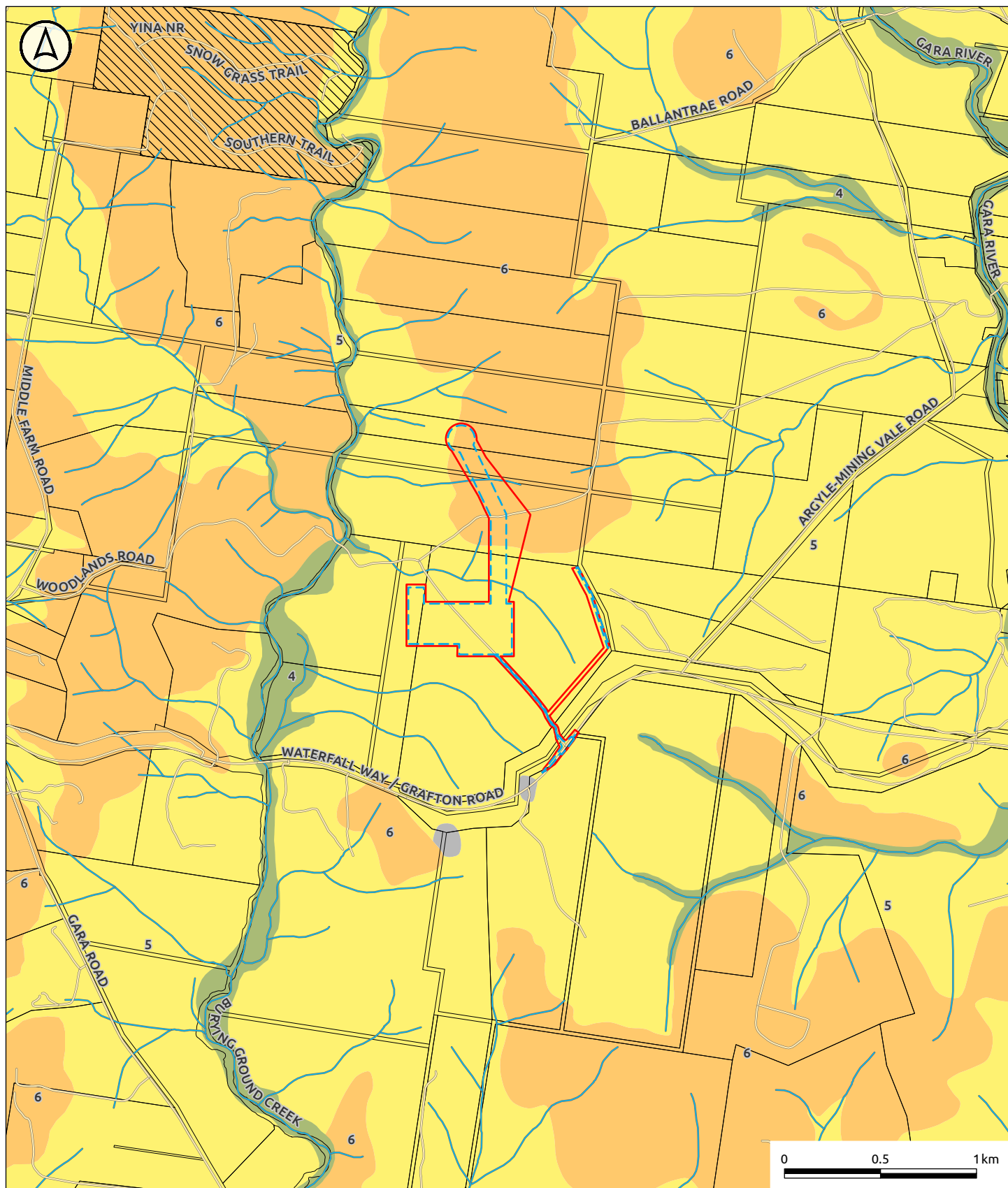
**Soil Landscapes of Central and Eastern NSW
v2.1**

- Argyle
- Commissioners Waters
- Disturbed Terrain
- Middle Earth



P000974
Gara BESS

Figure 13
Soil Landscapes



- Legend**
- Site
 - Development Footprint
 - Cadastre
 - Road
 - Watercourse
 - NPWS Reserve

- Land and Soil Capability (LSC)**
- 4 - Moderate to severe limitations
 - 5 - Severe limitations
 - 6 - Very severe limitations
 - Disturbed Terrain


Premise
ACENERGY PTY LTD
Gara BESS

Figure 14
Land and Soil Capability

6.4.3 ASSESSMENT IMPACTS

6.4.3.1 Agricultural land

The site is predominantly used for agricultural purposes, with the mapped land use as grazing native vegetation. The site and locality is not mapped as containing any land identified via Strategic Regional Land Use Policy including Strategic Agricultural Land - Biophysical (otherwise referred to as 'BSAL'). The site is partially mapped via the draft state significant agricultural land map, however this mapping has not been adopted at the time of writing and has been in draft status for some time.

The ALUA indicates that the removal of 22.43 ha of land from the property's agricultural production for the development will not adversely impact property production, income or viability. Additionally, the loss in agricultural production as a result of the development is not significant and is not likely to impact the economy of the district, or of the State. Further, the AULA considers that the change in land use from agricultural to BESS is not likely to have adverse impacts on adjoining lands.

6.4.3.2 Flood prone land

The site is not mapped as flood prone land however a surface water assessment has been undertaken (Refer to **Section 6.8.2.2** and **Appendix S**). The assessment concluded that the likelihood of impacts of the proposed development on the flood behaviour at the site is negligible to very low. The assessment also noted that the proposed development complies with all relevant flood planning controls outlined in the Armidale LEP and with the issues identified in the *Flood Risk Management Guideline LU01*.

6.4.3.3 Crown lands

The proposed development involves traversing the following Crown land lots:

- > Lots 144 and 145 DP755826
- > Lot 7003 DP1060212
- > Lot 7009 DP1060213

Access through these lands will be required for upgrading the site access and for electrical connection to the network. A licence or approval is to be sought under the *Crown Lands Management Act 2017* for authority for the electrical connection that will traverse Lots 144 and 145. Lots 7003 and 7009 are both identified as travelling stock reserves and are subject to undetermined Aboriginal Land Claims. An approval to gain permanent legal right over the project access route is to be investigated in consultation with LLS, Crown Lands and NSWALC.

6.4.3.4 Mining, quarries, mineral and petroleum rights

While the site is not near or within a mine subsidence district, it is situated within a mining exploration licence application (ELA6821) as shown in **Figure 15**. ELA 6821 was applied for by Aurora Tenements Consulting Pty Ltd on behalf of Obscure Minerals Pty Ltd after the issue of the Gara BESS SEARs and seeks to allow for exploration for Group 1 minerals. Obscure Minerals Pty Ltd has since been acquired by Trigg Minerals Ltd. Aurora Tenements Pty Ltd has confirmed that the application is in the early stages, and no investigation or contact has been made with the land owner of 86 Woodlands Road, Armidale NSW at this stage.

Engagement has been ongoing with Trigg Minerals Ltd and will continue during detailed design and construction phases to ensure potential impacts are appropriately managed.

6.4.3.5 Soils

Investigations undertaken by Cadeema in relation to soil capabilities indicate that the main limitation of the site relates to risk of soil structural decline, limited soil surface and soil profile drainage and waterlogging. Overall, the site is not suitable for high productivity agricultural uses and is generally not suitable for most horticultural fruit or vegetable crops. The AULA confirms that the loss of agricultural land and change of land use will not significantly adversely impact the property production, income or viability, and is unlikely to impact on adjoining land uses.

Potential impacts relating to the Gara BESS as provided in the ALUA are as follows:

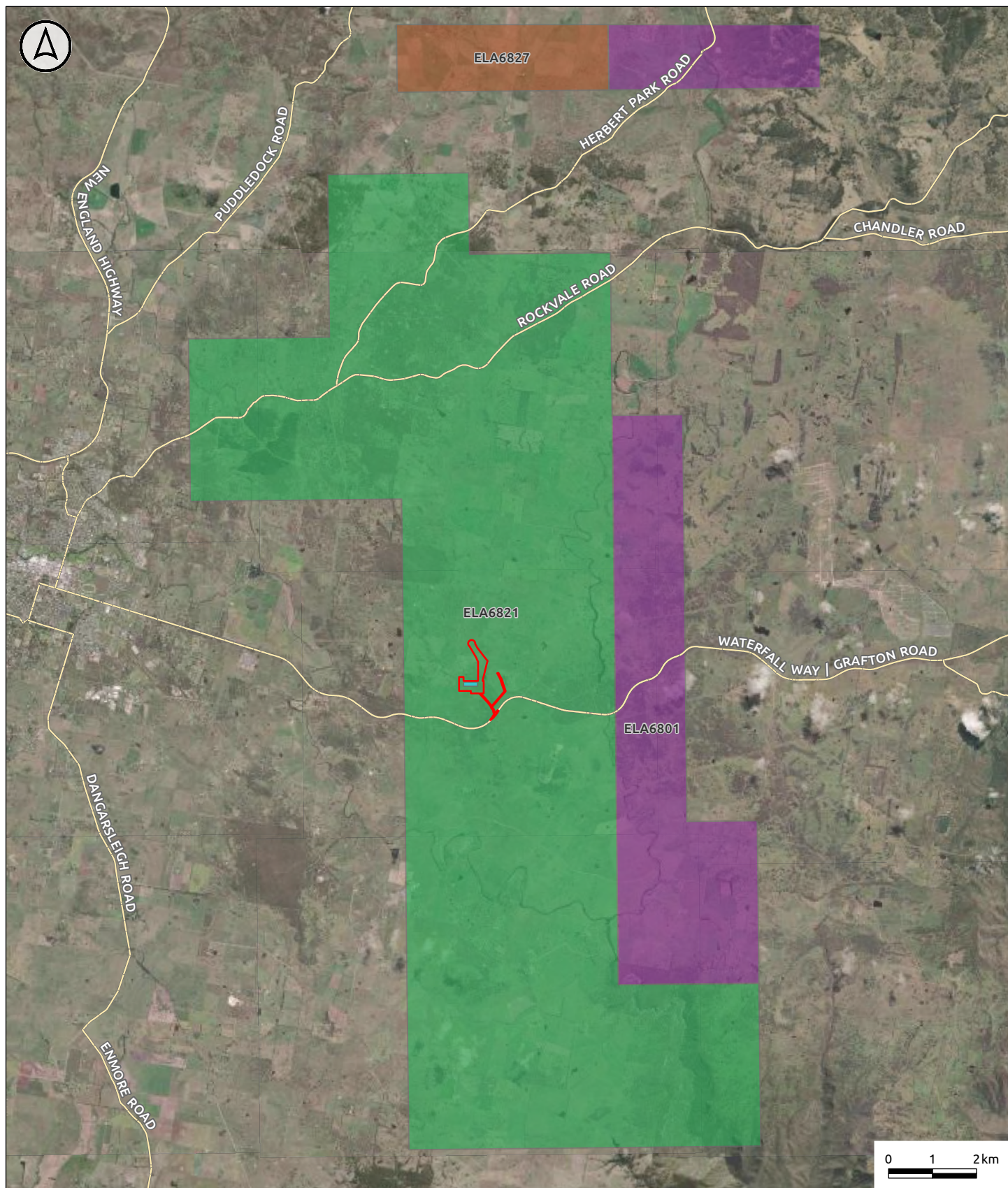
- > Soil physical properties are more likely to be impacted, while soil chemical characteristic are only likely to be effected from mixing soil layers;
- > Adverse soil physical impacts may include traffic and infrastructure induced compaction, soil organic matter reduction and associated soil structural deterioration and/or erosion causing sediment mobilisation; and
- > The soils on site are susceptible to soil structural decline which may be further influenced by the development.

6.4.3.6 Land Use Conflict Risk

The prepared LUCRA identified a total of 40 potential land use conflicts. The revised risk ranking for all identified land use conflicts have been reduced to a value of less than 11, which is consistent with the LUCRA objective to lower the revised risk ranking to 10 or below.

The LUCRA concludes the Gara BESS has an average risk rating of 7.05, which is low risk.

Notwithstanding, effective implementation of management strategies identified in Appendix M is likely to further minimise the risk of potential land use conflicts.



- Legend**
- Site
 - Indicative BESS Area
 - Major Road
- Mining Title Applications**
- ELA6801
 - ELA6821
 - ELA6827

Figure 15
Mining Title

6.4.4 MITIGATION MEASURES

A Construction Erosion and Sediment Control Plan (ESCP) is recommended to be compiled as part of the detailed design stage, as well as the preparation of a Soil and Water Management Plan (SWMP) to cover site development, operation and decommissioning.

A range of soil protection measures should be implemented in the planning, construction, operation and decommissioning of the site and should be included in the ESCP and SWMP. General soil management measures to help minimise the risk of adverse impacts to soil as outlined in the AULA, includes:

- > Minimise soil disturbance and excavation where possible
- > Minimise mixing of soil layers where practical
- > Retain and stockpile all disturbed or excavated soil
- > Ameliorate any excavated and/or stockpiled soils in accordance with advice obtained from the NSW Soil Conservation Service
- > Consider soil amelioration with gypsum prior to reinstatement and/or as part of decommissioning
- > Return stockpiled soil to its original location (where possible) as soon as reasonably practicable
- > Ensure topsoil and subsoils are stockpiled separately and returned in order
- > Minimise overworking of the surface soils (in-situ, in excavation, stockpiling and reinstatement)
- > Reinstatement topsoil where possible where excavation occurs
- > Minimise vehicular traffic induced compaction where practical
- > Minimise stock compaction by excluding livestock during construction, minimising stocking rates and/or minimising the risk of stock coinciding with wet topsoil conditions
- > Minimise infrastructure induced compaction where possible (spread loads etc)
- > Maintain and maximise vegetative cover where possible to help protect surface soils
- > Employ practices which maintain/increase soil organic matter levels such as maintaining grass cover where practical, minimising soil disturbance and the retention/incorporation of any cleared vegetation or organic matter as soon as reasonably practicable
- > Avoid bare (fallow) soil surface where practical
- > Whilst good weed control should be implemented, retention of less detrimental weeds may help maintain vegetative cover and/or increase soil organic matter levels
- > Minimise the exposure of subsoil layers particularly to rainfall/surface water run-off impacts
- > Implement excess surface water controls to minimise collection/concentration of mobile surface water
- > Implement practices to minimise sediment mobilisation and/or sediment capture
- > Minimise site activities and soil disturbance during wet weather conditions where possible
- > Regularly monitor soils for potential adverse impacts and if and when identified, implement appropriate mitigation or remediation actions
- > Implement construction and/or site rehabilitation and revegetation in accordance with an appropriate landscape, revegetation or rehabilitation plan prepared by a suitably qualified professional

- > Ensure rehabilitation is undertaken progressively to minimise the total disturbance area at any one time
- > Prepare an appropriate decommissioning management plan which aims to minimise adverse soil impacts and aims to return the site to preconstruction land and soil capability (or better)
- > The decommissioning management plan should determine soil conditions prior to decommissioning to ensure any existing soil conditions and/or adverse impacts, which may have changed/developed throughout the life of the development, are catered for.

6.5 Visual

6.5.1 INTRODUCTION

A Visual Impact Assessment (VIA; IRIS Visual Planning + Design, 2024) is provided at **Appendix O**. The assessment has been prepared in accordance with the guidance provided in the following:

- > *Large-Scale Solar Energy Guideline* (NSW DPE 2022), including the *Technical Supplement - Landscape and Visual Impact Assessment*, and
- > *Guidance note EIA-N04 Guidelines for Landscape Character and Visual Impact Assessment* (TfNSW 2020).

The assessment has been prepared to assess the visual impact of the Gara BESS project. The VIA includes (among other things):

- > A summary of the proposal, planning context and existing site conditions;
- > An assessment of potential visual impacts; and
- > A summary of the avoidance, mitigation and offsetting of impacts.

A summary of the VIA is provided in the following sections, as well as the recommended mitigation measures.

6.5.2 EXISTING ENVIRONMENT

The site is located in an undulating rural area located approximately 9.5 kilometres to the east of Armidale. The site is surrounded by land historically used for livestock grazing. The landscape and site feature groups of native trees and bushland, as well as tree species planted along boundaries as windbreaks.

Rural dwellings are scattered throughout the surrounding landscape, with the closest two non-associated dwellings (R1 and R3), located approximately 495 metres to the east of the site.

6.5.2.1 Dwelling entitlements

Premise conducted a review of available data to determine if there are any properties near to the site that are lawfully capable of accommodating a dwelling. This was completed via a review of the ARC DA tracker for dwelling and subdivision approvals; and review of commercially available spatial data to identify land parcels within the visual catchment of the project that achieve the relevant minimum lot size as per Clause 4.1 of the LEP, and therefore could lawfully accommodate a dwelling.

A review of the LSC DA tracker for street addresses (by reference to NSW Six Maps data) within 2km of the site identified one (1) additional dwelling that is under construction (R21). This future dwelling has

been added to the assessment. No other lots were identified with a potential dwelling entitlement by reference to minimum lot size requirements.

6.5.3 ASSESSMENT IMPACTS

6.5.3.1 Landscape character assessment

The site is considered to be located within one consistent landscape character zone, which has been labelled Gara undulating rural hills and valley landscape character zone (LCZ1). The LCZ1 is characterised by low rolling hills, extending along the Burying Ground Creek valley. The landscape includes large pastures used for livestock grazing, as well as associated dwellings and sheds. Trees are generally positioned in groups along the road and boundary lines. It is also noted that there are existing transmission lines that traverse the land and influence the landscape character of the area. The assessment of landscape character impact concludes that there would be a low landscape character impact due to the relatively low scenic quality, landscape sensitivity and magnitude of change.

6.5.3.2 Public domain visual impacts

The visual catchment shows that there is potential for views from the following directions:

- > North and northwest to the fields and rural properties along the Burying Ground Creek valley
- > East to the fields and rural properties along Argyle-mining Vale Road, to around 500 metres, with views from areas further to the east blocked by a ridgeline
- > South across the fields to Waterfall Way / Grafton Road, and extending along a ridgeline to around one kilometre
- > West across the fields and rural properties along the western side of Burying Ground Creek valley.

To assess this potential, several representative view points have been identified for assessment:

- > Viewpoint 1: View northeast from Waterfall Way / Grafton Road at Burying Ground Creek crossing
- > Viewpoint 2: View north from Waterfall Way / Grafton Road
- > Viewpoint 3: View northwest from Waterfall Way / Grafton Road.

A detailed assessment of the representative viewpoints found that there were no scenic or significant vistas near or within the visual catchment of the proposal. The assessment of these viewpoints found that with no mitigation measures the visual impact resulting from the proposed development ranged from low impacts to negligible impacts. However, where the assessment considered planting of screening vegetation the visual impacts were reduced to negligible impacts.

6.5.3.3 Views during construction

During the construction period, the works would involve construction vehicles including cranes and other equipment rising above the height of the development. There would also be tree clearing and construction vehicles visible from Waterfall Way / Grafton Road. While the impacts on views during this time may be slightly more prominent, these visual impacts of the construction are anticipated to be short-lived and therefore minimal overall impact.

6.5.3.4 Views at night

The lighting of the site and surrounding landscape comprises relatively low levels, with scattered lighting from surrounding rural dwellings and outbuildings, as well as the glow of the Armidale township and

headlights of passing vehicles on Waterfall Way / Grafton Road. It is concluded that the site and surrounding area has a low district brightness and moderate visual sensitivity at night.

There is not expected to be any construction at night. With the exception of security lighting and the occasional afterhours delivery, it is considered that there would negligible visual impact at night during construction.

During operation there would be some minor security lighting provided at the BESS facility, with lighting mounted outside the maintenance and operation building. Notwithstanding, lighting would not noticeably alter prevailing light levels in the area and there would be a negligible magnitude of change and visual impact at night. It is considered that there would be a low visual impact at night during operation.

6.5.3.5 Views from surrounding dwellings

Dwellings located within around one kilometre of the site have been considered for potential view impacts. Dwellings outside of this buffer are unlikely to experience prominent views of the site and unlikely to be impacted. Receivers 1 to 6 have been considered for visual impacts, with the exception of receiver 4 which is associated with the proposed development.

