Scoping Report and SEARS Request for Gugaa Battery Energy Storage System

477 Gregadoo East Road, Gregadoo

Prepared on behalf of Silo Energy for the Department of Planning, Housing and Infrastructure

24 November 2025

The APP Group

BUREAU VERITAS

Amendment, Distribution & Authorisation Record

This report has been prepared in accordance with our quality control system.

Document	Revision	Reviewed by	Date
Scoping Report	Draft for client review	Andrew Wilson NSW Planning Manager	18/11/2025
Scoping Report	Final for submission	Andrew Wilson NSW Planning Manager	24/11/2025
Scoping Report	Revision	Josh Owen General Manager – Planning and Advisory	18/12/2025
Scoping Report	Revision	Andrew Wilson NSW Planning Manager	15/01/2026

Contents

1 Introduction 1

1.1 Applicant 1

1.2 Objectives of the Development 2

1.3 Site Location and Description 2

1.4 Background to the Project and Related Development 4

2 Strategic Context 5

2.1 Government Policies and Plans 5

2.2 Regional and Local Site Context 9

2.3 Site Conditions 13

3 Project 21

3.1 BESS Description 21

3.2 Staging of Delivery 24

3.3 Capital Investment Value / Development Cost 24

3.4 Site Selection and Design Alternatives 24

3.5 Workforce and accommodation 27

3.6 Electricity Network Connection 28

3.7 Access 29

3.8 Landscaping 29

3.9 Water Supply 29

3.10 Stormwater Management 30

3.11 Waste Water Management 30

3.12 Storage of Dangerous Goods 30

3.13 Site Preparation Works 31

3.14 Management Plans 31

3.15 Decommissioning 31

3.16 Proposed DA Documentation 32

4 Statutory Context 33

5 Engagement 35

5.1 Engagement Plan 35

5.2 Engagement Monitoring, Review and Adaptation 36

5.3 Consultation to Date 36

5.4 Initial Meetings with City of Wagga Wagga Council 36

5.5 Preliminary Feedback from Local Community 38

6 Proposed Assessment of Impacts 39

6.1 Key Environmental, Social and Economic Matters 39

6.2 Matters Requiring Further Assessment in the EIS 39

6.2.1 Electricity System Security and Reliability 39

6.2.2 Land Use Compatibility / Suitability 39

6.2.3 Landscape and Visual Impact 40

6.2.4 Traffic, Transport and Accessibility 41

6.2.5 Water 43

6.2.6 Heritage 44

6.2.7 Contamination and Remediation 45

6.2.8 Bush Fire Risk 46

6.2.9 Waste Management 47

6.2.10 Social Impact 47

6.2.11 Economic Impact 47

6.2.12 Biodiversity 49

6.2.13 Noise and Vibration 50

6.2.14 Hazards and Risks 53

6.2.15 Cumulative Impact Considerations 55

6.2.16 Management Plans 55

6.3 Matters Not Requiring Further Assessment in the EIS 56

7 Conclusion 57

8 References 58

9 Appendix A – Scoping Summary Table 59

10 Appendix L – Cumulative Impact Assessment Scoping Summary Table 63

List of Appendices

Appendix A – Scoping Summary Table

Appendix B – Preliminary Development Concept Plans

Appendix C – Civil Engineering Preliminary Site Investigation

Appendix D – Draft Engagement Plan

Appendix E – Preliminary Traffic Assessment

Appendix F – BDAR Waiver Request

Appendix G – Aboriginal and Historic Heritage Scoping Report

Appendix H – Noise and Vibration Assessment

Appendix I – Preliminary Hazard Analysis and Emergency Management Plan

Appendix J – Social Impact Assessment Scoping Report

Appendix K – Survey Plan and Site Analysis

Appendix L – Cumulative Impact Assessment Scoping Summary

1 Introduction

This Scoping Report and SEARs Request has been prepared for the development of a proposed Battery Energy Storage System (BESS) on part of a 40.2ha. allotment of RU1 Zone land at 477 Gregadoo East Road, Gregadoo in the local government area of Wagga Wagga.

The proposed BESS is a 1GW / 4GWh facility (in 2 stages) with a proposed connection to the Gugaa Substation node located on the adjoining property to the south which is a part of Transgrid's HumeLink electrical transmission line infrastructure currently under construction that will be a core part of the NSW, SA and eventually VIC power network. This BESS project will be an important investment in supporting the national power grid. It has an estimated development cost of $350 million.