A detailed assessment found that only two of the assessed dwellings would experience a low visual impact if no mitigation were imposed. The remaining dwellings experienced negligible impacts with no mitigation imposed. However, with consideration of the proposed vegetation screening, it was concluded that the visual impact would be negligible for all assessed dwellings that were considered.

6.5.4 MITIGATION MEASURES

To avoid and minimise potential visual impacts resulting from the development, the proposed development has proactively been designed in the following ways:

- > Located close to existing transmission infrastructure and away from surrounding dwellings
- > The natural undulating landscape shields the development from surrounding areas.
- > Located to avoid natural landscape features, such as the creek valleys, and minimise removal of native vegetation.
- > Colouring of noise walls, buildings and BESS will be selected to blend with the local character, such as shades of green.
- > Proposed screen planting located along fence lines that reflect the local character mitigate direct view lines (see **Appendix P**).

With consideration of these existing design matters, the VIA recommends the following mitigation measures:

- > Lighting during construction and operation would be designed and operated in accordance with AS4282-2019 Control of the obtrusive effects of outdoor lighting.
- > Minimise the removal of mature native vegetation in the vicinity of the construction footprint, including at the track intersection with Waterfall Way / Grafton Road, where possible.

6.6 Noise

6.6.1 INTRODUCTION

A Noise Impact Assessment (NIA; Assured Environmental, 2024) is provided in **Appendix Q**. It includes assessment of:

- > Construction noise;
- > Operational noise;
- > Road traffic noise; and
- > Vibration impacts.

A summary of each is provided in the following sections, as well as a summary of recommended mitigation measures.

6.6.2 EXISTING ENVIRONMENT

The topography of the area is generally flat, with slight undulations to the west and east, and an elevation of approximately 980 metres AHD. The site is surrounded by land used for agricultural purposes with associated dwellings. The NIA identifies 21 single existing dwellings within a two kilometre buffer that require assessment of potential acoustic impacts.

6.6.3 ASSESSMENT IMPACTS

6.6.3.1 Construction noise

The NIA includes an assessment of construction noise impacts to the nearby sensitive receivers. The construction phase of the project is anticipated to take approximately 14 months, with varying activities undertaken throughout this phase. Construction is expected to commence mid to late 2026.

The NIA is based on the worst case scenario noise levels and concludes that during the loudest stages of construction that nearby receivers would exceed the Noise Affected criteria of 50 dB(A) but would not exceed the Highly Noise Affected criteria of 75 dB(A). Mitigation measures are recommended in the NIA to reduce the noise impacts for nearby receivers. Additionally, during any work that generates high noise levels that have impulsive, intermittent, low frequency or tonal characteristics, surrounding sensitive receivers will be consulted with regularly.

Cumulative construction noise impacts have been considered for nearby projects of the site. Nearby renewable projects include the following:

- > Oxley Solar Farm
- > Stringybark Solar Farm
- > Olive Grove Solar Farm

Oxley Solar Farm timeline states that it will be operational from Q2 2025, however it is assumed that this timeline is outdated as the 12-18 month construction period has yet to commence. To achieve a conservative assessment, it has been assumed that the construction will occur concurrently with the Gara BESS. The cumulative impact of the projects was assessed at three receivers identified in both the EIS for Oxley Solar Farm and the Gara BESS. The NIA shows that when considering worst case modelling

conditions from both projects the cumulative impact on common receptors falls below the noise affected criteria.

The acoustic report for Stringybark Solar Farm identifies a single common receiver between the Stringybark Solar Farm and the Gara BESS. Due to a lack of data available, it has been conservatively assumed that the Stringybark Solar Farm construction noise would be 50 decibels at all stages. Due to this, the single receiver was found to meet the noise affected criteria but not the highly noise affected criteria. It is noted however that the realistic noise levels would likely be lower than the noise affected criteria.

The Olive Grove Solar Farm is expected to take nine months for construction, with an expected completion of 2024-2025. As the Gara BESS is not anticipated to commence construction until 2026, no overlap of construction periods is expected. Therefore the NIA has not considered cumulative construction noise impacts for the Olive Grove Solar Farm.

6.6.3.2 Road traffic noise

The NIA includes an assessment of the road traffic noise impacts during the construction phase of the project. The assessment considers the potential noise emissions that may occur on the proposed route of entry to the site along Waterfall Way (Grafton Road). Operational vehicle movements are anticipated to be low, with approximately seven light vehicle movements daily during peak hours. However, during the construction period vehicle movements are expected to be more significant, with an estimated peak of 43 light vehicles and 75 heavy vehicles daily. NIA assessment concludes that given the low traffic generated by the development, that the construction period would result in a negligible (<2 db) increase in noise to surrounding dwellings.

6.6.3.3 Vibration

The NIA includes an assessment of potential vibration impacts during the construction phase. The assessment considers the amenity criteria associated with the three categories of vibration, comprising continuous vibration, impulsive vibration, and intermittent vibration.

The NIA states that due to the distance of the site from nearby receivers, the proposed construction works will achieve compliance with the relevant vibration criteria. The NIA concludes that due to this compliance, there will be no adverse amenity effects on nearby receivers during peak construction or operation periods.

6.6.3.4 Operational noise

The NIA includes an assessment of operational noise impacts to existing receivers based on baseline noise levels equivalent to the minimum background noise levels, noise sources and source locations.

The NIA concludes that the predicted noise levels at each of the receivers achieves compliance with the NPfI requirements for all receivers for day, evening and night periods when assessed against worst-case meteorological conditions. However, this is subject to the installation of the proposed acoustic barrier and placement of equipment as outlined in the recommended mitigation measures.

Cumulative operational noise impacts have been considered in relation to the nearby developments outlined in **Section 6.14**. An assessment has been completed for three common receivers between Gara BESS and Oxley Solar Farm. The assessment found that under worst case meteorological conditions the cumulative impacts will remain compliant.

The acoustic assessment for the Stringybark Solar Farm found that there would be no operational noise impacts on surrounding receivers. There is only one common receiver between the Stringybark Solar Farm. Due to the distance of the receiver from each development, it is considered that the attenuation of sound would result in negligible cumulative operational noise impacts.

The Olive Grove Solar Farm and Gara BESS share five common receivers based on the acoustic assessment from the Olive Grove Solar Farm. The Olive Grove Solar Farm acoustic assessment concludes that the operational activities of the solar farm would have insignificant operational noise impacts. Due to a lack of data, an assessment of cumulative impacts cannot be accurately completed.

6.6.4 MITIGATION MEASURES

The following mitigation measures would be adopted during the construction phase:

- > Implement community consultation or notification measures;
- > Train workers and contractors on the best practice use of equipment and work methods in order to minimise noise
- > Ensure workers and contractors are aware of noise management requirements in approvals consents or licenses, site inductions and “toolbox talks” providing a summary of relevant to the Project requirements for reference;
- > Include appropriate clauses and conditions within tenders, employment contracts, sub-contractor agreements and work method statements that require all workers and contractors to observe (noise management) directions from their site manager;
- > Inform all vehicles and mobile plant equipment of designated vehicle routes, parking locations and acceptable delivery hours or other relevant practices, such as minimising use of engine brakes and avoiding engine idling;
- > Periodically check the site, nearby residences and other sensitive land uses to proactively identify noise issues and feasible and reasonable mitigation (verification);
- > Limiting the type and scale of concurrent activities undertaken close to sensitive receptors where possible;
- > Using broad band reversing alarms on all mobile plant and equipment if practical;
- > Examine different types of machines that perform the same function and compare the noise level data to select the least noisy machine;
- > Operating plant in a quiet and efficient manner;
- > Reduce throttle setting and turn off equipment when not being used;
- > Regularly inspect and maintain equipment to ensure it is in good working order including checking the condition of mufflers;
- > Validation of noise levels during construction at nearest sensitive receptor; and
- > A full, detailed and specific Construction Noise and Vibration Management Plan (CNVMP) must be prepared prior to commencing works on site, once a developer is appointed and detailed construction methodology is known.

The following additional mitigation measures would be included in the CNVMP as required:

- > Notification (letterbox drop or equivalent) - Advanced warning of works and potential disruptions can assist in reducing the impact on the community. The notification may consist of a letterbox drop (or equivalent) detailing work activity, time periods over which these will occur, impacts and

mitigation measures. Notification should be a minimum of 5 working days prior to the start of works. The approval conditions for projects may also specify requirements for notification to the community about works that may impact on them.

- > Specific notifications - Specific notifications are letterbox dropped (or equivalent) to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. The specific notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops.
- > Phone calls - Phone calls detailing relevant information made to identified/affected stakeholders within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used.
- > Individual briefings - Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Project representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. Where the resident cannot be met with individually then an alternative form of engagement should be used.
- > Respite offers - Respite Offers should be considered made where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis and may not be applicable to all projects.
- > Respite period 1 - Out of hours construction noise in out of hours period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month.
- > Duration respite - Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly.
- > Alternative accommodations - Alternative accommodation options may be offered to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a project-by-project basis. Additional aspects for consideration shall include whether the highly intrusive activities occur throughout the night or before midnight.
- > Verification - Please see Appendix F of the Construction Noise and Vibration Guideline (2016) for more details about verification of Noise and Vibration levels as part of routine checks of noise levels or following reasonable complaints. This verification should include measurement of the background noise level and construction noise. Note this is not required for projects less than three weeks unless to assist in managing complaints.

The following mitigation measures are recommended during the operational phase of the development:

- > An acoustic barrier is proposed as shown in Figure 4 of the NIA. In order to be effective the acoustic barrier would need to be free of gaps and be constructed of material with a mass density greater than or equal to 12kg/m² excluding structural components.
- > The acoustic barrier is to be constructed such that there is a 10 m space between the acoustic barriers and BESS equipment to allow for fire safety.
- > The acoustic barrier is in the eastern segment of the BESS area and is to be constructed with a height of 3.15 m. The barrier should have a length of approximately 110 metres when constructed in its entirety. The barrier has been modelled to include a 150 mm gap between the ground and the base of the barrier (to allow for flood design).
- > Placement of the MVPS equipment as discussed with ACenergy, MVPS front face of all units to be facing north to help with directionality of loudest side away from sensitive receptors.
- > Similarly, placement of BESS equipment as discussed with ACenergy, BESS front side (chiller facade/loudest facade) facing towards the north for all BESS units to help with noise directionality away from sensitive receptors to the east and west.

6.7 Traffic transport and access

6.7.1 INTRODUCTION

A Traffic Impact Assessment (TIA) has been prepared by The Transport Planning Partnership (2024) and is provided in **Appendix G**, a detailed over-dimensional vehicle route assessment has been completed by Ares and is provided in **Appendix H** and bridge assessments are supplied in **Appendix I**. This report presents the results of an assessment of the road transport implications of the proposed development.

The assessment responds to the SEARs and details how road impacts of the project traffic, particularly from standard heavy vehicle use and over-dimensional vehicles requiring escort, will be avoided or managed using road-use management strategies. The assessment has been prepared in consultation with Transport for NSW and Armidale Regional Council.

A summary of the TIA is provided in the following sections, including mitigation measures.

6.7.2 EXISTING ENVIRONMENT

Access to the site is available via an existing site access from Waterfall Way. The site access road and its connection to Waterfall Way will be upgraded to accommodate anticipated vehicles as part of the development. The existing site access is a single, unsealed road.

East of Armidale, Waterfall Way is also known as Grafton Road, and through Armidale, MR 76 is known as Barney Street, Dangar Street, Kentucky Street and Uralla Road. In the vicinity of the development, Waterfall Way is a two-lane, two-way rural road with a posted speed limit of 100 km/h.

TTPP commissioned an automatic tube count survey on Waterfall Way approximately 270 m west of the existing site access, from 2 August to 12 August 2024. The results suggest that the highest two-way volumes were recorded on Fridays with heavy vehicles making up a lower proportion of total traffic on weekends. The data also suggests that the highest two-way demands occur during the afternoon, however there is no distinct consistent or peak hour.

Waterfall Way is an approved route for General Mass Limit (GML), Concessional Mass Limit (CML) and Higher Mass Limit (HML) 25/26m B-doubles.

A review of crash history in the vicinity of the site for the five-year period between 2018 and 2022 reported that no crashes occurred on Waterfall Way at or near the site. Between the site access and the urban area of Armidale, five (5) crashes were reported with no casualty crashed. In light of this it is considered that no further investigation of crash history is required.

6.7.3 ASSESSMENT IMPACTS

The development has three (3) distinct stages:

- > Construction stage – over a period of 14 months commencing in mid to late 2026 with peak construction activity occurring over a period of approximately 4 months.
- > Operational stage – operation of the BESS would commence in late 2027 and will continue over the course of 23 years with the possibility of future upgrades extending the operational life upwards of 23 years.
- > Decommissioning stage – at the cessation of the operational stage of the BESS, all infrastructure will be removed and the site will be rehabilitated back to its original state.

Construction activities would generally occur within standard construction hours and would require an average of approximately 58 staff, with a peak of approximately 80 staff on site per day. The BESS would be operational 24 hours a day, 7 days a week and would be operated remotely with occasional onsite maintenance activities by a maximum of five (5) personnel.

6.7.3.1 Traffic generation

The construction of the project would take 14 months, with construction expected to commence in mid to late 2026. The construction stage is expected to attract a peak of 8 shuttle bus, 48 light vehicle and 75 heavy vehicle movements per day. The project would also trigger the need for 16 over-dimensional heavy vehicle movements requiring escort.

Allowing for arrival and departure of the vehicles each day, this would generate a peak of 16 shuttle bus, 96 light vehicle and 150 heavy vehicle trips per day.

It is expected that the majority of the construction workforce would arrive prior to 7 am and depart after 6 pm on weekdays, and arrive prior to 8 am and depart after 1 pm on Saturdays. The peak hourly trip generation for the project is estimated at:

- > a peak of 4 shuttle buses, 48 light vehicles and 11 heavy vehicles arriving and 4 shuttle buses departing in the AM peak (i.e., 8 shuttle bus, 48 light vehicle and 11 heavy vehicle trips in total)
- > a peak of 4 shuttle buses arriving, and 4 shuttle buses, 48 light vehicles and 11 heavy vehicles departing in the PM peak (i.e., 8 shuttle bus, 48 light vehicle and 11 heavy vehicle trips in total).

It is also noted that up to four (4) 22 seat shuttle buses would be provided to transport specialised construction workforce between Armidale and the site. Each shuttle bus would generate four trips per day, with two in the morning and two in the evening. Four shuttle buses would generate a total of 16 vehicle trips per day.

A total of 16 oversize overmass (OSOM) vehicles requiring escort will also be required to transport infrastructure to the site. This infrastructure would include two high voltage transformers, control rooms, and cranes required for construction. The transformers will comprise the largest single components to be transported, requiring a prime mover and 18-axle low platform trailer. These components will require accompaniment by two police vehicles and four pilot vehicles each, as well as any other permit requirements of the National Heavy Vehicle Regulator (NHVR). Three OSOM cranes will also be required to be one site for the construction phase of the development. These cranes will require accompaniment by two pilot vehicles.

The operational activities of the BESS would generate a low volume of traffic on a day to day basis and will be operated remotely. In general, the decommissioning and rehabilitation stages of large projects are less intense than the construction stage with a lower volume of vehicle generation. As a result, the TIA focuses primarily of the impacts relating to the construction stage.

6.7.3.2 Traffic distribution

The TIA assumes the following distributions:

- > The OSOM components are anticipated to be transported from Mayfield Berth 4 at the Port of Newcastle.
- > Heavy vehicle deliveries are expected to be sourced primarily from Newcastle, including the Port of Newcastle. B-doubles would use approved routes between Newcastle and the site, e.g. New England Highway and through Armidale via Uralla Road and Kentucky Street, then via either Dangar Street, Taylor Street or Long Swamp Road and Canambe Street to Barney Street. Heavy vehicle drivers would be required to adhere to all travel restrictions along the route, including school zone speed limits, and the existing limit of one heavy vehicle at any time on the Dangar Street bridge over the Main North Railway. It is noted that other approved routes for B-doubles are also available and may be used by Project delivery vehicles.

Construction personnel would be sourced locally from the Armidale region, including Uralla and Tamworth.

6.7.3.3 Traffic assessment

The TIA has assessed the impact of the peak project generated construction traffic on traffic volumes on Waterfall Way, cumulative with the potential coincidence of traffic associated with other nearby developments and background growth in traffic.

The forecasted daily traffic during the average weekday during peak construction in 2026 is shown in **Table 8**.

Table 8 – Daily traffic on Waterfall Way with Project Peak Construction (vehicles per day)

Location on Waterfall Way	Baseline 2026		Project Peak Construction		Total	
	Light	Heavy	Light	Heavy	Light	Heavy
West of Eathorpe Road	1,819	408	86	128	1,905	536
West of Gara Road	1,659	388	86	128	1,745	516

Location on Waterfall Way	Baseline 2026		Project Construction		Total	
	Light	Heavy	Light	Heavy	Light	Heavy
West of Stringybark Solar Road Off-Site Access	1,637	378	86	128	1,723	506
West of Project Access	1,627	376	86	128	1,713	504
West of Olive Grove Solar Farm Access	1,627	376	10	38	1,637	414
West of Oxley Solar Farm Access	1,601	364	10	38	1,611	402

The forecast hourly traffic during the average weekday during peak construction in 2026 is shown in **Table 8**.

Table 9 – Peak Hourly Traffic Waterfall Way with Project Peak Construction (vehicles per hour)

Location on Waterfall Way	Baseline 2026		Project Construction		Total	
	AM	PM	AM	PM	AM	PM
West of Eathorpe Road	211	207	59	59	270	266
West of Gara Road	165	161	59	59	224	220
West of Stringybark Solar Road Off-Site Access	153	149	59	59	212	208
West of Project Access	148	144	59	59	207	203
West of Olive Grove Solar Farm Access	148	144	8	8	156	152
West of Oxley Solar Farm Access	135	131	8	8	143	139

6.7.3.4 Site Access Intersection Design

It is proposed that the point of access to the site from Waterfall Way will be upgraded to provide a basic access right and basic access left treatment in Waterfall Way as per the strategic intersection design provided in **Appendix G**. Some trimming and/or removal of some roadside vegetation will occur to provide adequate sight distance for eastbound drivers approaching the intersection.

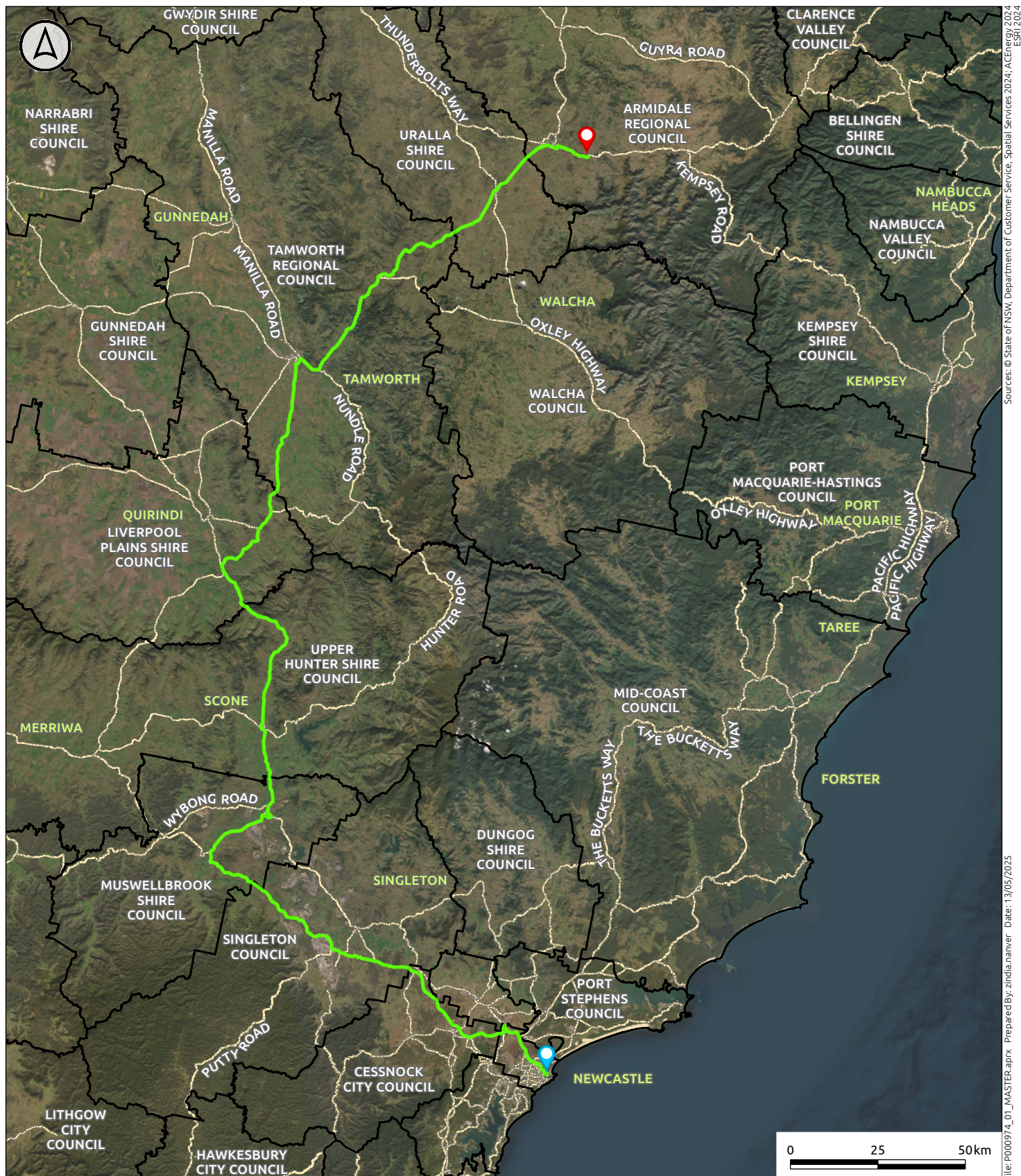
Roadworks required for the upgrading of the site access intersection with Waterfall way would be subject to a Works Authorisation Deed (WAD) obtained from TfNSW. As part of this WAD, a Construction Traffic Management Plan (CTMP) would be prepared in consultation with TfNSW, and works would be undertaken in accordance with that agreement and relevant traffic control requirements, including the *Traffic Control at Work Sites Technical Manual* (TfNSW, 2022).

6.7.3.5 OSOM Vehicle Access

ARES (2024) conducted a preliminary route study for the movement of the largest component from Mayfield Berth 4 at the Port of Newcastle to the site (**Appendix H**). The report provides a route via Muswellbrook, Tamworth and Armidale (refer **Figure 16**). Consultation has occurred with UGL in relation to the rail bridge at Kentucky Street and it has been confirmed that this route is acceptable for all movements.

The route assessment conclusions that, subject to several road modifications, the transport of the OSOM components to the Gara BESS site will be feasible.

Bridge assessments have been completed along the route to confirm the adequacy of existing infrastructure and these are supplied as **Appendix I**. These confirm the adequacy of all bridges along the proposed route subject to the conditional limits contained within the assessments.



- Legend**
- LGA Boundary
 - Major Road
 - Site
 - Newcastle
 - Material Transport Route



ACENERGY PTY LTD
Gara BESS

Figure 16
Material Transport Route

6.7.4 MITIGATION MEASURES

Overall, it is concluded that no specific road or intersection upgrades are required to mitigate the impacts of the development on the capacity, safety and efficiency of the surrounding road network.

The TIA proposes that to actively manage vehicle trips during construction, the following measures may be implemented:

- > Requiring contractors to provide forecasts of their total vehicle numbers inclusive of workforce travel, heavy vehicle deliveries and OSOM vehicles on week by week basis;
- > Sharing of the vehicle forecasts with all site managers;
- > Nominating limits on total and directional vehicle numbers, with site management coordinating the total vehicle activity levels to remain within the nominated limits;
- > Monitoring and recording daily vehicle activity, including the direction of travel, by site management;
- > Identifying exceedances of the nominated limits, with consequences of non-compliance to be identified and enforced. These may include:
 - Placing restrictions on non-essential vehicle movements until compliance is restored;
 - Fining contractors (e.g. via specified donation amount to charity of their choice) for repeated breaches; and/or
 - Revising scheduling to balance traffic loads.

The TIA proposes the following measures to mitigate impacts on safety and efficiency of the road network:

- > The intersection of Waterfall Way with the Project site access road would be upgraded with BAL and BAR treatments on Waterfall Way in accordance with Austroads guidelines;
- > Specific trees would be trimmed/removed (subject to ecology assessment) on the western side of Waterfall Way to the south of the Project site access to maximum sight distance between approaching drivers and the access intersection;
- > Required permits would be obtained for OSOM vehicle movements, and modifications to accommodate the largest OSOM vehicle movement would be implemented, the details of which would be confirmed as the size and load requirements are refined (desktop review by ARES [2024] has identified possible changes to roadside signage, traffic signals at one location and vegetation clearing); and
- > A WAD would be obtained for the upgrading works at the intersection of Waterfall Way with the Project site access, including preparation of a CTMP and work to be undertaken in accordance with relevant traffic control requirements.

It is recommended that a TMP and Driver Code of Conduct be developed and implemented to govern traffic movements during the Project construction stage. These would form part of the contractual arrangements with suppliers to the Project, and would be prepared in consultation with Council and/or TfNSW prior to commencement of construction of the Project, to address such matters as:

- > compliance with access routes and travel restrictions that may be applicable;
- > compliance with road rules, laws and regulations, including those relating to OSOM vehicles and dangerous goods transport;

- > maintaining safe following distances between vehicles, and increasing separation in poor visibility (e.g. fog or rain);
- > reporting of any unsafe driving practices or incidents;
- > driver behavioural expectations within the site (e.g. radio communication, speed limits, and use of flashing lights on moving vehicles); and
- > driver behaviour expectations at any specific locations or conditions, including at the Dangar Street bridge in Armidale, when warning signs advise that stock are present on or near the road, and in the vicinity of any school bus during bus operating hours.

6.8 Water

6.8.1 INTRODUCTION

A Groundwater Assessment has been prepared by Engeny (2024) and is provided in **Appendix R**. This report includes a desktop review of the existing environment and assessment of the potential impacts of the development on groundwater resources.

A Surface Water Assessment Report has been prepared by Water Technology (2024) and is provided in **Appendix S**. This report documents the methodology and outcomes of the surface water assessment including riverine flood risk and provides mitigation measures for the development.

A summary of the Groundwater Assessment and the Surface Water Assessment is provided below.

6.8.2 EXISTING ENVIRONMENT

6.8.2.1 Groundwater

The site is located within the New England Fold Belt Coast Groundwater Source which is fractured rock aquifer with groundwater contained within and moving through the fractures in the rock. Yields are typically low sitting at 1 L/s however, yields up to 10 L/s can be obtained from highly fractured fault systems. Groundwater across this region is generally recharged through rainfall infiltration and typically is considered good quality water.

The Groundwater Assessment confirmed the presence of five (5) groundwater bores located within 2 km of the site. Depth to water is greater than 19 m and the water quality measures generally has low salinity and is recorded as 'potable.' Additionally, six (6) groundwater users were identified within 2 km of the site which are recorded as being utilised for water supply, irrigation or stock and domestic use.

There are no known contaminated lands located at or within proximity to the site.

There are no high priority groundwater dependent ecosystems (GDE) located within 1 km of the site. similarly, there are no GDEs listed in the Water Sharing Plan for the North Coast Fractured and Porous Rock Groundwater Sources 2016-New England Fold Belt Coast Water Source, at or in proximity to the site.

6.8.2.2 Surface water

The site is located within the Macleay River catchment (refer **Figure 17**) in a predominantly agricultural landscape, mostly utilised for grazing. Burying Down Creek runs to the west of the site and flows south towards Commissioners Waters which then joins the Gara River approximately 5 km to the east.

Hydrological and hydraulic modelling of the site was undertaken as part of the Surface Water Assessment. The results of the flood modelling are provided in **Section 6.8.3.2**.

The site and surrounding lands contain several unnamed waterways, two of which are first order streams which traverse the northern portion of the site, running in an east to west direction, under the proposed overhead connection route. However, these waterways are most likely historical overland flows. There are no local wetlands located within the site.



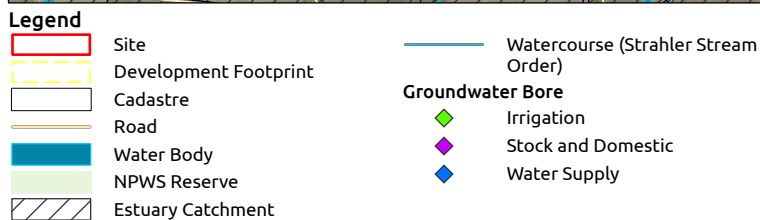
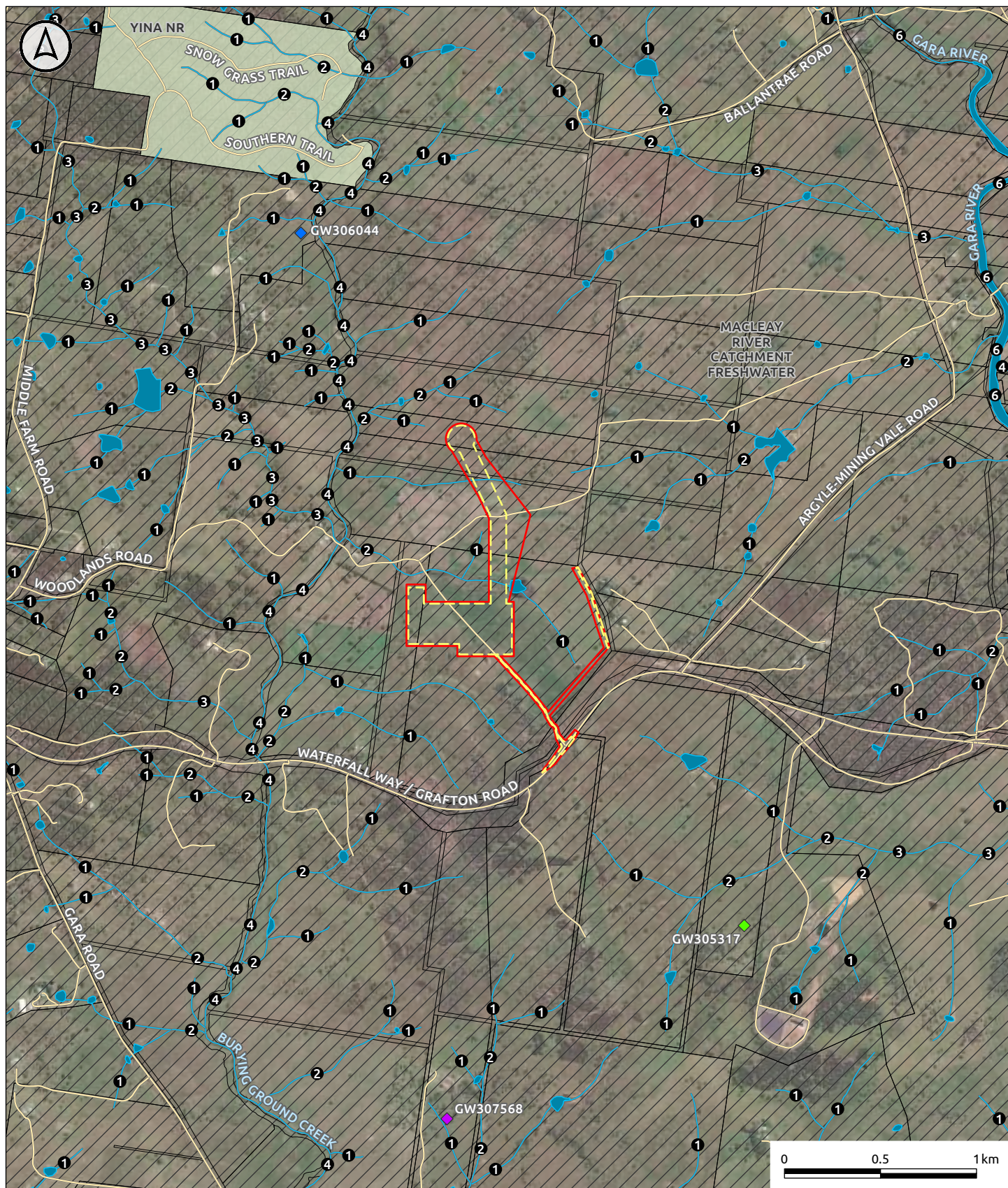


Figure 17
Surface Water

6.8.3 ASSESSMENT IMPACTS

6.8.3.1 Groundwater

The Groundwater Assessment has considered the potential impacts of the development with respect to groundwater quantity and quality during construction and operation and the potential impacts to groundwater users in the area.

Due to the minimal disturbance of the land required to construction and facilitate the development, the risks of altering recharge patterns or inducing drawdown in the groundwater table are considered low. Overall, the development will not cause the water table drawdown at nearby receivers.

In terms of groundwater quality, contamination of groundwater may occur due to leaks or spills or hazardous substances including hydrocarbons or leaks and spills from associated road traffic. To mitigate and maintain groundwater quality, site specific controls are proposed that will minimise the risk of contamination of groundwater. These controls would include the following:

- > Self-bunded battery and fuel storage units;
- > Regular maintenance and inspection of bunded fuel, oil, and battery storage areas to ensure integrity; and
- > Proper storage and bunding of chemicals, along with well-designed site drainage and sedimentation basins at key locations to manage site runoff effectively.

Site management plans would also be prepared which provide response protocols to leaks, such as spill kits, remove of contaminated soils, and groundwater monitoring bores.

6.8.3.2 Surface water

The Surface Water Assessment included the preparation of hydraulic and hydrologic modelling for the following events:

- > 5% AEP;
- > 1% AEP;
- > Probable Maximum Flood (PMF); and
- > 0.5% and 0.2% AEP which are advised to be used as proxies for assessing climate change.

Risk to people and vehicles within the site in existing conditions is not considered a concern. The results of the existing conditions were compared to those anticipated as a result of the development. It was determined that the impact of the proposed development on the flood behaviour at the site is negligible to very low.

The location of the proposed BESS, situated on a ridge of the of the Burying Ground Creek catchment is considered suitable from a flood risk perspective and outside the riverine PMF extent. The proposed development is not predicted to result in indirect or direct damage to the local community in the event of significant flooding. No other detriment is observed that would impact other nearby receptors or emergency management within the local region.

The development complies with all relevant flood planning controls outlined in the Armidale LEP and with the issues identified in the *Flood Risk Management Guideline LU01*.

6.8.3.3 Water demand

Water demand during construction would be limited to that required for dust mitigation and/or moisture conditioning of material, as well as a potable supply for construction staff. The former will be sourced from a legal supply source, including farm dams on-site (if available) and/or commercial water suppliers.

There is no intent or need for any volumetric water licencing requirement. No water entitlement is needed or required to be purchased.

The quantity of water required for dust mitigation during construction can only be roughly estimated. Ultimately, it will be determined by the detailed design, the EPC contractor's approach to the construction program and the climatic conditions experienced at the time the works are undertaken. Assuming a maximum daily use, in excessively dry and windy conditions, would be 40 kL, and that these conditions are experienced 50% of the time during the peak 4 month construction when bulk earthworks occur, this equates to 2.4 ML. This requires approximately 89 x 27 kL bulk tankers. By reference to the traffic assessment and the 4 month peak construction program, this equates to just over 5 trucks per week. This is less than one per day and is accommodated within the projected maximum traffic movements.

Potable supply will be provided through bottled water.

Dry port-a-loos would be provided for amenities throughout construction minimising water demand and negating the need for on-site domestic sewage treatment.

6.8.4 MITIGATION MEASURES

6.8.4.1 Groundwater

Mitigation and management measures are not required during the operation of the BESS as there is no permanent groundwater take proposed for any of the development stages. Overall, the project is considered to generally have no impact on groundwater and would be managed with the implementation of control measures outlined in the CEMP which typically include requirements for training, inspections, corrective actions, notification and classification of environmental incidents, record keeping and performance objectives for handover of construction.

A Soil and Water Management sub-plan should also be prepared for the project and should include, but not be limited to, the following:

- > appropriate design of self-bunded battery and fuel and oil storage areas;
- > use nominated and bunded fuel and chemical storage areas;
- > provision of spill kits for cleaning up chemical, oil and fuel spillages;
- > training for personnel and regular maintenance and inspection of bunded fuel, oil, and battery storage areas to ensure integrity;
- > procedure for managing any intercepted shallow groundwater; and
- > procedures for soil storage (including any potential contaminated soil) and erosion control with well-designed site drainage and sedimentation basins at key locations to manage site runoff effectively.

Groundwater monitoring and testing is also recommended during geotechnical investigations, including:

- > Installation of groundwater monitoring bores to detect any changes in water quality;
- > Regular water sampling and testing for contaminants during and post-construction, especially in the vicinity of storage areas; and
- > Ongoing monitoring as part of the environmental management plan to ensure that groundwater remains unaffected over the long term.

6.8.4.2 Surface water

The following recommendations are proposed to be adopted by the site:

- > Any sensitive infrastructure such as inverters and battery storage etc, should be located on raised concrete footings to 300mm elevation above finished ground level at the site. It is common for this type of infrastructure to be housed within shipping containers or small sheds with relatively small footprints. Given the shallow depths across the site, raising these small concrete footings is highly unlikely to result in any adverse impacts offsite.
- > The footings should be designed to withstand the flood velocities described in this report, which are mostly low in the Development Footprint.
- > Extension of existing 300 mm diameter pipe under the existing access tract at the intersection with Waterfall Way (Grafton Road).
- > Incorporate drainage channels in a north to south direction within the BESS area to control surface runoff within the proposed facility.
- > The location of the proposed electricity poles/towers within the development extent should be outside any mapped flood depth in all modelled events, if practical.
- > It is recommended that the best practice principles to stormwater and sediment control be incorporated into the design, construction and operation phases of the BESS site.
- > It is anticipated that vehicles can safely access and egress from the Site via Waterfall Way (Grafton Road).

6.9 Hazards

6.9.1 INTRODUCTION

A Preliminary Hazard Analysis (PHA) has been prepared by Riskcon Engineering (2024) and is provided in **Appendix K**. The PHA has been prepared in accordance with the Hazard Industry Planning Advisory Paper No. 4 - Risk Criteria for Land Use and Safety Planning, Hazard Industry Planning Advisory Paper No. 6 – Guidelines for Hazard Analysis (DOP, 2011) and Multi-Level Risk Assessment (DOP, 2011).

The PHA has been prepared to provide:

- > A summary of the assessment methodology in the context of the site and project description;
- > Identification of hazards;
- > Analysis of consequences;
- > Frequency analysis and risk assessment; and
- > Conclusions and recommendations.

A summary of the PHA is provided in the following sections, as well as a summary of recommended mitigation measures.

6.9.2 ASSESSMENT IMPACTS

6.9.2.1 Overview

A hazard identification table was developed as part of the PHA to identify the potential hazards that may be present at the site as a result of the operation or storage of materials relating to the development. Based on the identified hazards, scenarios were postulated that may result in an incident with the potential for offsite impacts. Postulated scenarios were discussed qualitatively and any scenarios that would not impact offsite were eliminated from further assessment. Scenarios not eliminated were then carried forward for consequence analysis. No scenarios were carried out for further analysis.

Overall, it was concluded that the risks identified at the site boundary would not exceed the acceptable risk criteria and that the project is not classified as potentially hazardous, and is permitted within the current RU1 Primary Production land zoning.

The hazardous scenarios developed for the assessment are outlined below.

6.9.2.2 Transportation and storage of toxins

The BESS will not involve the storage or transport of toxic DGs during the construction operational or decommissioning stages. Therefore, this risk do not apply to the project.

6.9.2.3 Lio-ion battery fault, thermal runaway and fire

A review of the batteries proposed to be used as part of this project indicates the battery chemistry is lithium-Ion phosphate (LiFePO₄, or simply LFP) which are considered to be one of the safest battery chemistries within the industry.

The PHA concluded that LFP technology does not cause fire during thermal runaway. Should fire be developed within one CATL EnerC+ 0.25P BESS container it would not transfer to nearby containers due to the fire safety design features. This incident was not carried forward for further analysis.

6.9.2.4 Victorian Big Battery fire review

The PHA identified that there is sufficient space within the site to maintain the required separation distance to prevent incident propagation between BESS subunits. This incident was not carried forward for further analysis.

6.9.2.5 Lio-ion battery fire and toxic gas dispersion

The PHA identified that there would be insufficient production of carbon dioxide or carbon monoxide to generate a plume of sufficient concentration to displace the required oxygen for a significant downwind consequence to occur.