The proposed BESS is permissible within the RU1 Zone under *Wagga Wagga Local Environmental Plan 2010* (LEP) and also under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, and is a State significant development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021.*

It is understood the proposed Gugaa BESS is not eligible for the Industry-Specific SEARs due to meeting the threshold criteria applying to designated development, and therefore requires the submission of a Scoping Report to obtain Project-Specific SEARs for an Environmental Impact Statement (EIS) pursuant to the *Environmental Planning and Assessment Act 1979*, associated *Environmental Planning and Assessment Regulation 2021*, and *State significant development guidelines*.

This Scoping Report has been prepared in accordance with the *State significant development guidelines – preparing a scoping report.*

1.1 Applicant

Silo Energy is the applicant which is a boutique renewable energy development company with over 20 years of experience in the property sector and 14 years in renewable energy. Silo Energy's co-founders have successfully managed and developed large-scale solar and wind projects in both Australia and the UK.

Silo energy is committed to empowering rural communities through sustainable energy solutions by working closely with farmers, landowners, and local stakeholders to create developments that align with community values and needs. Integrity, honesty, and collaboration are central in guiding delivery of successful projects while fostering lasting relationships.

Applicant Details	
Name	Silo Energy Pty Ltd
ABN	79 680 797 997
Address	Level 10, 145 Eagle Street Brisbane QLD 4000
Contact	Mr Simon Fuhrmann (Director)
E-mail:	simon@siloenergy.com.au
Phone:	0404 472 627

1.2 Objectives of the Development

The objectives of the development are:

- Deliver a large-scale Battery Energy Storage System (BESS) facility that enhances the capacity, stability, and reliability of the electricity transmission network within the National Electricity Market (NEM);
- Support the integration and increased penetration of renewable energy generation in southern New South Wales by providing essential grid-forming, firming, and energy shifting services;
- Silo Energy have secured a strategically located site immediately adjacent to Transgrid's new Gugaa 500/330 kV Substation (under construction as part of the HumeLink project), enabling high-capacity connection to the high-voltage transmission network;
- Utilise a site with strong environmental suitability for BESS development, characterised by favourable topography, low biodiversity values, and minimal material environmental or land-use constraints;
- Design and configure the development to respond sensitively to the site's topography, visual amenity, landscape character, and surrounding environmental values, incorporating appropriate screening, setbacks, and landscaping measures; and
- Proactively identify, avoid where possible, and otherwise mitigate and manage potential environmental, safety, and community impacts and hazards throughout the development, construction, operational, and decommissioning phases of the project.

1.3 Site Location and Description

A brief description of the site location, and description is provided below.

Site Attribute	Description
Local Government Area	Wagga Wagga
Property Location and Address	477 Gregadoo East Road, Gregadoo located approximately 15km to the southeast of the Wagga Wagga urban area.
Title Description	Lot 114 DP757261 (comprises the southern half of the subject property)
Site Area	Lot 114 has an area of approximately 40.2 hectares. The proposed BESS facility occupies approximately 24 hectares on the front part of the subject lot fronting Livingstone Gully Road.
Land Use and Improvements	The site is used for agriculture and primarily as grazing land with some cropping for animal grazing. Existing improvements on Lot 114 include stock holding / feed yard and feed storage structures on the northwest part of the lot, dams on the northwest and southeast corners of the lot, and perimeter wire fencing.
Zoning	RU1 Primary Production with a minimum lot size of 200 hectares under Wagga Wagga Local Environmental Plan 2010

Maps in this report show the subject site with the four boundary corners tagged A to D with the following georeference co-ordinates:

SITE COORDINATES			
		ZONE: GDA94 - MGA55	
TAG	LOCATION	EASTING	NORTHING
A	NORTH-WEST CORNER	542978.496	6097874.663
B	NORTH-EAST CORNER	543889.209	6097726.050
C	SOUTH-EAST CORNER	544087.527	6097306.005
D	SOUTH-WEST CORNER	542916.708	6097497.063