For a toxic gas dispersion, a battery container fire is necessary as the initiating event. The PHA states that the potential for a fire to occur is considered negligible due to the highly stable and safe battery chemistries used. This incident was not carried forward for further analysis.

6.9.2.6 Electrical equipment failure and fire

Electrical equipment used for the proposed BESS is ubiquitous throughout the world and across industry segments and is therefore not a unique fire scenario. Based upon fire development within switch rooms, the fire would be considered to be relatively slow in growth and would be unlikely to result in substantial impacts in terms of offsite impact or incident propagation. This incident was not carried forward for further analysis.

6.9.2.7 Transformer internal arcing, oil soil, ignition and bund fire

Transformers are ubiquitous units with a low potential for failure and the separation distance to the site boundary and other adjacent units would be unlikely to result in incident propagation and offsite impacts. This incident was not carried forward for further analysis.

6.9.2.8 Transformer electrical surge protection failure and explosion

As outlined in the PHA, there is the potential for an explosion to occur which may result in offsite impacts; however, as previously noted, these units are ubiquitous and have a low potential for failure. This incident was not carried forward for further analysis.

6.9.2.9 Electromagnetic impacts

As the strengths of EMF attenuate rapidly with distance, the ICNIRP reference level for exposure to the general public will not be exceeded. The PHA confirms that the impact to the general public in surrounding land uses is therefore, negligible. This incident was not carried forward for further analysis.

6.9.3 MITIGATION MEASURES

The following recommendations have been made within the PHA:

- > End-to-end spacing (short side) of BESS containerised units shall be a minimum of 3 m
- > Back-to-back spacing (long side) of BESS containerised units shall be no less than 0.2 m for the CATL BESS units selected for this study.
- > BESS separation and spacing are to be specific to BESS the selected.
- > The BESS containerised units shall be provided with the fire protection system specified by the BESS manufacturer.
- > The active ventilation vents shall not be located above battery packs within the BESS container.
- > The vent covers of the BESS shall be constructed of non-combustible material.
- > Prior to commissioning, the UL test data for the selected battery units shall be made available to the DPHI.

6.10 Contamination

6.10.1 INTRODUCTION

A Preliminary Site Investigation (PSI) for potential contamination has been prepared by Cadeema (2024) and is provided in **Appendix T**.

The PSI includes a review of historical site land use, assessment of environmental features on and adjoining the site, assessment of public records relating to planning and contamination, an assessment of historical aerial imagery, a detailed site inspection, representative soil sample collection, soil contaminant laboratory analysis, and the subsequent assessment of the risk of, potential for, or existence of contamination on the site including whether further investigation is needed.

6.10.2 EXISTING ENVIRONMENT

The site is located within an undulating landscape, where elevation ranges between 990 - 1090 m Australian Height Datum (AHD). The site has been historically cleared and grazed for sheep and cattle production and is typical of farmland in the region. Based on historical land use, the highest risk of land contamination is associated with the potential for land contamination presented by agricultural activities.

The PSI indicated that the site is utilised for rotational grazing, growing predominantly winter crops such as Ryegrass, Fescue, Phalaris and Clover in the north and western paddocks, and more recently has also introduced Cocksfoot, Chickery, Plantain and Peri grass into the pasture mix.

There are no previously recorded contaminated land records located at or within 1 km of the site.

6.10.3 ASSESSMENT IMPACTS

A site inspection was undertaken by appropriately qualified agricultural and environmental consultants in August 2024. This included a soil physical characteristic assessment to assess the soils and to determine the presence of refuse, dumped foreign material and/or fill.

The desktop assessment, site inspection and interviews investigated potential sources of contamination on the site and noted the following:

- > there was no evidence of waste being stored;
- > there was no evidence of extensive imported fill material;
- > there was no visual evidence of extensive chemical usage or storage;
- > there was no evidence of underground or aboveground fuel storage tanks;
- > there was no evidence of wastewater treatment systems;
- > there was no evidence of potential asbestos containing materials on the soil surface;
- > there was no evidence of plant stress or unhealthy vegetation; and
- > there was no evidence of odours or soil staining.

Based on the results of the PSI, a basic conceptual site model (CSM) was prepared given the site was assessed as being uncontaminated. Overall, the site is located within an undulating landscape, therefore, there is a risk of potential contamination mobilisation through either excess surface water runoff or percolation of surface water down through the soil profile to groundwater beneath the site. Groundwater beneath the site occurs at depths greater than 10 m and is therefore not particularly vulnerable to surface contamination.

6.10.4 CONCLUSION

The PSI concludes that there is no evidence of potentially land contaminating activities having occurred on the site other than agricultural/horticultural uses, which we deem to present a negligible risk of contamination.

The PSI recommends that the construction phase should include construction of shallow earthen surface water drains designed to capture and remove excess surface water from the study site. This has been included in **Appendix E** as a mitigation measure.

It was determined that no further investigations or an audit of the site is required.

6.11 Bushfire

6.11.1 INTRODUCTION

A Bushfire Assessment Report (BAR) has been prepared by Peak Land Management (2024) and is provided in **Appendix U**. This report has been prepared in accordance with the NSW RFS publication *Planning for Bushfire Protection* (2019) (the PBP guidelines).

The BAR has been prepared to:

- > Address the SEARs;
- > Inform and assess potential bushfire risks;
- > Recommend mitigation measures to ensure the bushfire risk is at an acceptable level; and
- > Demonstrate consistency with the aims and objectives of PBP.

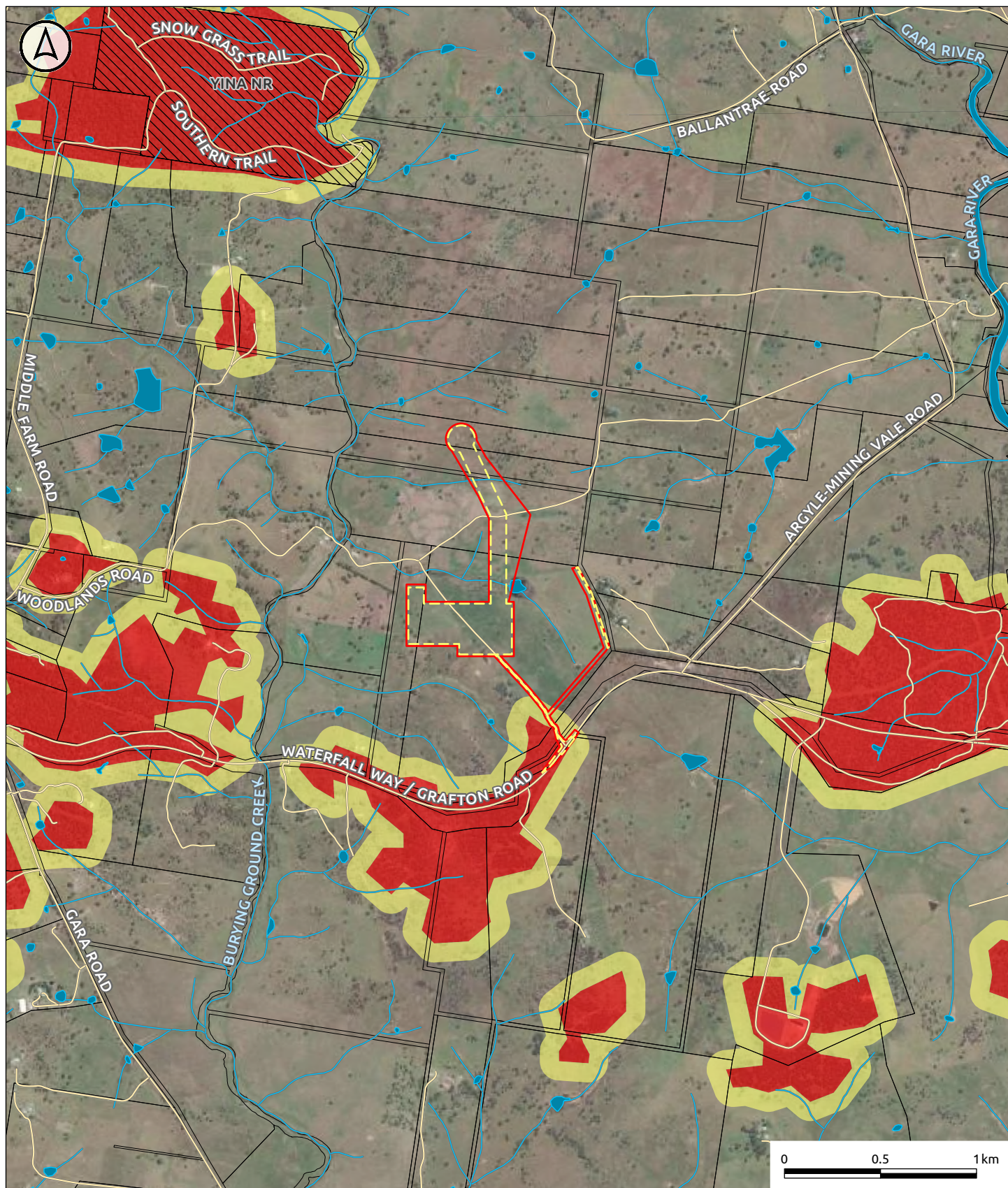
A summary of the BAR is provided in the following sections, as well as a summary of the recommended mitigation measures.

6.11.2 EXISTING ENVIRONMENT

The southern extent of Lot 1 DP246878 is mapped as being bushfire prone land (refer Figure 18).

The predominant vegetation type across the development footprint are grasslands. Outside of the development footprint, vegetation is to be grazed on an ongoing basis. This will effectively manage the grassland so that it has a lower fuel loads. Scattered trees will be retained and are not considered a bushfire threat or hazard.

The BAR confirms that there is ample room for fire fighting vehicles to access and turn around on site, and access the Asset Protection Zone located around the perimeter of the BESS.



- Legend**
- Site
 - Development Footprint
 - Cadastre
 - Road
 - Water Body
 - Watercourse
 - NPWS Reserve

- Bush Fire Prone Land**
- Vegetation Category 1
 - Vegetation Buffer

Premise
ACENERGY PTY LTD
 Gara BESS

Figure 18
Bushfire Prone Land

6.11.3 ASSESSMENT IMPACTS

The proposed development will have at least one (1) dedicated non-combustible 100,000 litre (l) water tank with Storz fitting, and other fire-fighting equipment in compliance with Australian Standards. Emergency firefighting water would be stored in a suitable accessible location. As the PBP makes no reference to water supply requirements relating to solar and wind farms, the dedicated water tank supply is considered adequate based upon the scale of the project and lack of permanent dwellings on site.

Similarly, there are no permanent proposed gas tanks/bottling associated with the development which may post a bushfire risk.

The BAR confirms that the threat of bushfires at the site is considered low, being possible ember and smoke attack only, assuming the Asset Protection Zone (APZ) is maintained over the site and surrounding area. Overall, the proposed development meets the criteria outlined in the PBP relating to wind and solar farms.

6.11.4 MITIGATION MEASURES

The following recommendations are made within the BAR in relation to the project:

- > Buildings should be designed and constructed to withstand the potential impacts of a bushfire by adhering to recommendations outlined in the BAR;
- > A 10 m APZ shall be established for the life of the project (including the construction stage) to provide sufficient space and maintain a reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact;
- > Water, electricity and as shall comply with Table 7.4a of the PBP (where relevant);
- > The proposed development is to have a non-combustible 100,000 dedicated water tank with Storz fitting, and other fire fighting equipment in compliance with the Australian Standards;
- > Internal roads should have a minimum 4 m vertical clearance to any overhanging obstructions and be a minimum 4 m width with 1 m traversable shoulders, unsealed/sealed all weather traversable road with suitable load bearing capacity. drainage structures and feature crossing. Road grade should be at least 10⁰, short steep sections are acceptable if sealed <15⁰ and then suitable cross fall of the road surface provided. Two way traffic flow (with capacity for passing and turning areas) which enables safe access & egress for emergency services and allow crews to work with equipment about the vehicle is to be provided by the proposed road system & APZs.
- > Landscaping to the Asset Protection Zones is to comply with the principles of APZ standards - Appendix 4 of PBP, 2019;
- > A Bushfire Emergency Management and Operations Plan should be developed and include the following:
 - detailed measures to prevent or mitigate fires igniting;
 - work that should not be carried out during total fire bans;
 - availability of fire-suppression equipment, access and water;
 - storage and maintenance of fuels and other flammable materials;
 - notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate; and

- appropriate bush fire emergency management planning

Other mitigation measures outlined in the BAR to help provide bushfire safety include:

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

6.12 Social

6.12.1 INTRODUCTION

A Social Impact Assessment (SIA; bd infrastructure Pty Ltd, 2024) is provided in **Appendix V**. The assessment has been prepared in accordance with the Social Impact Assessment Guideline (DPE, 2023). The SIA outlines the following:

- > A social baseline of the social locality
- > An assessment of potential social impacts
- > Identification of mitigation measures for potential social impacts

A summary of the SIA is provided in the following sections, as well as the recommended mitigation measures.

6.12.2 EXISTING ENVIRONMENT

The SIA identifies the social locality as the Armidale Suburb and locality (SAL) and Metz SAL. When determining the social locality several factors were considered. Some of the key considerations included the following:

- > The project is located in a rural area and is considered to be small scale in comparison to other major projects such as transport and extractive industry projects.
- > The site is located in a rural area with the surrounding population small and dispersed.
- > No vulnerable or marginalised people were identified during engagement activities that would influence the social locality.
- > A main social trend relevant to the project is the lack of affordable housing, which is a consistent issue nation-wide.

- > The area is already exposed to renewable energy developments as the area is a Renewable Energy Zone and experiencing a high concentration of developments.

Within the nominated social locality the following characteristics are considered:

- > A population of approximately 24,084
- > The Armidale SAL has a slightly higher percentage of younger residents in comparison to the Metz SAL and the state. This is as expected due to the high number of educational facilities in the Armidale area.
- > A greater percentage of Aboriginal and/or Torres Strait Islander residents in Armidale SAL (7.9%) compared to the Metz SAL and State (3.4%).
- > The Metz SAL has a higher proportion of family households as well as couples with children likely due to the rural setting. Armidale SAL has a higher proportion of lone person households and group households likely due to its role as a regional centre.
- > Metz SAL has a higher number of dwellings owned outright or with a mortgage, compared to Armidale SAL which has a higher number of rented dwellings, reflecting the higher level of rental housing in Armidale.
- > The 2021 Census found that the Metz SAL has a very high rate of unoccupied dwellings compared to Armidale and the State.
- > The Socio-economic Index for Areas (SEIFA) score indicates a higher level of socio-economic disadvantage in Armidale SAL (3rd quintile) compared to Metz SAL (4th quintile).
- > Armidale SAL (5.7%) has a slightly higher unemployment than the State (4.9%), whereas Metz SAL has no unemployment. However it is noted that the labour force in Metz SAL (59) is significantly smaller than the Armidale SAL (11,030).



6.12.3 ASSESSMENT IMPACTS

Key non-enhanced positive and unmitigated negative impacts have been identified and summarised in **Table 10**.

Table 10 - Summary of Assessed Social Impacts

Social Impact	Nature	Social Impact Category	Project Phase	Social impact significance
Employment diversification > Long-term investment in the REZ > Community supports lasting employment opportunities	Positive	Way of life	Construction, operation and cumulative	Low (possible, minor magnitude)
Road upgrades > Upgrades will address community safety and accessibility concerns	Positive	Way of life	Construction and operation	Low (possible, minimal magnitude)
Business revenue and employment > 80 new jobs > Stimulate local businesses	Positive	Livelihoods	Construction and cumulative	Medium (likely, moderate magnitude)
Business revenue and employment > Five full-time long term jobs > Long term economic stability for the community	Positive	Livelihoods	Operation	Medium (likely, minor magnitude)
Community benefit and energy transition > Benefit-sharing programs > Active community engagement	Positive	Community	Operation and cumulative	Medium (likely, moderate magnitude)
Amenity > Potential noise, vibration, visual changes and traffic congestion	Negative	Way of life	Construction and cumulative	Low (possible, minimal magnitude)
Amenity > Operational noise and visual impacts	Negative	Way of life	Operation	Low (possible, minimal magnitude)

Social Impact	Nature	Social Impact Category	Project Phase	Social impact significance
Workforce accommodation > Influx of temporary of construction workers	Negative	Community	Construction and cumulative	Medium (possible, minor magnitude)
Local road network access and transport services > Potential temporary road access and parking disruptions > Access to transport services > Temporary increase in traffic volumes	Negative	Accessibility	Construction and cumulative	Medium (possible, minor magnitude)
Aboriginal cultural heritage > Disturbances to archaeological items or other culturally significant locations	Negative	Culture	Construction	Low (very unlikely, low magnitude)
Noise and vibration	Negative	Health and wellbeing	Construction	Medium (possible, minor magnitude)
Potential operational fire risks and EMF	Negative	Health and wellbeing	Operation	Low (unlikely, minor magnitude)
Land impacts > potential to affect local ecosystems, access to and use of the natural and built environment	Negative	Surroundings	Construction and operation	Low (unlikely, minor magnitude)
Visual impacts > Property devaluation due to visual changes	Negative	Surroundings	Operation	Low (possible, minimal magnitude)

6.12.4 MITIGATION MEASURES

The SIA recommends the following mitigation measures to improve non-enhanced positive impacts and mitigate negative impacts:

- > Partner with local organisations to inform prospective workers about participation in the project.
- > Continue updating project-specific website with information and advertising for procurement
- > Collaborate with local employment, apprenticeship, and training providers to enhance local hiring potential.
- > Regular updates to residents throughout construction to ensure transparency. Notify when undertaking work for improvements to the road.
- > Engagement with Armidale Regional Council, local businesses, and the local Chamber of Commerce to understand procurement limitations and aspirations.
- > Target local economic impact through procurement of local goods and services.
- > Track and report on local content used for the project.
- > Engage regularly with local businesses about construction periods and potential increases in trade.
- > Encourage project workforce to support local businesses through local spending initiatives (e.g., vouchers).
- > Develop and implement an Industry Participation Plan addressing:
 - Opportunities for supply of goods and services, employment, training (including Aboriginal participation), and sustainable procurement.
- > Identify community funding opportunities.
- > Engage in community initiatives, potentially in partnership with nearby renewable energy SSD proponents.
- > Develop a consultation plan to promote feedback mechanisms in relation to amenity impacts, including:
 - enquiries and complaints handling process
 - regular updates to residents throughout construction to ensure transparency
 - notifications when undertaking work that produces impulsive, intermittent, or low-frequency noise.
- > Continue discussions with accommodation providers, ensuring proactive planning to secure accommodation if required.
- > Cumulative - Maintain ongoing dialogue with the other projects identified in **Section 6.14** of the EIS and accommodation suppliers to address potential cumulative impacts and ensure coordination and if possible, sequencing of workforce.
- > Procurement – seek out opportunities to engage local people and local businesses through the construction phase.

6.13 Economic

6.13.1 CONSTRUCTION

Key economic impacts during construction would include:

- > Increased employment;
- > Investment in the local economy; and
- > Pressure on local services.

During the peak of construction, the project would generate up to 80 jobs, which would positively contribute to the local economy. The SIA indicates that as a worst-case scenario, if projects Armidale BESS, Eathorpe BESS, Oxley Solar Farm, and New England Solar Farm overlap, employment demand across all projects could reach up to 500 workers. However, it is noted that the New England Solar Farm has successfully sourced 80% of its workforce locally, therefore the use of similar hiring strategies could minimise the need for outsourcing of workers. Therefore, where possible local workers would be employed, however the nature of the some of the work may still result in out of area workers being employed.

The potential exists to support local training and support services organisations during the construction and operation phase, and these opportunities would be explored through an Industry Participation Plan (IPP).

The influx of construction workers would be expected to drive growth of local services such as hospitality and food, however may have a temporary impact on accommodation available to visitors and tourists to the area. An accommodation analysis has been provided in **Appendix W**.

There is also the potential for impacts to local services and employment. Mitigation measures are recommended for adoption so that any residual impacts can be managed proactively and in consultation with the local community.

The short-term loss of agricultural land during construction is likely to be of limited impact given the small area of land involvement in the context of the site, and that upon commencement of operations, co-located agricultural opportunities would be investigated.

6.13.2 OPERATIONS

During operation the project will provide up to 5 full time jobs, generally comprising maintenance activities. This job creation is expected to positively contribute to the local economic over the next 20 to 30 years. This has a positive impact for the local economy and provides training/value add opportunities for local workers.

In terms of the continued economic impact of the site, the proposed development is expected to provide an opportunities for diverse revenue streams without significant investment in the site. The AULA confirms that while the development will result in a loss of 22.43 ha of agricultural land, it is unlikely to impact on the production, income and viability of the site. Additionally, the AULA confirms that the loss of agricultural production from the site will not be significant and is not likely to impact on the economy of the region of the of the State.

To date, the applicant has not entered into any agreements with other parties in relation to voluntary planning agreements, negotiated landowner agreements, or benefit-sharing schemes. The applicant will continue to communicate with the relevant parties.

6.13.3 MITIGATION MEASURES

Ongoing consultation with key stakeholders is recommended to ensure that benefits of the project are maximised and residual impacts appropriately managed.

The following mitigation measures are recommended to manage residual economic impacts:

- > Prepare IPP incorporating ongoing liaison with local industry representatives to ensure the maximisation of the use of local contractors, manufacturing facilities, materials.
- > Liaison with local representatives regarding accommodation options for staff, to minimise adverse impacts on local services.
- > Liaison with local tourism industry representatives to manage potential timing conflicts with local events.
- > ACenergy or the developer will consult with local employment agencies and training organisations and, where practicable, will consider supporting training and apprenticeships.

6.14 Cumulative impacts

6.14.1 INTRODUCTION

A review of the potential for cumulative impacts has been prepared by Premise.

Cumulative impacts have been identified and assessed in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPIE, 2022).

6.14.2 EXISTING ENVIRONMENT

To gain an understanding of projects in the region with the potential to act cumulatively with respect to impacts Premise completed a review of the DPHI major projects website for renewable, or other significant, projects within the region, together with a review of the Northern Regional Panel and a review of the ARC DA tracker.

A number of state significant projects with the potential to occur simultaneously have been identified, outlined in **Table 11**.

Table 11 – Relevant projects

Project description		Stage	Scale	Distance and direction from the site	Potential cumulative impacts
Oxley Farm BESS	Solar and	Approved but not yet constructed	SSD	~2.5 km SE	Visual, noise, traffic, social
Armidale BESS		EIS submitted/assessment	SSD	~4 km W	Visual, noise, traffic, social

Project description	Stage	Scale	Distance direction the site and from	Potential cumulative impacts
Eathorpe BESS	Prepare EIS	SSD	~4.5 km W	Visual, traffic, social
Metz Solar Farm	Built/operational	SSD	~7.5 km NE	Traffic, social
Armidale East BESS	Prepare EIS	SSD	~9 km NE	Visual, traffic, social
Armidale Regional Landfill	Built/Operational	Regional	~7.5 km E	Traffic, social
Petersons Solar Farm	Approved	Regional	~ 8.5 km W	Traffic, social
New England Solar Farm	Approved and under construction	SSD	~17.5 km W	Traffic, social
Oven Mountain Pumped Hydro Energy Storage	EIS submitted, under assessment	SSD	~50 km SE	Traffic, social
Doughboy Wind Farm	SEARs issued, application withdrawn	SSD	~40 km NE	N/A
Olive Grove Solar Farm	Approved but not yet built	Regional	Within 1km of the site	Visual, noise, social
Stringybark Solar Farm	Approved but not yet built	Regional	~2.5 km SW	Traffic, noise, social

6.14.3 ASSESSMENT IMPACTS

By reference to **Table 11**, the following sections discuss potential cumulative impacts in the context of nearby projects.

6.14.3.1 Biodiversity

The proposed development has been located in an area generally clear of biodiversity values to avoid and minimise impacts to biodiversity. Notwithstanding, a review and comparison of Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farm BDARs has been completed in relation to the potential cumulative biodiversity impacts. The assessments undertaken for Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farms made note that the developments had been positioned to avoid and minimise impacts to any biodiversity, similarly to the Gara BESS, which has resulted in minimal native vegetation impacted by the developments.

As discussed in **Section 6.1**, the Gara BESS BDAR site surveys identified only one PCT occurring within the site, which is identified as "PCT 3359 New England Hills Stringybark-Box Woodland in patches throughout the central north of the site".

While PCTs have been considered in the assessments of Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farm, there have not been any overlapping PCTs identified between Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farms and the Gara BESS. PCTs identified in the Oxley Solar Farm included PCT 84, PCT 510, and PCT 567, whereas Olive Grove Solar Farm Identified PCT 568 and PCT 1331. The assessment of the Stringybark Solar Farm concluded that the site was absent of any definable PCTs and generally consisted poor condition grasslands dominated by exotic species. It is anticipated as a result of the variation of PCTs across Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farm, that there would be minimal cumulative biodiversity impacts.

Other relevant projects listed in **Table 11** are not anticipated to generate cumulative biodiversity impacts due to the distance from the project and variability between biodiversity values across the sites.

6.14.3.2 Land use

The LUCRA identifies several future developments as well as the mining exploration licence application, ELA6821 which was recently granted. The assessment concludes that the development is not expected to prevent future development from occurring on the land. It is anticipated that once decommissioned that the land will continue to be suitable for a range of land uses including agricultural uses.

Additionally, the ALUA considers the impact of the use of agricultural land on the overall continued function of agricultural land in the district. The ALUA concluded that the loss of 22.43 ha of agricultural land would not adversely impact on the agricultural production of the land and is unlikely to cumulatively impact the economy of the district, or of the State.

6.14.3.3 Noise

Assured Environmental completed a cumulative impact assessment for the Gara BESS, taking into account cumulative construction and operational noise impacts. Cumulative impacts have been considered for each of the identified projects of **Table 11**, with specific focus on Oxley Solar Farm, Stringybark Solar Farm, and Olive Grove Solar Farm. Other projects in **Table 11** did not require detailed assessment for construction or operational acoustic impacts as either there was no data available or there was too great a distance between projects. The exception to this is the Armidale Landfill which at operational stage, is considered to already exceed acoustic thresholds and as a result, any operational noise impact from the proposed Gara BESS would be negligible.

The Gara BESS shares three common receivers with Oxley Solar Farm, one common receiver with Stringybark Solar Farm, and five common receivers with Olive Grove Solar Farm.

Cumulative construction noise impacts for Oxley Solar Farm are concluded to be below the noise affected criteria. Due to the requirement for conservative assumptions, cumulative construction noise impacts for Stringybark Solar Farm are concluded to meet the noise affected criteria but below the highly noise affected criteria. Due to the timing of the construction of Olive Grove Solar Farm, no construction overlap is expected, therefore cumulative noise impacts have not been considered.

An assessment of cumulative operational noise impacts for Oxley Solar Farm found that impacts to common receivers would remain compliant with acoustic requirements. The Stringybark Solar Farm

acoustic assessment concludes that there would be negligible operational noise impacts. Due to the attenuation of sound, it is considered that there would negligible cumulative operational noise impacts. While a detailed review of the information has been completed, due to a lack of data an accurate assessment of cumulative operational impacts for Olive Grove Solar Farm cannot be completed.

Section 6.4.4 of the NIA (**Appendix Q**) provides a detailed discussion of the cumulative noise impacts associated with the operation of the Oxley Solar Farm, Stringybark Solar Farm and Olive Grove Solar Farm.

6.14.3.4 Traffic

A TIA has been prepared by ttp and is supplied at **Appendix G**.

Section 3.9 of the TIA comprehensively assesses the potential cumulative impacts of the development and operation of the Gara BESS in the context of other relevant projects in the region.

Of the 10 projects listed by ttp, five (5) require no detailed assessment as they are either constructed and completed, not proceeding or are insufficiently advanced such that there is no available information to complete an assessment.

The remaining five (5) projects (Olive Grove Solar Farm, Stringy Bark Solar Farm, Oxley Solar Farm, Armidale BESS, Oven Mountain Pumped Hydro) have been considered by ttp in the context of potential cumulative impacts including the unlikely scenario that all five projects plus the Gara BESS occur simultaneously.

Section 3.9.11 of the TIA summarises the outcome of this assessment, together with consideration of a growth factor for traffic numbers on Waterfall Way (as per the Waterfall Way Draft Strategy).

6.14.3.5 Visual

Cumulative visual impacts of the development have been assessed in the VIA (**Appendix O**). Of the relevant projects listed in Table 11, New England Solar Farm, Doughboy Wind Farm, and Oven Mountain Pumped Hydro Energy Storage have been excluded from the assessment due to distance and nature of projects. The remaining relevant projects, with exception of Olive Grove Solar Farm, are considered sufficiently distanced from the site to mitigate any potential visual impacts.

Due to the location of the Olive Grove Solar Farm, there is potential for it to be glimpsed simultaneously with Gara BESS when travelling along Waterfall Way (Grafton Road). However, it is noted that the Council assessment report for Olive Grove Solar Farm stated that the project was highly screened through a combination of topography and existing vegetation. For this reason, it is considered unlikely that the projects would be viewed simultaneously. While there remains potential for the projects to be seen sequentially while travelling along Waterfall Way (Grafton Road), the VIA concludes that it is unlikely to result in adverse cumulative visual impacts on visual amenity or landscape character. It is also noted that the Olive Grove Solar Farm the Council assessment report also states that the project will not be visible from nearby residential dwellings, therefore it is considered that there is no potential for cumulative visual impacts for surrounding residential dwellings.

It is concluded that the Gara BESS is unlikely to result in any significant adverse cumulative visual impacts. The nearby projects are all well separated from the site and will therefore not be viewed together or sequentially. As such, there would not be a cumulative landscape character or visual impact on these projects.

6.14.3.6 Social and economic

Assessments in relation to social and economic impacts identify potential for several cumulative impacts which include as increased demand for workforce, and an influx of demand to accommodate this workforce, and traffic impacts. Cumulative traffic impacts have been discussed in **Section 6.14.3.4**. In terms of cumulative workforce impacts, a worst-case scenario demand of 500 staff across all assessed projects has been calculated. To mitigate this, project timelines will be prepared with consideration of other renewable energy development projects, to disburse and sequence workforce demand. Further, to address the demand for accommodation it is proposed that an IPP be prepared to identify opportunities and strategies to manage the demand.

These impacts and mitigation measures have been further addressed in **Sections 6.12** and **6.13**.

6.14.4 MITIGATION MEASURES

Mitigation measures in relation to cumulative impacts have been included in the relevant impact assessments. The following mitigation measure is recommended in addition to the previously addressed matters:

- > Maintain ongoing dialogue with surrounding renewable developers and accommodation suppliers to address potential cumulative impacts and ensure coordination and if possible sequencing of workforce.

6.15 Waste

6.15.1 INTRODUCTION

Premise has conducted a review of likely waste impacts associated with the construction and operation of the project. The legislative framework and assessment of impacts is provided in the following sections.

6.15.2 EXISTING ENVIRONMENT

The management of waste in NSW, including recycling, is via the POEO Act and the Waste Avoidance and Resource Recovery Act 2001 (the WARR Act). The WARR Act sets out a hierarchy of management, including avoidance, recovery and then disposal.

6.15.3 ASSESSMENT IMPACTS

6.15.3.1 Construction

From a waste perspective, the construction program will generate a range of solid waste, including:

- > Packaging materials;
- > Building materials;
- > Scrap metal;
- > Excess soil;
- > Plastic and masonry products; and
- > Vegetation from clearing.

Waste generated through the construction phase would be managed in accordance with an adopted waste management plan, with consumption avoidance being the first management tier, following by on

site reuse/recycling where possible (i.e., mulch from vegetation clearing). As a last resort, waste would be removed from the site and either recycled or disposed of at an appropriate waste disposal facility.

Effluent disposal would be limited to provision of short-term services to service the construction workforce. Transportable services would be provided and emptied by suitable contractors. These would be removed at the completion of the construction period.

6.15.3.2 Operations

Operational waste associated with the facility is of a limited nature, being likely limited to small amounts of packaging associated with plant maintenance/replacement and general waste from site staff.

Noting the intended life of the project is up to 23 years, it is possible that batteries may require replacement during the life of the project.

Batteries are classed as hazardous waste and their transport for disposal or recycling is regulated under the Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission 2020, Ed. 7.7). The operator will be required to ensure that all transport requirements are met for the off-site transport of batteries at their end of life. This would be managed by the operator at the time in line with the applicable hazardous materials requirements in effect at that time.

As the development of solar farms and large-scale batteries and uptake of electric vehicles increases in Australia in response to the shifting methods of energy generation and management, there is the likely potential for increase in batteries requiring recycling or disposal. This will increase opportunities for onshore recycling operations and avoid the need for export of these materials, a shift that is now increasingly evident in the domestic market.

6.15.3.3 Decommissioning

Waste generating during the decommissioning phase would be managed in a manner consistent with the construction phase, including waste avoidance, reuse and finally disposal.

Waste expected to be generated includes electrical infrastructure including batteries, inverters, transformers and other components and cabling.

Most materials would be reused or recycled where possible. Disposal of batteries would occur in accordance with the hazardous waste policies in effect at the time of decommissioning.

Any items that cannot be reused or recycled, would be disposed of as waste at appropriate facilities in line with applicable regulations. Those on-site materials that remain of use to the landowner (such as roads) or the electricity authority (such as the switching station or sub-station) would remain on site, subject to agreements with the landowner.

Most materials are able to be reused or repurposed, and this would be the core aim of the decommissioning phase.

6.15.4 MITIGATION MEASURES

A Waste Management Plan for all phases of the project would be prepared and implemented prior to the commencement of any works on the site.

7. JUSTIFICATION OF THE PROJECT

This section provides a justification and evaluation of the project, having regard to the economic, environmental and social impacts of the project and the principles of ecologically sustainable development

7.1 Design of the project

The project design has been carefully designed and informed by the findings of specialist reports completed in relation to the project, to ensure that impacts are avoided and minimised where possible.

The Gara BESS will be designed to provide grid flexibility services and 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 to maintain the stability of the broader electricity grid.

Power would transition to and from the project via a proposed one (1) kilometre long overhead ETL that would connect to the existing Transgrid aboveground 330 kV ETL, that connects to the Armidale Transgrid substation. The power conversion systems rectify the power into a form that is suitable for storage in the facility's batteries. The BESS strengthens the power network by providing greater flexibility in grid management.

Several feasible alternatives have been considered (refer **Section 2.4**) have been considered, and it was concluded that proceeding with the project with the current design (Option 4) was the preferred pathway. The project area has been carefully selected to identify a site in close proximity to existing electricity infrastructure and a nearby substation.

The construction schedule for the project will consider the timing of other major projects in the region to ensure that cumulative impacts are minimised.

Where impacts have been identified or are unavoidable, mitigation measures have been identified to mitigate impacts on the local or regional environment. These mitigation measures have been identified throughout the EIS and summarised in **Appendix E**.

7.2 Consistency with the project with the strategic context

The NSW Government has recognised that the NSW electricity system needs to change, acknowledging that traditional generators are ageing, and the State's transmission system is congested. Further, electricity prices are putting pressure on households and businesses. This realisation has informed the preparation of Government policies and documents, the provisions of which have filtered to the local scale and informed local plan making.

The project will contribute to the provision of renewable energy in NSW and facilitate private investment in the state's electricity system over the next decade and beyond, a key consideration of the NSW Electricity Strategy. The BESS has an anticipated lifespan in the order of 23 years and will contribute to the NSW Government's three objectives for the electricity system: reliability, affordability and sustainability.

Refer to the detailed discussion at **Section 2.2** of this EIS.

7.3 Compliance with relevant statutory requirements

The project is characterised as SSD as the proposal is for the purpose of electricity generating development works with an EDC of more than \$30 million, pursuant to Clause 20 of Schedule 1 of the Systems SEPP.

Pursuant to the LEP, the project is on land zoned as RU1 Primary Production via the ARLEP.

Electricity generating works are permitted with consent in the RU1 land use zone via Section 2.36(1) of the Infrastructure SEPP. The BESS is wholly located within the RU1 zoned land, including the proposed transmission line connecting to the existing 330 kV transmission line and the proposed accessway.

Refer to **Section 4** of this EIS for a detailed discussion.

7.4 Community views

Community consultation was undertaken which identified several concerns from community members including construction impacts (noise, traffic, biodiversity, Aboriginal heritage), operational noise, visual impacts, fire, operating hours, transmission, and property prices. These concerns were addressed by either providing information to address questions, or through recommended mitigation measures.

Refer to **Section 5.3** of this EIS for a detailed discussion.

7.5 Economic, social, environmental and cumulative impacts

The proposed development is likely to have a net positive economic impact derived from creating local employment opportunities during the construction, operation and decommissioning phases, as well as by contributing to electricity supply from renewable sources and stability. Improved electricity supply and stability are expected to contribute towards downward pressure on electricity prices paid by residents of the local area, as well as by users of the broader electricity network.

The unmitigated social impacts assessed in the SIA resulted in an overall impact significance of low to medium significance for both positive and negative impacts. It is expected that the mitigation measures recommended in the SIA will further improve these impacts.

With consideration of the specialist reports relating to the project, the project has been sited and designed to minimise environmental impacts. Where environmental impacts cannot be avoided mitigation measures have been included.

A review of the NSW Major Projects portal and Armidale Regional Council DA tracker has identified several significant projects within the Armidale area. A large portion of these projects relate to renewable energy as a result of the REZ. Whilst there is potential for cumulative impacts as a result of these projects, several mitigation measures have been recommended throughout the detailed assessments to address these matters. Refer to **Section 6.14** for a detailed discussion of cumulative impacts.



7.6 Compliance monitoring and communication

Throughout construction, management measures will be implemented through the adoption of an Environmental Management Strategy (EMS), which will consist of a range of supporting studies, including but not limited to:

- > Construction Environmental Management Plan;
 - Soil and Water Management sub-plan;
- > Construction Traffic Management Plan;
- > Driver Code of Conduct;
- > Construction Noise Management Plan;
- > Vegetation Management Plan;
- > Unexpected finds protocol;
- > Bushfire and Emergency Management Operation Plan;
- > Industry Participation Plan;
- > Community Stakeholder Engagement Plan; and
- > Waste Management Plan.

Operation and monitoring of the facility would be governed by an overarching Operational Environmental Management Plan, supported by a range of specific sub-plans, that would clearly identify any residual matters requiring ongoing attention during operation, with particular emphasis on hazards and environmental monitoring, and ongoing noise monitoring to ensure ongoing compliance with adopted criteria.

The site is expected to operate for a period of approximately 23 years, after which it would either be approved for an extended timeframe or be decommissioned. Decommissioning would be in accordance with the measures outlined in a decommissioning management plan.

7.7 Key Uncertainties

Due to the extent of technical studies undertaken to inform the project and the mitigation measures proposed to address impacts of the development, there are no uncertainties with the project. All impacts can be adequately mitigated through the location and design of the BESS and on-going management practices and monitoring.

7.8 Public interest

The public interest may be determined by consideration of relevant national, state and local government goals, as well as community priorities, which are expressed through a range of documentation. Relevant strategic documents are considered in **Section 2.2**.

It also requires the consideration of the principles of ecologically sustainable development, discussed in **Section 7.9**. It has been consistently held through a range of determinations in the NSW Land and Environment Court that the ESD precautionary intergenerational equity principles include considerations associated with climate change (impact of the development on climate change and impacts of climate change on development).

Mostly recently, the LEC held that the downstream impacts of mining projects, including the burning of fossil fuels for energy production, is a public interest consideration. Namely, in *Gloucester Resources Limited v Minister for Planning* [2019] NSWLEC 7, Preston J stated at 499:

Many courts have held that indirect, downstream GHG (greenhouse gas) emissions are a relevant consideration to take into account in determining applications for activities involving fossil fuel extraction or combustion or electricity generated by fossil fuel combustion.

In summing up, Preston noted that the impacts associated with climate change, among others, were sufficient to justify refusal of the project.

It follows that a project that seeks to provide for improved grid stability and support and encourage the uptake of renewable forms of energy is in the public interest as it reduces the reliance on forms of electricity generation that rely on the consumption and burning of fossil fuels and that negatively contribute to the impacts of climate change as a result. Adoption of forms of development that counter the need for these high impact uses is therefore positive in the context of the ESD principles and is in the public interest.