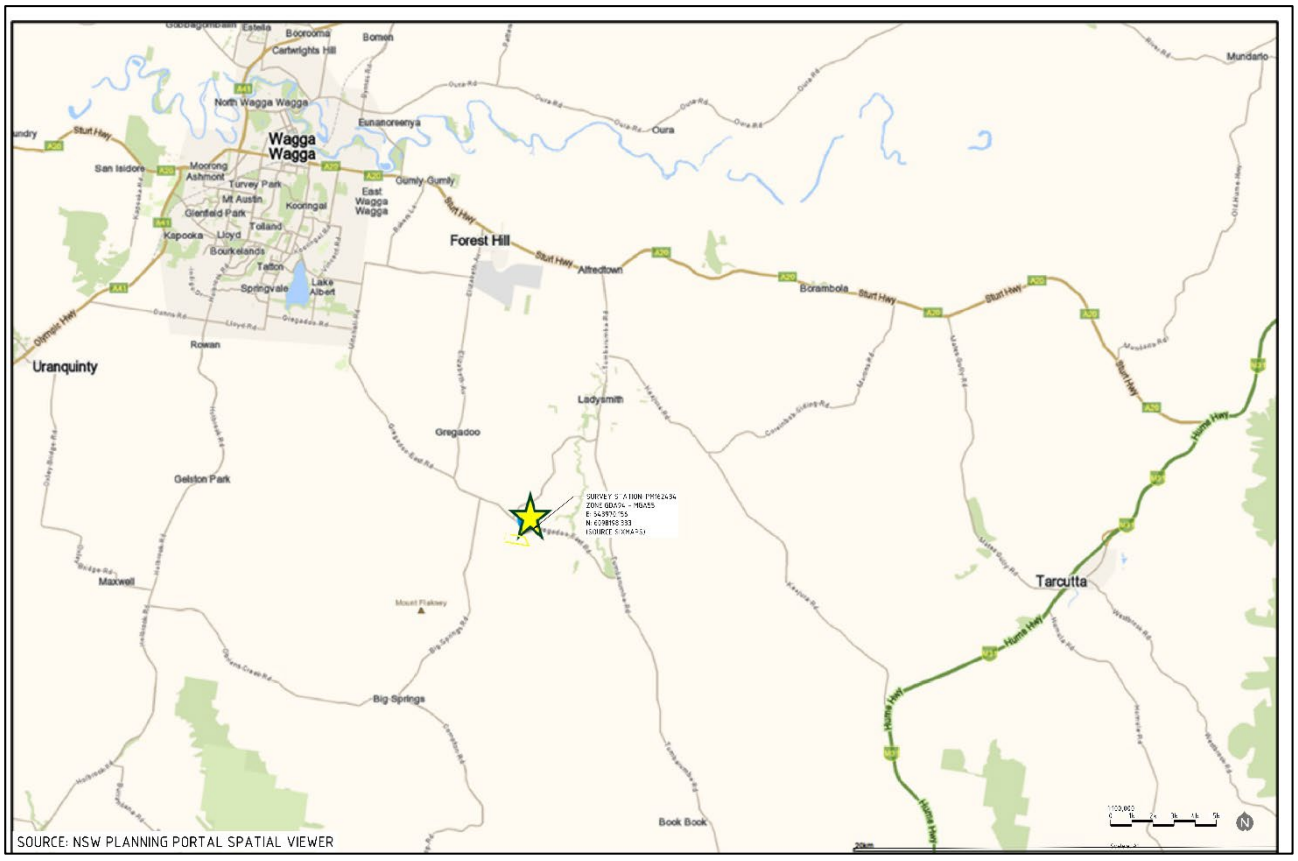


Figure 1 Location of the site shown with yellow star

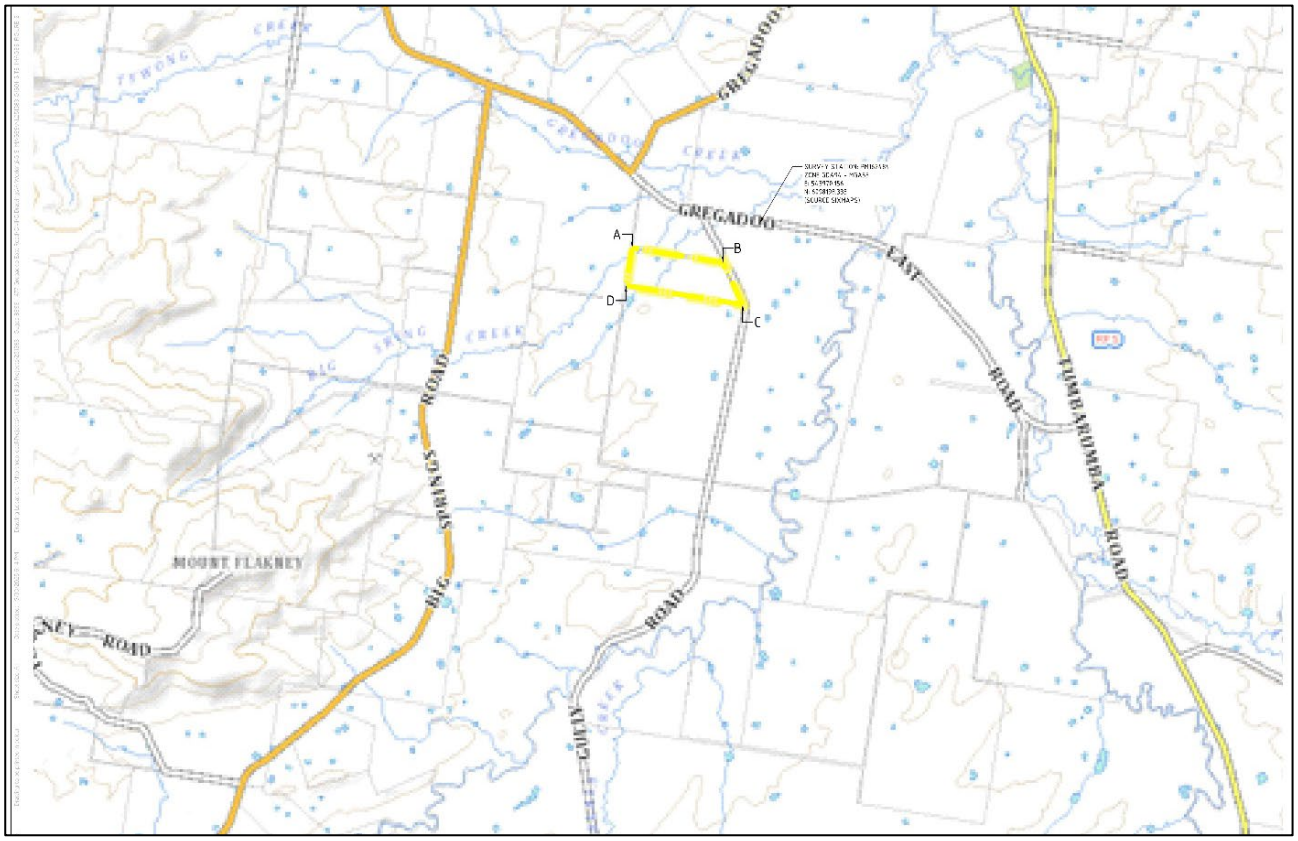


Figure 2 Location of the site shown outlined yellow

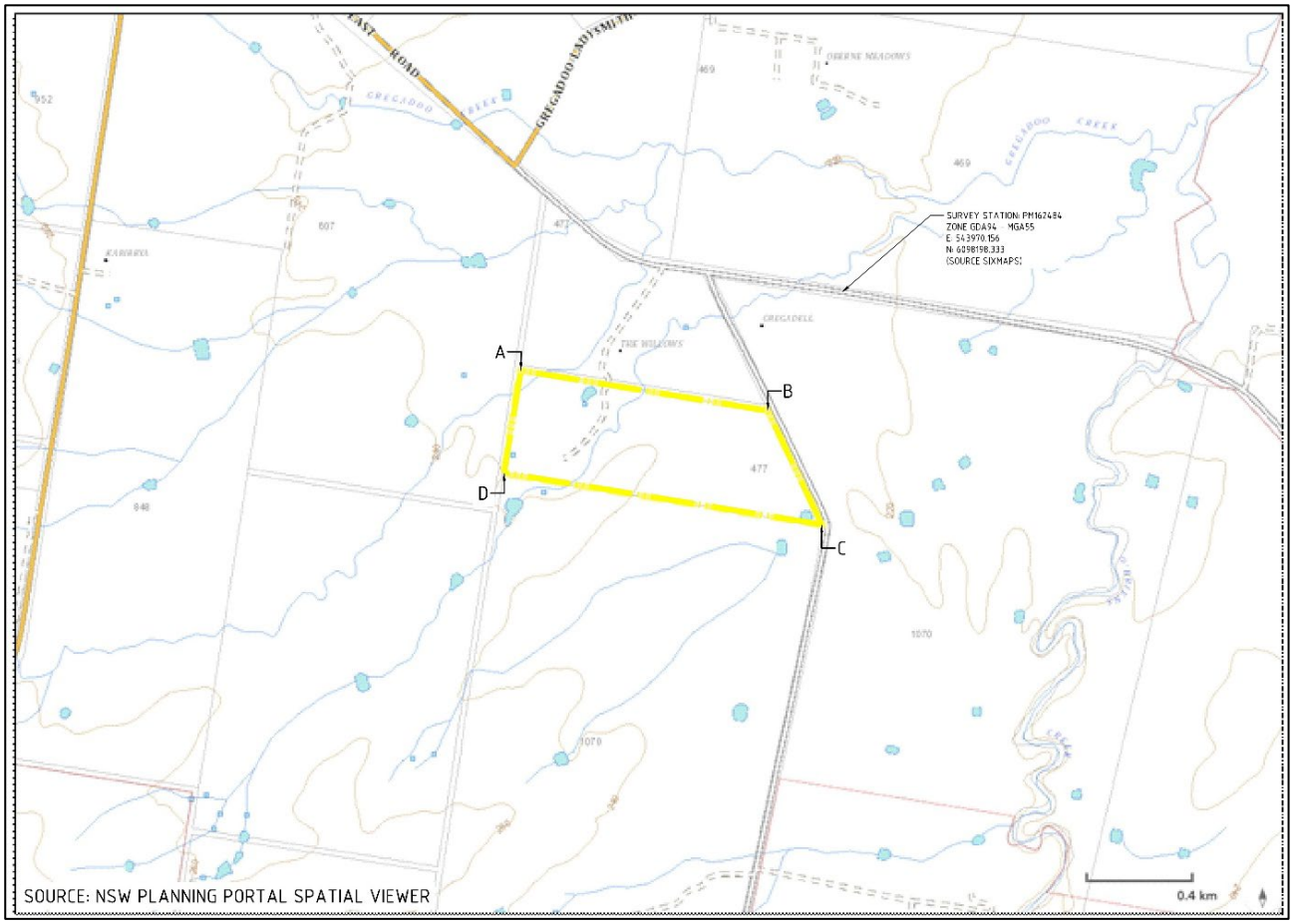


Figure 3 NSW Base Map of the site outlined yellow (Source: NSW Planning Portal Spatial Viewer)

1.4 Background to the Project and Related Development

The proposed BESS supplements Transgrid's HumeLink high voltage 330/500kv overhead electrical transmission line infrastructure project adjacent to the site and its associated 330/500kV Gugaa Substation being constructed on the adjoining property to the south. Hume Link was approved by the NSW Government as a Critical State Significant Infrastructure (CSSI) project in November 2024, and by the Federal Minister for Environment under the EPBC Act in December 2024. The HumeLink is a major electricity transmission project that enhances the distribution, capacity, reliability, and