The proposed development is in the public interest on the basis that it:

- > Offers an opportunity for productive and sustainable economic activity within the area;
- > Presents an excellent opportunity to the local region to provide local employment opportunities;
- > Has been designed with appropriate consideration to social, environmental and sustainability interests of the community;
- > Aims to minimise impacts to natural resources through minimising the land required to support energy supply; and
- > Assists to reduce reliance on traditional, fossil fuel burning forms of electricity generation, thereby assisting in curbing the long-term impacts of climate change.

7.9 Ecologically sustainable development

The *National Strategy for Ecological Sustainable Development* (NSED) (Department of Environment and Heritage 1992) defines Ecologically Sustainable Development (ESD) as:

using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased (refer website)

The concept of ESD gives formal recognition to environmental and social considerations in decision-making to ensure the current and future generations can enjoy an environment that functions as well as or better than the environment they inherit.

The core objectives of the NSED are:

- > To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- > To provide for equity within and between generations; and
- > To protect biological diversity and maintain essential ecological processes and life-support systems.

As outlined in Clause 193 of the *Environmental Planning and Assessment Regulation 2021*, the four principles of ESD are listed below. These are discussed in the following sections.

- > Precautionary principle;
- > Intergenerational equity;
- > Conservation of biological diversity and ecological integrity; and
- > Improved valuation and pricing of environmental resources

7.9.1 PRECAUTIONARY PRINCIPLE

The precautionary principle states where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a justification for not implementing mitigation measures or strategies to avoid potential impact. This has been held in various decisions in the NSW Land and Environment Court to include considerations associated with climate change (impact of the development on climate change and impacts of climate change on development).

The potential impact from the proposal has been identified in the environmental assessment section of this EIS and all mitigation measures are summarised in **Appendix E**.

The proposal supports improvements to grid efficiency, including the uptake of renewable forms of renewable energy. This assists in reducing the long-term impacts of climate change and is therefore in the public interest. The potential outcome of climate change, being higher temperatures and greater periods of sunlight, also suggests that increasing reliance of renewable forms of energy generation is sustainable.

7.9.2 INTERGENERATIONAL EQUITY

The second principle of ESD is intergenerational equity, such that the present generation should ensure the health, diversity and productivity of the environment are equal to or better for future generations.

All work would be carried out in accordance with the environmental safeguards summarised in **Appendix E** to mitigate potential impact associated with noise and vibration, traffic and transport, drainage and water quality, Aboriginal heritage, soils, and waste.

The proposal supports the development of sustainable forms of renewable energy, and in doing so reduces reliance on traditional forms of electricity generation, including the burning of fossil fuels. This assists in reducing the impacts of climate change and therefore assists in ensuring the health of future generations is protected; the development is therefore in the public interest.

7.9.3 CONSERVATION OF BIOLOGICAL DIVERSITY AND ECOLOGICAL INTEGRITY

The third principle of the ESD is conservation of biological diversity and ecological integrity such that ecosystems, species and genetic diversity within species are maintained.

The proposed development has been the subject of a comprehensive assessment in accordance with the provisions of the *Biodiversity Conservation Act 2016* by reference to **Appendix J**.

The mitigating measures for protecting biodiversity at the site are provided in **Section 6.1.4**.

7.9.4 IMPROVED VALUATION, PRICING AND INCENTIVE MECHANISMS

The final principle of ESD is improved valuation and pricing of environmental resources which establishes the need to determine economic values for services provided by the natural environment such as the atmosphere's ability to receive gaseous emissions, cultural values and visual amenity. The principle is designed to improve methods of carrying out valuation of environmental costs and benefits and use this information when making decisions.

The development of policy to guide pricing and incentive mechanisms in delivering ecologically sustainable development is the responsibility of governments and regulatory stakeholders.

7.10 Site suitability

As outlined throughout this EIS, the site is suitable for the proposed purpose on the basis that:

- > The site is within an agricultural area with limited residential receivers;
- > The site is not unduly constrained such that the development would result in significant impacts to the receiving environment;
- > The site is located within the New England REZ and will support the delivery of the REZ;
- > The site is proximal to existing electrical infrastructure (substation and transmission lines) to meet the objectives of the project and substantial upgrades are not required; and
- > The project has been refined (as discussed in **Section 3**) to ensure the design and delivery of the project would not lead to unreasonable impacts.

7.11 Conclusion

This EIS has been prepared pursuant to Part 4, Division 4.7, Subdivision 3 of *the Environmental Planning and Assessment Act 1979* (the EP&A Act), Part 8, Division 5 of the *Environmental Planning and Assessment Regulation 2021* (the EP&A Regulation), *State Significant Development Guidelines – Preparing an Environmental Impact Statement* (DPIE, 2022) and SEARs issued by DPHI on 19 July 2024 in response to the Scoping Report.

An assessment of potential environmental impacts has identified limited minor adverse residual impacts to the environment that would require the implementation of appropriate controls to ensure compliance in accordance with relevant legislation, standards and guidelines. Measures are proposed during both construction and operation to ensure impacts are appropriately managed. These measures would ensure compliance with relevant legislation and any conditions of approval.

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APPENDIX A

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

APPENDIX B

SEARS CHECKLIST

Table 12 – SEARs requirements

	Details	Section of EIS where issues addressed
General requirements	In particular, the EIS must include:	
	> a stand-alone executive summary;	Refer to Executive Summary
	> a full description of the development, including: – details of construction, operation and decommissioning, including any staging of the development; – a high quality site plan at an adequate scale showing all infrastructure and facilities (including any infrastructure that would be required for the development, but the subject of a separate approvals process); – the Project Area (as per Table 1 of <i>the SSD guidelines - preparing an environmental impact statement</i>) and Development Footprint (disturbance area including but not limited to areas for infrastructure, road works, access tracks, defendable space, fencing and temporary laydown); – a high quality detailed constraints map identifying the key environmental and other land use constraints that have informed the final design of the development; and – confirmation if the project is designated development in accordance with the <i>Environmental Planning and Assessment Act 1979</i> (EP&A Act) and the Regulation;	Refer to Section 3
	> consistency in information presented in the EIS and all technical reports, including distances, development footprint, project design and infrastructure proposed, construction timeframes and receiver numbers;	This EIS and appendices
	> a table of commitments including mitigation measures;	Refer to Appendix E
	> a strategic justification of the development focusing on site selection and the suitability of the proposed site with respect to potential land use conflicts with existing and future surrounding land uses (including existing land use, other proposed or approved energy facilities, major projects, rural/residential development, Crown lands within and adjacent to the project site and subdivision potential);	Refer to Sections 2.2, 6.4, and 7
	> a risk assessment of the potential impacts of the development, identifying the key issues for further assessment;	Refer to Section 6
	> an assessment of the likely impacts of the development on the environment, and any other significant issues identified	

Details	Section of EIS where issues addressed
in the above risk assessment, focusing on the specific issues identified below, including:	
– a description of the existing environment likely to be affected by the development using sufficient baseline data;	Refer to Section 2.1
– an assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), including any cumulative impacts of the site and existing, approved or proposed developments in the region and impacts on the site and any road upgrades, taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice including the Cumulative Impact Assessment Guideline (DPIE, 2022);	Refer to Section 6
– a description and assessment if staging of the project is proposed, including any site mobilisation or pre-construction works;	No staging is proposed
– a description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development (including draft management plans for specific issues as identified below); and	Refer to Section 6 and Appendix E
– a description of the measures that would be implemented to monitor and report on the environmental performance of the development;	Refer to Section 6 and Appendix E
> a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS;	Refer to Appendix E
> a detailed evaluation of the merits of the project as a whole, having regard to:	
– the requirements in Section 4.15 of the Environmental Planning and Assessment Act 1979, including the objects of the Act and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development;	Refer to Sections 4 and 7.9
– the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses;	Refer to Section 7.10

	Details	Section of EIS where issues addressed
	– feasible alternatives to the development and its key components, including siting and project design alternatives to avoid areas of biodiversity value, opportunities for shared infrastructure with proposed developments in the region, and the consequences of not carrying out the development; and	Refer to Section 2.4
	– a detailed consideration of the capability of the project to contribute to the security and reliability of the electricity system in the National Electricity Market, having regard to local system conditions and the Department's guidance on the matter.	Refer to Section 2.3
	Estimated Development Cost and Employment	
	> Provide the estimated development cost (EDC) of the development prepared in accordance with the relevant planning circular using the Standard Form of EDC Report;	Provided with the application
	> Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided;	Refer to Section 3.3 .1
	> The development application must also be accompanied by:	
	– the consent of the owner/s of the land (as required in Section 23(1) of the EP&A Regulation); and	Provided with the application
	– a declaration from a Registered Environmental Assessment Practitioner that the EIS includes the information specified in the <i>Department's Registered Environmental Assessment Practitioner Guidelines</i>.	Refer to Certification
Key issues	Biodiversity – including: > an assessment of the biodiversity values, and the likely biodiversity impacts of the project, in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 (NSW) (BC Act), having regard to the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR). > The BDAR must: – be prepared using the approved BDAR template; – document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM;	Refer to Section 6.1 and 6.14.3.1

Details	Section of EIS where issues addressed
– assess the impacts associated with all ancillary infrastructure, including the transport route road upgrades; – include an assessment for serious and irreversible impacts (SAII) in accordance with Section 9.1 of the BAM; – include a strategy to offset any residual impacts of the development in accordance with the BC Act; and – be finalised by an accredited assessor as BAM-compliant within 14 days of submission, unless BCS and DPHI determine the proposed development is not likely to have any significant impacts on biodiversity values;	> an assessment of the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the Fisheries Management Act 1994, and a description of the measures to minimise and rehabilitate impacts; > a cumulative impact assessment of biodiversity values in the region from nearby developments; and > if an offset is required, details of the measures proposed to address the offset obligations.
Heritage – including: > An <i>Aboriginal Cultural Heritage Assessment Report</i> (ACHAR) prepared in accordance with the <i>Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage</i> in NSW (OEH, 2011) and the <i>Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW</i> (DECCW, 2010), identifying, describing, and assessing any impacts to any Aboriginal cultural heritage sites or values associated with the site (including impacts from any proposed earthworks, construction works and road works), including results of archaeological test excavations (where required), undertaken in accordance with the relevant standards and requirements; > evidence of adequate and ongoing consultation with Aboriginal communities in determining and assessing impacts, identifying and selecting options for avoidance of Aboriginal cultural heritage and identifying appropriate and mitigation measures (including the final proposed measures), having regard to the <i>Aboriginal Cultural Heritage Consultation Requirements for Proponents</i> (DECCW, 2010), including the consultation process within; and > assess the impact to historic heritage having regard to the <i>NSW Heritage Manual</i>.	Refer to Sections 6.2 and 6.3

Details	Section of EIS where issues addressed
Land – including: > a detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, land contamination, permissibility, strategic context and existing site constraints; > an assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: – agricultural land, flood prone land, nearby drinking water catchments, Crown lands, mining, quarries, mineral or petroleum rights (if relevant); – a soil survey to determine the soil characteristics and consider the potential for salinity, acid sulfate soils, and erosion to occur; and – a cumulative impact assessment of nearby developments; > an assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including: – consideration of the zoning provisions applying to the land, including subdivision in consultation with Council (if proposed); – completion of a Land Use Conflict Risk Assessment in accordance with <i>the Department of Industry's Land Use Conflict Risk Assessment Guide</i>; and – an assessment of impact on agricultural resources and agricultural production on the site and region.	Refer to Section 6.4
Visual – including a detailed assessment of the likely visual impacts (including night lighting) of all components of the project (including transmission lines, substations and any other ancillary infrastructure) on surrounding residences (including approved developments, lodged development applications and dwelling entitlements) and key locations, scenic or significant vistas and road corridors in the public domain and provide details of measures to mitigate and/or manage potential impacts.	Refer to Section 6.5
Noise – including an assessment of the construction noise impacts (including impacts from proposed road upgrades) of the development in accordance with the Interim Construction Noise Guideline (ICNG), operational noise impacts in accordance with the NSW Noise Policy for Industry (2017) and cumulative noise impacts (considering other developments in the area), including (where appropriate):	Refer to Section 6.6

Details	Section of EIS where issues addressed
> identification of impacts associated with construction, site emission and traffic generation at noise affected sensitive receivers, including the provision of operational noise contours; > details of noise monitoring survey, background noise levels and amenity noise levels at the most-affected residential receivers > details of manufacturer specifications for plant and equipment and noise source inventory (demonstrating worst-case modelling of plant and equipment); > an assessment of 'worst case' noise emission scenarios; > consideration of annoying characteristics of noise and prevailing meteorological conditions in the study area; and > details and analysis of the effectiveness of proposed management and mitigation measures to adequately manage identified impacts, including a clear identification of residual noise and vibration impacts following application of these mitigation measures and details of any proposed compliance monitoring programs.	
Transport – including: > an assessment of the peak and average traffic generation, including light vehicles, shuttle buses, heavy vehicles and high risk heavy vehicles requiring escort and construction worker transportation; > an assessment of the likely transport impacts to the site access route(s), including the above listed vehicles, site access point(s), any Crown land, particularly in relation to the capacity and condition of the roads, road safety and intersection performance; > a cumulative impact assessment of traffic from nearby developments; and > provide details of measures to mitigate and / or manage potential impacts (developed in consultation with the relevant road authorities) – a schedule of all required road upgrades (including resulting from heavy vehicle and over mass / over dimensional traffic haulage routes), – clear figures of proposed road upgrades (including the site access point), and – road maintenance contributions, and any other traffic control measures.	Refer to Section 6.7
Water – including:	Refer to Section 6.8

Details	Section of EIS where issues addressed
> an assessment of the likely impacts of the development (including flooding and flood modelling) on surrounding watercourses (including their Strahler Stream Order), groundwater resources and surface water movements, and measures proposed to monitor, reduce and mitigate these impacts including water management issues; > a site water balance for the development; > details of water requirements and supply arrangements for construction and operation (including consultation with suppliers); > a description of the erosion and sediment control measures that would be implemented to mitigate any impacts in accordance with <i>Managing Urban Stormwater: Soils & Construction</i> (Landcom, 2004) and <i>Managing Urban Stormwater: Soils and construction - Volume 2A manual</i> (Landcom, 2008); > assessing the impacts of the development, including any changes to flood risk and overland flows on-site or off-site, and detail design solutions and operational procedures to mitigate flood risk where required; > where the project involves works within 40 metres of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the <i>DPI Guidelines for Controlled Activities on Waterfront Land</i> (2018) and (if necessary) <i>Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings</i> (DPI 2003), and <i>Policy & Guidelines for Fish Habitat Conservation & Management</i> (DPE, 2013); and > identification of any flood risk on site having regard to adopted flood studies, the potential effects of climate change and any relevant provisions of the NSW Flood Risk Management Manual; – where the development could alter flood behaviour, affect flood risk to the existing community or expose its users to flood risk, provide a flood impact and risk assessment (FIRA) prepared in accordance with the Flood Impact and Risk Assessment - Flood Risk Management Guide LU01; and – detailed design solutions and operational procedures to mitigate flood risk where required.	
Hazards – including:	Refer to Section 6.9,

Details	Section of EIS where issues addressed
> a preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards); > a Preliminary Hazard Analysis (PHA) prepared in accordance with <i>Hazardous Industry Planning Advisory Paper No. 6 – Guideline for Hazard Analysis</i> (DoP, 2011) and <i>Multi-Level Risk Assessment</i> (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to on-site and off-site receptors to prevent fire propagation and compliance with the Department's <i>Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning</i> (DoP, 2011) and include the key design parameters identified in the PHA within the project description. The PHA must consider the effect of bushfires on batteries or other components of the BESS; > <i>Health</i> – an assessment of potential hazards and risks including but not limited to fires, spontaneous ignition, electromagnetic fields or the proposed grid connection infrastructure against the <i>International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields</i>; > <i>Bushfire</i> - identify potential hazards and risks associated with bushfires / use of bushfire prone land including the risks that a BESS would cause a bush fire and demonstrate compliance with the RFS <i>Planning for Bush Fire Protection 2019</i>; and > Dangerous Goods – a preliminary risk screening completed in accordance with the <i>State Environmental Planning Policy (Resilience and Hazards)</i>.	6.10, and 6.11
Social – including an assessment of the social impacts or benefits of the project for the region and the State as a whole in accordance with the Social Impact Assessment Guideline (DPE, 2023), including consideration of any increase in demand for community infrastructure services, and consideration of construction workforce accommodation.	Refer to Section 6.12
Economic – including an assessment of the economic impacts or benefits of the project for the region and the State as a whole and provide details of any proposed voluntary benefit sharing programs.	Refer to Section 6.13
Waste - including > identify, quantify and classify the likely waste stream to be generated during construction, operation, and	Refer to Section 6.15

	Details	Section of EIS where issues addressed
Plans and Documents	decommissioning, and describe the measures to be implemented to manage, reuse, recycle and safely dispose of this waste (in consultation with waste facilities, including Council); and > provide a waste management plan (as appropriate).	
	The EIS must include all relevant plans, diagrams and relevant documentation required under Part 3 of the EP&A Regulation. Provide these as part of the EIS rather than as separate documents. In addition, the EIS must include high quality files of maps and figures of the subject site and proposal.	This EIS
Legislation, Policies & Guidelines	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. A list of some of the legislation, policies and guidelines that may be relevant to the assessment of the project can be found at: > https://www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework/Improving-assessment-guidance; > https://www.planningportal.nsw.gov.au/major-projects/assessment/policies-and-guidelines; and > http://www.environment.gov.au/epbc/publications#assessments	Refer to Section 4
Consultation	During the preparation of the EIS, you should consult with the relevant local, State or Commonwealth Government authorities, infrastructure and service providers, community groups, affected landowners and any exploration licence and/or mineral title holders. In particular, you must undertake detailed consultation with affected landowners surrounding the development, relevant government agencies, including the relevant local Council. The EIS must: > detail how engagement undertaken was consistent with the Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2021); and > describe the consultation process and the issues raised, and identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, an explanation should be provided.	Refer to Section 5
Expiry Date	If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, your SEARs will expire. If an extension to these SEARs will be required, please consult with the Planning Secretary 3 months prior to the expiry date	The development application is submitted

Details	Section of EIS where issues addressed
	within two years of the SEARs issue date.

Table 13 – Supplementary SEARs requirements

Details	Section of EIS where issues addressed
Introduction	
1. On 1 April 2025, a delegate of the Minister for the Environment and Water (Environment Minister), determined Gara Battery Energy Storage System (Gara BESS) was a controlled action under section 75 of the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). The EPBC Act controlling provisions for the proposed actions are: i. listed threatened species and communities (sections 18 and 18A).	Noted
2. The proposed action will be assessed in accordance with the bilateral assessment agreement Amending Agreement No. 1, and as such, is required to be assessed in the manner specified in Schedule 1 to that Agreement, including, addressing the matters outlined in Schedule 4 of the <i>Environment Protection and Biodiversity Conservation Regulations 2000</i> (EPBC Regulations).	Noted
3. The proponent must undertake an assessment of all protected matters that may be impacted by the development under the controlling provision identified in paragraph 1. The Commonwealth Federal Minister for the Environment and Water considers that the proposed action is likely to have a significant impact on threatened species and communities listed in Appendix A.	Noted
4. The proponent must consider each of the protected matters under the triggered controlling provisions that may be impacted by the action. Note that this may not be a complete list and it is the responsibility of the proponent to undertake an analysis of the relevant impacts and ensure all protected	Noted

	Details	Section of EIS where issues addressed
General requirements	matters that are likely to be impacted are assessed for the Commonwealth Minister's consideration.	
	Relevant Regulations 5. The Environmental Impact Statement (EIS) must address all matters outlined in Schedule 4 of the EPBC Regulations and all matters outlined below in relation to the controlling provisions.	Refer to Appendix D
	Project Description 6. The title of the action, background to the action and current status.	The title of the action is "Gara BESS". The current status of the Gara BESS is under assessment with DPHI. Background is detailed in Section 1.3
	7. The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on Matters of National Environmental Significance (MNES).	Site and locality are discussed in Section 2.1. The action is described in Section 3. Section 7 and Section 9.1 of Appendix J provides discussion of MNES impact (direct and indirect). Figure 7 of Appendix J shows the extent of impact on MNES.
	8. How the action relates to any other actions that have been, or are being taken in the region affected by the action.	The BDAR provided in Appendix J identifies only one other controlled action within the locality of the Gara BESS. Consideration of other projects has been included in the cumulative assessment in Section 6.14
	9. How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES.	The Gara BESS has been designed with consideration of biodiversity impacts, with the intention to avoid impacts to biodiversity values where possible. This

Details	Section of EIS where issues addressed
	was achieved through several meetings throughout the project development between the applicant and Habitat ecologists. Additionally, mitigation measures are outlined in Appendix E and Appendix J which further ensure that the development design parameters avoid direct and indirect impacts on MNES.
Impacts 10.The EIS must include an assessment of the relevant impacts of the action on the matters protected by the controlling provisions, including: i. a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts; ii. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible; iii. analysis of the significance of the relevant impacts; and iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.	The EIS provides discussion of direct, indirect and prescribed, and serious and irreversible impacts in Section 6.1.3 based on the assessment within Appendix J. The assessment finds that the Gara BESS will have a direct impact on MNES.
Avoidance, mitigation and offsetting 11.For each of the relevant matters protected that are likely to be significantly impacted by the action, the EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action including: i. a description, and an assessment of the expected or predicted effectiveness of the mitigation measures, ii. any statutory policy basis for the mitigation measures; iii. the cost of the mitigation measures;	Mitigation measures are outlined in Appendix E and Appendix J, which include the requirement of a Vegetation Management Plan (VMP) which would be prepared post consent. The effectiveness and cost of the VMP is dependent on the requirements of the consent. The BDAR also proposes offsetting of the MNES impacts through retirement of ecosystem

	Details	Section of EIS where issues addressed
Key Issues	iv. an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing; v. the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	credits as detailed in Table 18 of Appendix J .
	12. Where a significant residual adverse impact to a relevant protected matter is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy.	The BDAR proposes offsetting of the MNES impacts through retirement of ecosystem credits as detailed in Table 18 of Appendix J .
	13. For each of the relevant matters likely to be impacted by the action the EIS must provide reference to, and consideration of, relevant Commonwealth guidelines and policy statements including any: i. conservation advice or recovery plan for the species or community; ii. relevant threat abatement plan for the species or community; iii. wildlife conservation plan for the species; and iv. any strategic assessment. Note: the relevant guidelines and policy statements for each species and community are available from the Department of Climate Change, Energy, the Environment and Water Species Profiles and Threats Database. http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl	Appendix G of Appendix J provides an assessment against the EPBC Act Significant Impact Guidelines 1.1 for each of the relevant Commonwealth entities.
	14. In addition to the general requirements described above, specific information is required with respect to each of the determined controlling provisions. These requirements are outlined in paragraphs 15-17.	Noted.
	Biodiversity (threatened species and communities and migratory species) <u>Assessment Requirements</u>	The assessments undertaken in Appendix C and G of the BDAR (Appendix J) consider whether Gara BESS will

Details	Section of EIS where issues addressed
15. The EIS must identify each EPBC Act listed threatened species and community and migratory species likely to be impacted by the action. For any species and communities that are likely to be impacted, the proponent must provide a description of the nature, quantum and consequences of the impacts. For species and communities potentially located in the project area or in the vicinity that are not likely to be impacted, provide evidence why they are not likely to be impacted.	impact on any EPBC Act listed threatened species and community and migratory species. These appendices consider the likelihood of occurrence and provide an assessment of the EPBC Act Significant Impact Criteria. The assessments conclude that the Gara BESS is likely to significantly impact only the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC.
16. For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate: i. description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans; ii. details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements; iii. description of the relevant impacts of the action having regard to the full national extent of the species or community's range; iv. description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action; v. identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account;	Assessment of the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC has been undertaken in Appendix J. The description of the habitat of the CEEC is included in Appendix C of the BDAR (Appendix J). Section 4 of Appendix J outlines the scope, timing and methodology for identifying the CEEC, which included desktop surveys and field surveys, which informed the delineation of the vegetation zones. The Gara BESS design process was undertaken in consultation with Habitat ecologists to ensure that avoidance was achieved where possible. Where avoid has not been possible, mitigation measures have been recommended to minimise impacts, as

	Details	Section of EIS where issues addressed
Other approvals and conditions	vi. a description of any offsets proposed to address residual adverse significant impacts and how these offsets will be established; vii. details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; and viii. details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the BAM and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites. Note: For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action and deliver an overall conservation outcome that improves or maintains the viability of the MNES i.e. 'like for like'. Like-for-like includes protection of native vegetation that is the same ecological community or habitat being impacted (preferably in the same region where the impact occurs), or funding to provide a direct benefit to the matter being impacted e.g. threat abatement, breeding and propagation programs or other relevant conservation measures.	outlined in in Appendix E and Appendix J. Section 6.1.3 of the EIS identifies direct impacts on the CEEC will occur as a result of the Gara BESS, based on the assessment within Appendix J. The BDAR proposes offsetting of the MNES impacts through retirement of ecosystem credits as detailed in Table 18 of Appendix J. Details of the offsets are discussed in Section 8 and Section 9.1 of Appendix J.
	17. Any significant residual impacts not addressed by the BAM may need to be addressed in accordance with the EPBC Act 1999 Environmental Offset Policy. https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy.	The BDAR states that there are no additional residual impacts not addressed by the BAM that require offset under the EPBC Act Environmental Offset Policy.
	18. Information in relation to any other approvals or conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations.	The Gara BESS will require approval under Section 138 of the <i>Roads Act 1993</i> due to site access upgrades and work proposed within the road corridor.

	Details	Section of EIS where issues addressed
Environmental Record of person proposing to take the action	19.Information in relation to the environmental record of a person proposing to take the action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations.	Section 1.1.1
Information Sources	20.For information given in an EIS, the EIS must state the source of the information, how recent the information is, how the reliability of the information was tested; and what uncertainties (if any) are in the information.	Section 8

APPENDIX C

DETAILED MAPS AND PLANS

APPENDIX D

STATUTORY COMPLIANCE TABLE

Table 14 – Commonwealth legislation

Statutory Reference	Pre-Condition	Relevance	Section in EIS
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Direct or indirect impacts to a Matter of National Environmental Significance (MNES)	The BDAR identified the presence of one CEEC identified as White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland. A referral to DCCEEW Cth determined that the Gara BESS is a controlled action under EPBC 2025/10102 on 1 April 2025. Therefore approval under the e EPBC Act is required. The Gara BESS will be assessed under the assessment bilateral agreement between the Commonwealth and New South Wales.	Section 6.1
<i>Native Title Act 1993</i>	Objective of the Act is to recognise and protect Native Title.	No sites listed on the Native Title register are impacted by the project	N/A

Table 15 – NSW legislation

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
<i>Aboriginal Land Rights Act 1983</i>	Section 36	The NSW Aboriginal Land Council may make a claim for land on its own behalf or on behalf of one or more Local Aboriginal Land Council.	Access to the site will involve works on land subject to an undetermined Aboriginal Land Claim. Required licences and agreements would be sought as a post consent matter.	Section 6.2 and Appendix N
<i>Biodiversity Conservation Act 2016</i>	Section 7.9	Any SSD or SSI application is required to be accompanied by a BDAR unless the Planning and Environment Agency Heads determine that the proposed development is not likely to have	The proposed development is SSD and has not been assessed by the Planning and Environment Agency Heads. A BDAR is required.	Section 6.1

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
		any significant impact on biodiversity values.		
<i>Contaminated Land Management Act 1997</i>	Section 11	The EPA may declare any land it believes to significantly contaminated as significantly contaminated land.	A PSI has been completed which concluded that the site is suitable in its current state for the proposed purpose.	Section 6.9
<i>Electricity Infrastructure Investment Act 2020</i>	Section 19	The Minister may declare a renewable energy zone (REZ) by reference to a specified geographical area of the State and a specified generation, storage or network infrastructure (including planned or existing infrastructure).	The site is within a REZ.	Section 2.2.2
<i>Environmental Planning and Assessment Act 1979</i>	Section 1.3	Objects of the Act	The proposed development is consistent with each of the Objects of the Act, with the exception of Object (d) which relates to the delivery and maintenance of affordable housing which is not relevant to this proposal.	Section 4.3.1
	Section 4.15(1)	Consideration of the relevant provisions of any environmental planning instruments	> <i>State Environmental Planning Policy (Resilience and Hazards) 2021;</i> > <i>State Environmental Planning Policy (Transport and Infrastructure) 2021;</i> > <i>State Environmental Planning Policy (Planning Systems) 2021;</i> > <i>State Environmental Planning Policy (Biodiversity and Conservation) 2021; and</i>	Section 4

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
			> <i>Armidale Regional Local Environmental Plan 2012.</i>	
		Consideration of the relevant provisions of any proposed environmental planning instruments	No draft environmental planning instruments apply.	N/A
		Consideration of the relevant provisions of any development control plans	Development control plans do not apply to SSD by way of clause 2.10 of the Planning Systems SEPP.	N/A
		Consideration of the relevant provisions of any planning agreements or draft planning agreements	No planning agreements or draft planning agreements apply.	N/A
		Consideration of the relevant provisions of the regulations	Refer next section of this table	This table
		Consideration of the likely impacts of the development		Section 6
		Consideration of the suitability of the site for the development		Section 7.10
		Consideration of any submissions made in accordance with this Act or the regulations	The proponent will be required to prepare a Submissions Report in accordance with Appendix C to the SSD Guidelines following the completion of the mandatory public exhibition period.	N/A
		Consideration of the public interest		Section 7.8

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
<i>Environmental Planning and Assessment Regulation 2021</i>	Section 23	Requires the consent of all landowners to be obtained for the making of a Development Application.		Supplied via the major projects portal
<i>Environmental Planning and Assessment Regulation 2021</i>	Clause 192	(1) An environmental impact statement must contain the following—		
		(a) a summary of the environmental impact statement,		Executive Summary
		(b) a statement of the objectives of the development, activity or infrastructure,		Section 1
		(c) an analysis of feasible alternatives to the carrying out of the development, activity or infrastructure, considering its objectives, including the consequences of not carrying out the development, activity or infrastructure,		Section 2.4
		(d) an analysis of the development, activity or infrastructure, including—		

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
		(i) a full description of the development, activity or infrastructure, and		Section 3
		(ii) a general description of the environment likely to be affected by the development, activity or infrastructure and a detailed description of the aspects of the environment that are likely to be significantly affected, and		Section 3
		(iii) the likely impact on the environment of the development, activity or infrastructure, and		Section 6
		(iv) a full description of the measures to mitigate adverse effects of the development, activity or infrastructure on the environment, and		Throughout Section 6 and Appendix E
		(v) a list of the approvals that must be obtained under another Act or law before the development, activity or infrastructure may lawfully be carried out,		This table
		(e) a compilation, in a single section of the environmental impact statement, of the measures referred to in paragraph (d)(iv),		Appendix E

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
		(f) the reasons justifying the carrying out of the development, activity or infrastructure, considering biophysical, economic and social factors, including the principles of ecologically sustainable development set out in section 193.		Section 7
<i>Heritage Act 1977</i>	Section 58	Approval in respect of the doing or carrying out of an act, matter or thing referred to in s 57(1)	No interim heritage order/s or listing/s apply to the site under the State Heritage Register. The proponent will develop a Chance Finds Protocol following receipt of development consent in consultation with Heritage NSW.	Sections 6.2 and 6.3
<i>Local Land Services Act 2013</i>			Two TSRs within the site will be impacted by the access upgrade. Clearing of native vegetation is dealt with within this application.	Section 6.4.3.3
<i>National Parks and Wildlife Act 1974</i>	Section 90	Grant of Aboriginal heritage impact permit	The results of the ACHAR indicate that impacts to Aboriginal cultural heritage values are unlikely.	Section 6.2
<i>Protection of the Environment Operations Act 1997</i>	Sections 43(a), 43(b), 43(d), 47, 55 and 122	Various environmental protection licences	The proposed Gara BESS is not considered to comprise a scheduled activity under the POEO Act.	N/A
<i>Roads Act 1993</i>	Section 138	Various activities within road reserves	The project will upgrade the existing access from Waterfall Way (Grafton Road). Approval is required under the Roads Act.	Section 6.7

Statutory Reference	Section	Pre-Condition	Relevance	Section in EIS
<i>Water Management Act 2000</i>	Sections 89, 90 and 91	Water use approval, water management work approval or activity approval under Part 3 of Chapter 3	Dewatering activities during construction of footings may be required. If works are necessary, approval under the <i>Water Management Act 2000</i> will be required.	Section 6.8

Table 16 – EPBC Regulations 2000 Schedule 4

Statutory Requirement	Section in EIS
1 General information	Section 6.1
1.01 The background of the action including:	
(a) the title of the action;	Gara BESS
(b) the full name and postal address of the designated proponent;	Section 1.1
(c) a clear outline of the objective of the action;	The objective of the action is to construct a BESS that will provide grid flexibility services and will support the efficiency of the existing electrical network.
(d) the location of the action;	Site details are provided in Table 2 .
(e) the background to the development of the action;	Section 1.3.
(f) how the action relates to any other actions (of which the proponent should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;	Consideration of other projects has been included in the cumulative assessment in Section 6.14
(g) the current status of the action;	Under assessment by DPHI.
(h) the consequences of not proceeding with the action.	Feasible alternatives have been considered in Section 2.4 . Not proceeding would be inconsistent with the strategic context set by the State and local policy.

Statutory Requirement	Section in EIS
2 Description	
2.01 A description of the action, including:	
(a) all the components of the action;	Section 3
(b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;	Section 3
(c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;	The Gara BESS has been designed with consideration of biodiversity impacts, with the intention to avoid impacts to biodiversity values where possible. Additionally, mitigation measures are outlined in Appendix E and Appendix J which further ensure that the development design parameters avoid direct and indirect impacts on MNES.
(d) relevant impacts of the action;	Section 6.1.3 identifies that the action will directly impact on the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC, based on the assessment within Appendix J .
(e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;	Appendix E and Appendix J
(f) any other requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action;	The Gara BESS will require approval under Section 138 of the <i>Roads Act 1993</i> due to site access upgrades and work proposed within the road corridor.
(g) to the extent reasonably practicable, any feasible alternatives to the action, including:	Section 2.4
(i) if relevant, the alternative of taking no action;	Section 2.4

Statutory Requirement	Section in EIS
(ii) a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action;	Section 2.4
(iii) sufficient detail to make clear why any alternative is preferred to another;	Section 2.4
(h) any consultation about the action, including:	Section 5
(i) any consultation that has already taken place;	Section 5
(ii) proposed consultation about relevant impacts of the action;.	Section 5
(iii) if there has been consultation about the proposed action—any documented response to, or result of, the consultation;	Section 5
(i) identification of affected parties, including a statement mentioning any communities that may be affected and describing their views	Section 5
3 Relevant impacts	
3.01 Information given under paragraph 2.01(d) must include:	
(a) a description of the relevant impacts of the action;	Section 6.1.3, and Section 7 of Appendix J
(b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;	Section 6.1.3, and Section 7 of Appendix J
(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;	Section 6.1.3, and Section 7 of Appendix J
(d) analysis of the significance of the relevant impacts;	Appendix G of Appendix J
(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.	Section 6.1.3, and Section 7 of Appendix J
4 Proposed safeguards and mitigation measures	
4.01 Information given under paragraph 2.01(e) must include:	

Statutory Requirement	Section in EIS
(a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;	Mitigation measures are outlined in Appendix E and Appendix J , which include the requirement of a Vegetation Management Plan (VMP) which would be prepared post consent. The effectiveness and cost of the VMP is dependent on the requirements of the consent. The BDAR also proposes offsetting of the MNES impacts through retirement of ecosystem credits as detailed in Table 18 of Appendix J .
(b) any statutory or policy basis for the mitigation measures;	
(c) the cost of the mitigation measures;	
(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;	
(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;	
(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the proponent.	
5 Other approvals and conditions	
5.01 Information given under paragraph 2.01(f) must include:	
(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including:	The Gara BESS will require approval under Section 138 of the <i>Roads Act 1993</i> due to site access upgrades and work proposed within the road corridor.
(i) what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy;	
(ii) how the scheme provides for the prevention, minimisation and management of any relevant impacts;	

Statutory Requirement	Section in EIS
(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;	
(c) a statement identifying any additional approval that is required;	
(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.	
6 Environmental record of person proposing to take the action	
6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:	Section 1.1.1
(a) the person proposing to take the action; and	
(b) for an action for which a person has applied for a permit, the person making the application.	
6.02 If the person proposing to take the action is a corporation—details of the corporation’s environmental policy and planning framework.	
7 Information sources	
7.01 For information given in a draft public environment report or environmental impact statement, the draft must state:	Section 8
(a) the source of the information; and	
(b) how recent the information is; and	
(c) how the reliability of the information was tested; and	
(d) what uncertainties (if any) are in the information.	

APPENDIX E

MITIGATION MEASURES

A.1 MITIGATION MEASURES

A.1.1 SUMMARY OF MITIGATION MEASURES

Table 16 provides a summary of proposed mitigation measures recommended through this EIS.

Table 17 – Summary of mitigation measures

Impact	Phase	Mitigation measure
Biodiversity	Construction	> Avoid and minimise clearing impacts to native vegetation where possible. > Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent. This includes the installation of appropriate fencing along the eastern extent of the Subject Land. Fencing should prohibit entry into the retained vegetation area and minimise indirect impacts during construction such as the movement of dust and rubbish into the forest and wetland. > Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in proximity (5m) to, areas of native vegetation retained under the proposed development. > Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed surrounding the area of retained native vegetation and wetlands. > Clearly identify and communicate the location of any 'no go zones' in site inductions. > Tree protection measures will be implemented to protect retained trees surrounding the Subject Land. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009). > Limit removal of trees to that required within the Subject Land where possible. > Pre-clearance surveys will be undertaken to determine if any inhabiting fauna, or habitat features (i.e. nests or hollows) are present 24 hours prior to clearing. > A staged habitat removal process is required for removal of habitat (hollow-bearing trees and nests) to minimise direct impacts on fauna by providing them with an opportunity to vacate hollows and relocate naturally. > If possible, avoid clearing during breeding seasons for hollow-dependent fauna and nonhollow dependent fauna, specifically nesting birds. > Contact vets and wildlife carers before construction activities commence. > Ensure a licensed wildlife carer and/or ecologist is present during vegetation clearing/habitat removal.

Impact	Phase	Mitigation measure
		> Adopt a two staged habitat removal strategy, for example clearing non-habitat trees first (shrubs, regrowth, ground cover) followed by habitat trees. Allow at least 24 hours for fauna to vacate habitat before removing habitat trees. > Fell habitat trees carefully using equipment that allows habitat trees to be lowered to the ground with minimal impact (claw extension). Do not fell trees towards exclusion zones. > Ensure a wildlife carer and/or ecologist inspects trees before and after felling. Capture and relocate non-injured fauna that are found in any felled trees to pre-determined habitat identified for fauna release to be undertaken by a licensed ecologist or wildlife carer. > A Vegetation Management Plan (VMP) is to be prepared and implemented prior to construction of the project. The VMP is to specify: – Management of weeds – Monitoring of the retained and partially impacted CEEC Box Gum Grassy Woodland to ensure that the condition is not reduced – The maintenance regime for a period of five years – The process for certifying completion of works at critical stages of the process. > The implementation of compensatory measures prior to construction activities including: – Koala friendly fencing and signage around the BESS infrastructure – Replacement of hollows at a ratio of 2:1 in the retained land > Source controls such as sediment fences, mulching and jute matting will be utilized where appropriate, especially along the eastern boundary of the proposed development area that runs adjacent to a first-order stream. > Source controls such as sediment fences, mulching and jute matting will be utilized where appropriate, especially along the eastern boundary of the proposed development area that runs adjacent to a first-order stream. > Site-based vehicles will carry spill kits. > Erosion and sediment control will be required for the development in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction. > Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby watercourses/wetland areas. > Speed limits within the Subject Land should be limited to 40 km/hr. > This limit should be clearly signed at all entry points to site.

Impact	Phase	Mitigation measure
		> The Subject Land should be separated from vegetated areas throughout the construction and operational phases of the development. This separation should be achieved through physical barriers including fencing and appropriate signage. > The fungal pathogens <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>) are known to occur along the entire east coast of NSW, however, it is unknown if they occur within the Subject Land. These pathogens can have devastating impacts on native plant communities and inhabiting fauna if not properly managed. > Appropriate washdown facilities will be available to clean vehicles and equipment prior to arrival on-site and prior to departure. > Ensure soil and seed material is not transferred > Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. > Impacts from construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. > Measures to mitigate impacts on flora and fauna from noise, vibration, waste, light and air pollution such as: – Enforce 'carry-out' policy regarding rubbish and waste materials generated onsite during construction to avoid waste materials entering adjacent vegetation. – Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction. – Fence sensitive areas to delineate 'no go' zones. – Levels of lighting associated with the proposed development (during construction and operation) will be reduced to a minimal level and directed away from retained vegetation areas to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. Lighting design and utilization during construction and operational phases of the development should be based on principles detailed in Appendix A of the National Light Pollution Guidelines for Wildlife (DEE 2020). This includes consideration of adaptive controls, and measures to reduce light intensity and inappropriate light spill into retained vegetation and fauna habitat. – Lighting should also comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting.

Impact	Phase	Mitigation measure
		– Noise minimization practices in accordance with DPIE recommendations. – Dust control measures such as covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required, to control dust; rehabilitation through vegetation of surfaces to be left unsealed; and truck wheel washes or other dust removal measures.
Aboriginal heritage	Construction	> An unexpected finds/chance finds protocol should be developed as part of the Gara BESS CEMP. > If unanticipated Aboriginal objects are uncovered during works, all work in the vicinity should cease immediately. A qualified archaeologist should be contacted to assess the find and Heritage NSW and Armidale and District LALC and a RAP must be notified. > All impacts must remain within the assessed study area or further archaeological investigation may be required.
Land	Construction	> Minimise soil disturbance and excavation where possible > Minimise mixing of soil layers where practical > Retain and stockpile all disturbed or excavated soil > Ameliorate any excavated and/or stockpiled soils in accordance with advice obtained from the NSW Soil Conservation Service > Consider soil amelioration with gypsum prior to reinstatement and/or as part of decommissioning > Return stockpiled soil to its original location (where possible) as soon as reasonably practicable > Ensure topsoil and subsoils are stockpiled separately and returned in order > Minimise overworking of the surface soils (in-situ, in excavation, stockpiling and reinstatement) > Reinstatement topsoil where possible where excavation occurs > Minimise vehicular traffic induced compaction where practical > Minimise stock compaction by excluding livestock during construction, minimising stocking rates and/or minimising the risk of stock coinciding with wet topsoil conditions > Minimise infrastructure induced compaction where possible (spread loads etc) > Maintain and maximise vegetative cover where possible to help protect surface soils > Employ practices which maintain/increase soil organic matter levels such as maintaining grass cover where practical, minimising soil disturbance and the retention/incorporation of any cleared vegetation or organic matter as soon as reasonably practicable

Impact	Phase	Mitigation measure
		> Avoid bare (fallow) soil surface where practical > Whilst good weed control should be implemented, retention of less detrimental weeds may help maintain vegetal of cover and/or increase soil organic matter levels > Minimise the exposure of subsoil layers particularly to rainfall/surface water run-off impacts > Implement excess surface water controls to minimise collection/concentration of mobile surface water > Implement practices to minimise sediment mobilisation and/or sediment capture > Minimise site activities and soil disturbance during wet weather conditions where possible > Regularly monitor soils for potential adverse impacts and if and when identified, implement appropriate mitigation or remediation actions > Implement construction and/or site rehabilitation and revegetation in accordance with an appropriate landscape, revegetation or rehabilitation plan prepared by a suitably qualified professional > Ensure rehabilitation is undertaken progressively to minimise the total disturbance area at any one time >
	Decommissioning	> Prepare an appropriate decommissioning management plan which aims to minimise adverse soil impacts and aims to return the site to preconstruction land and soil capability (or better) The decommissioning management plan should determine soil conditions prior to decommissioning to ensure any existing soil conditions and/or adverse impacts, which may have changed/developed throughout the life of the development, are catered for.
Visual	Construction and operation	> Lighting during construction and operation would be designed and operated in accordance with AS4282-2019 Control of the obtrusive effects of outdoor lighting. > Minimise the removal of mature native vegetation in the vicinity of the construction footprint, including at the track intersection with Waterfall Way / Grafton Road, where possible.
Noise	Construction	> Implement community consultation or notification measures; > Train workers and contractors on the best practice use of equipment and work methods in order to minimise noise > Ensure workers and contractors are aware of noise management requirements in approvals consents or licenses, site inductions and "toolbox talks" providing a summary of relevant to the Project requirements for reference;

Impact	Phase	Mitigation measure
		> Include appropriate clauses and conditions within tenders, employment contracts, sub contractor agreements and work method statements that require all workers and contractors to observe (noise management) directions from their site manager; > Inform all vehicles and mobile plant equipment of designated vehicle routes, parking locations and acceptable delivery hours or other relevant practices, such as minimising use of engine brakes and avoiding engine idling; > Periodically check the site, nearby residences and other sensitive land uses to proactively identify noise issues and feasible and reasonable mitigation (verification); > Limiting the type and scale of concurrent activities undertaken close to sensitive receptors where possible; > Using broad band reversing alarms on all mobile plant and equipment if practical; > Examine different types of machines that perform the same function and compare the noise level data to select the least noisy machine; > Operating plant in a quiet and efficient manner; > Reduce throttle setting and turn off equipment when not being used; > Regularly inspect and maintain equipment to ensure it is in good working order including checking the condition of mufflers; > Validation of noise levels during construction at nearest sensitive receptor; and > A full, detailed and specific Construction Noise and Vibration Management Plan (CNVMP) must be prepared prior to commencing works on site, once a developer is appointed and detailed construction methodology is known. The following additional mitigation measures would be included in the CNVMP as required: > Notification (letterbox drop or equivalent) - Advanced warning of works and potential disruptions can assist in reducing the impact on the community. The notification may consist of a letterbox drop (or equivalent) detailing work activity, time periods over which these will occur, impacts and mitigation measures. Notification should be a minimum of 5 working days prior to the start of works. The approval conditions for projects may also specify requirements for notification to the community about works that may impact on them. > Specific notifications - Specific notifications are letterbox dropped (or equivalent) to identified stakeholders no later than seven calendar days ahead of construction activities that are likely to exceed the noise objectives. The specific

Impact	Phase	Mitigation measure
		notification provides additional information when relevant and informative to more highly affected receivers than covered in general letterbox drops. > Phone calls - Phone calls detailing relevant information made to identified/affected stakeholders within seven calendar days of proposed work. Phone calls provide affected stakeholders with personalised contact and tailored advice, with the opportunity to provide comments on the proposed work and specific needs. Where the resident cannot be telephoned then an alternative form of engagement should be used. > Individual briefings - Individual briefings are used to inform stakeholders about the impacts of high noise activities and mitigation measures that will be implemented. Project representatives would visit identified stakeholders at least 48 hours ahead of potentially disturbing construction activities. Individual briefings provide affected stakeholders with personalised contact and tailored advice, with the opportunity to comment on the project. Where the resident cannot be met with individually then an alternative form of engagement should be used. > Respite offers - Respite Offers should be considered made where there are high noise and vibration generating activities near receivers. As a guide work should be carried out in continuous blocks that do not exceed 3 hours each, with a minimum respite period of one hour between each block. The actual duration of each block of work and respite should be flexible to accommodate the usage of and amenity at nearby receivers. The purpose of such an offer is to provide residents with respite from an ongoing impact. This measure is evaluated on a project-by-project basis and may not be applicable to all projects. > Respite period 1 - Out of hours construction noise in out of hours period 1 shall be limited to no more than three consecutive evenings per week except where there is a Duration Respite. For night work these periods of work should be separated by not less than one week and no more than 6 evenings per month. > Duration respite - Respite offers and respite periods 1 and 2 may be counterproductive in reducing the impact on the community for longer duration projects. In this instance and where it can be strongly justified it may be beneficial to increase the work duration, number of evenings or nights worked through Duration Respite so that the project can be completed more quickly. > Alternative accommodations - Alternative accommodation options may be offered to residents living in close proximity to construction works that are likely to experience highly intrusive noise levels. The specifics of the offer will be identified on a project-by-project basis. Additional aspects for

Impact	Phase	Mitigation measure
		consideration shall include whether the highly intrusive activities occur throughout the night or before midnight. > Verification - Please see Appendix F of the Construction Noise and Vibration Guideline (2016) for more details about verification of Noise and Vibration levels as part of routine checks of noise levels or following reasonable complaints. This verification should include measurement of the background noise level and construction noise. Note this is not required for projects less than three weeks unless to assist in managing complaints.
	Operation	> An acoustic barrier is proposed as shown in Figure 4 of the NIA. In order to be effective the acoustic barrier would need to be free of gaps and be constructed of material with a mass density greater than or equal to 12kg/m² excluding structural components. > The acoustic barrier is to be constructed such that there is a 10 m space between the acoustic barriers and BESS equipment to allow for fire safety. > The acoustic barrier is in the eastern segment of the BESS area and is to be constructed with a height of 3.15 m. The barrier should have a length of approximately 110 metres when constructed in its entirety. The barrier has been modelled to include a 150 mm gap between the ground and the base of the barrier (to allow for flood design). > Placement of the MVPS equipment as discussed with ACenergy, MVPS front face of all units to be facing north to help with directionality of loudest side away from sensitive receptors. > Similarly, placement of BESS equipment as discussed with ACenergy, BESS front side (chiller facade/loudest facade) facing towards the north for all BESS units to help with noise directionality away from sensitive receptors to the east and west.
Traffic	Construction	The TIA proposes that to actively manage vehicle trips during construction, the following measures may be implemented: > Requiring contractors to provide forecasts of their total vehicle numbers inclusive of workforce travel, heavy vehicle deliveries and OSOM vehicles on week by week basis; > Sharing of the vehicle forecasts with all site managers; > Nominating limits on total and directional vehicle numbers, with site management coordinating the total vehicle activity levels to remain within the nominated limits; > Monitoring and recording daily vehicle activity, including the direction of travel, by site management;

Impact	Phase	Mitigation measure
		> Identifying exceedances of the nominated limits, with consequences of non-compliances to be identified and enforced. These may include: > Placing restrictions on non-essential vehicle movements until compliance is restored; > Fining contractors (e.g. via specified donation amount to charity of their choice) for repeated breaches; and/or > Revising scheduling to balance traffic loads. The TIA proposes the following measures to mitigate impacts on safety and efficiency of the road network: > The intersection of Waterfall Way with the Project site access road would be upgraded with BAL and BAR treatments on Waterfall Way in accordance with Austroads guidelines; > Specific trees would be trimmed/removed (subject to ecology assessment) on the western side of Waterfall Way to the south of the Project site access to maximum sight distance between approaching drivers and the access intersection; > Required permits would be obtained for OSOM vehicle movements, and modifications to accommodate the largest OSOM vehicle movement would be implemented, the details of which would be confirmed as the size and load requirements are refined (desktop review by ARES [2024] has identified possible changes to roadside signage, traffic signals at one location and vegetation clearing); and > A WAD would be obtained for the upgrading works at the intersection of Waterfall Way with the Project site access, including preparation of a CTMP and work to be undertaken in accordance with relevant traffic control requirements. It is recommended that a TMP and Driver Code of Conduct be developed and implemented to govern traffic movements during the Project construction stage. These would form part of the contractual arrangements with suppliers to the Project, and would be prepared in consultation with Council and/or TfNSW prior to commencement of construction of the Project, to address such matters as: > compliance with access routes and travel restrictions that may be applicable; > compliance with road rules, laws and regulations, including those relating to OSOM vehicles and dangerous goods transport; > maintaining safe following distances between vehicles, and increasing separation in poor visibility (e.g. fog or rain); > reporting of any unsafe driving practices or incidents; > driver behavioural expectations within the site (e.g. radio communication, speed limits, and use of flashing lights on moving vehicles); and

Impact	Phase	Mitigation measure
		> driver behaviour expectations at any specific locations or conditions, including at the Dangar Street bridge in Armidale, when warning signs advise that stock are present on or near the road, and in the vicinity of any school bus during bus operating hours.
Groundwater	Construction and operation	A Soil and Water Management sub-plan should also be prepared for the project and should include, but not be limited to, the following: > appropriate design of self-bunded battery and fuel and oil storage areas; > use nominated and bunded fuel and chemical storage areas; > provision of spill kits for cleaning up chemical, oil and fuel spillages; > training for personnel and regular maintenance and inspection of bunded fuel, oil, and battery storage areas to ensure integrity; > procedure for managing any intercepted shallow groundwater; and > procedures for soil storage (including any potential contaminated soil) and erosion control with well-designed site drainage and sedimentation basins at key locations to manage site runoff effectively. Groundwater monitoring and testing is also recommended during geotechnical investigations, including: > Installation of groundwater monitoring bores to detect any changes in water quality; > Regular water sampling and testing for contaminants during and post-construction, especially in the vicinity of storage areas; and > Ongoing monitoring as part of the environmental management plan to ensure that groundwater remains unaffected over the long term.
Surface water	Construction	> Any sensitive infrastructure such as inverters and battery storage etc, should be located on raised concrete footings to 300mm elevation above finished ground level at the site. It is common for this type of infrastructure to be housed within shipping containers or small sheds with relatively small footprints. Given the shallow depths across the site, raising these small concrete footings is highly unlikely to result in any adverse impacts offsite. > The footings should be designed to withstand the flood velocities described in this report, which are mostly low in the Development Footprint. > Extension of existing 300 mm diameter pipe under the existing access tract at the intersection with Waterfall Way (Grafton Road).

Impact	Phase	Mitigation measure
		> Incorporate drainage channels in a north to south direction within the BESS area to control surface runoff within the proposed facility. > The location of the proposed electricity poles/towers within the development extent should be outside any mapped flood depth in all modelled events, if practical. > It is recommended that the best practice principles to stormwater and sediment control be incorporated into the design, construction and operation phases of the BESS site. > It is anticipated that vehicles can safely access and egress from the Site via Waterfall Way (Grafton Road).
Hazards	Construction	> End-to-end spacing (short side) of BESS containerised units shall be a minimum of 3 m > Back-to-back spacing (long side) of BESS containerised units shall be no less than 0.2 m for the CATL BESS units selected for this study. > BESS separation and spacing are to be specific to BESS the selected. > The BESS containerised units shall be provided with the fire protection system specified by the BESS manufacturer. > The active ventilation vents shall not be located above battery packs within the BESS container. > The vent covers of the BESS shall be constructed of non-combustible material. > Prior to commissioning, the UL test data for the selected battery units shall be made available to the DPHI.
Contamination	Construction	> The construction phase of the Gara BESS is to include construction of shallow earthen surface water drains designed to capture and remove excess surface water from the study site.
Bushfire	Construction and operation	> Buildings should be designed and constructed to withstand the potential impacts of a bushfire by adhering to recommendations outlined in the BAR; > A 10 m APZ shall be established for the life of the project (including the construction stage) to provide sufficient space and maintain a reduced fuel loads to ensure radiant heat levels at the buildings are below critical limits and prevent direct flame contact; > Water, electricity and as shall comply with Table 7.4a of the PBP (where relevant); > The proposed development is to have a non-combustible 100,000 dedicated water tank with Storz fitting, and other fire fighting equipment in compliance with the Australian Standards; > Internal roads should have a minimum 4 m vertical clearance to any overhanging obstructions and be a minimum 4 m

Impact	Phase	Mitigation measure
		width with 1 m traversable shoulders, unsealed/sealed all weather traversable road with suitable load bearing capacity. drainage structures and feature crossing. Road grade should be at least 10°, short steep sections are acceptable if sealed <15° and then suitable cross fall of the road surface provided. Two way traffic flow (with capacity for passing and turning areas) which enables safe access & egress for emergency services and allow crews to work with equipment about the vehicle is to be provided by the proposed road system & APZs. > Landscaping to the Asset Protection Zones is to comply with the principles of APZ standards - Appendix 4 of PBP, 2019; > A Bushfire Emergency Management and Operations Plan should be developed and include the following: – detailed measures to prevent or mitigate fires igniting; – work that should not be carried out during total fire bans; – availability of fire-suppression equipment, access and water; – storage and maintenance of fuels and other flammable materials; – notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate; and – appropriate bush fire emergency management planning Other mitigation measures outlined in the BAR to help provide bushfire safety include: > Noise wall shall be of non-combustible exterior. It may assist in protecting the BESS from potential grassland fire, and conversely also prevent any fire within the BESS from spreading outwards into Grassland. It is noted that the noise wall is only located in some areas and is up to 4 m high. > Informing Local Fire & Rescue Brigade of the proposal once approved regarding its operation, water supplies, and layout. > The interior of any Office buildings will have all necessary fire safety provisions (sprinklers, fire extinguishers, etc) as required by the relevant Australian Standards and legislation. > Windows and doors of site buildings should be shut in a fire event, and ember proofing is recommended for the Office. > It is anticipated relevant exterior fire fighting equipment will be provided including a protective clothing/PPE clothing/equipment, CO2 fire extinguishers, etc. > 100 000l water tank, with Storz fitting (to be installed at the Office /carpark during construction accessible at all times to NSW RFS fire tankers/others.

Impact	Phase	Mitigation measure
		> Training for all on-site personnel regarding bushfire response procedures. > Fire fighting training for operational workers.
Social	Construction	> Partner with local organisations to inform prospective workers about participation in the project. > Continue updating project-specific website with information and advertising for procurement > Collaborate with local employment, apprenticeship, and training providers to enhance local hiring potential. > Regular updates to residents throughout construction to ensure transparency. Notify when undertaking work for improvements to the road. > Engagement with Armidale Regional Council, local businesses, and the local Chamber of Commerce to understand procurement limitations and aspirations. > Target local economic impact through procurement of local goods and services. > Engage regularly with local businesses about construction periods and potential increases in trade. > Encourage project workforce to support local businesses through local spending initiatives (e.g., vouchers). > Develop and implement an Industry Participation Plan addressing: – Opportunities for supply of goods and services, employment, training (including Aboriginal participation), and sustainable procurement. > Identify community funding opportunities. > Engage in community initiatives, potentially in partnership with nearby renewable energy SSD proponents. > Develop a consultation plan to promote feedback mechanisms in relation to amenity impacts, including: – enquiries and complaints handling process – regular updates to residents throughout construction to ensure transparency – notifications when undertaking work that produces impulsive, intermittent, or low-frequency noise. > Continue discussions with accommodation providers, ensuring proactive planning to secure accommodation if required. > Cumulative - Maintain ongoing dialogue with the other projects identified in Section 6.14 of the EIS and accommodation suppliers to address potential cumulative impacts and ensure coordination and if possible, sequencing of workforce.

Impact	Phase	Mitigation measure
		> Procurement – seek out opportunities to engage local people and local businesses through the construction phase.
Economic	Construction	> Prepare IPP incorporating ongoing liaison with local industry representatives to ensure the maximisation of the use of local contractors, manufacturing facilities, materials. > Liaison with local representatives regarding accommodation options for staff, to minimise adverse impacts on local services. > Liaison with local tourism industry representatives to manage potential timing conflicts with local events. > ACEnergy or the developer will consult with local employment agencies and training organisations and, where practicable, will consider supporting training and apprenticeships.
Cumulative	Construction	> Maintain ongoing dialogue with surrounding renewable developers and accommodation suppliers to address potential cumulative impacts and ensure coordination and if possible sequencing of workforce.
Waste	Throughout	> A Waste Management Plan for all phases of the project would be prepared and implemented prior to the commencement of any works on the site.

APPENDIX F

LAND TITLES

APPENDIX G

TRAFFIC IMPACT ASSESSMENT

APPENDIX H

OSOM ROUTE ASSESSMENT

APPENDIX I

BRIDGE ASSESSMENTS

APPENDIX J

BIODIVERSITY DEVELOPMENT ASSESSMENT REPORT

APPENDIX K

PRELIMINARY HAZARD ANALYSIS

APPENDIX L

AGRICULTURAL LAND UTILITY ASSESSMENT

APPENDIX M

LAND USE CONFLICT RISK ASSESSMENT

APPENDIX N

ABORIGINAL CULTURAL HERITAGE ASSESSMENT

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LANDSCAPE PLAN

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NOISE IMPACT ASSESSMENT

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GROUNDWATER ASSESSMENT

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PRELIMINARY SITE INVESTIGATION

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BUSHFIRE ASSESSMENT

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ACCOMMODATION ANALYSIS