efficiency of the national grid and supporting a transition to renewable energy. In addition to the HumeLink and its Gugaa Substation adjoining the site, the locality has a number of renewable electricity generating projects at different stages of planning and development.

The site for the proposed Gugaa BESS was selected through a targeted multi-criteria process that prioritised optimal grid connection and minimal environmental impact. The preferred site directly adjoins Transgrid's new Gugaa 330/500 kV Substation (part of HumeLink), enabling fast, high-capacity connection with minimal easements . The site offers gentle topography, low biodiversity values, limited visual impact, and few constraints, making it clearly superior to other potential BESS locations considered in the surrounding area.

2 Strategic Context

This section of the Scoping Report provides an overview of the strategic context of the proposed Gugaa BESS in terms of:

- Government policies and plans; and
- regional and local context; and
- site environment conditions.

2.1 Government Policies and Plans

The main Government policies, strategies and plans that provide a context for the proposed BESS are summarised in the following table.

Document	Summary	Project Alignment
AEMO Integrated System Plan 2024	The 2024 Integrated System Plan (ISP) outlines Australia's electricity transition, forecasting the National Electricity Market's transformation to net zero by 2050. It projects an increase in utility-scale renewable generation, significant battery storage deployment, and approximately 10,000 km of new transmission infrastructure. The plan emphasizes investment in renewable energy, storage, and transmission to replace retiring coal generation, ensuring reliable, affordable, and low-emission electricity while supporting Australia's economic growth and emissions reduction targets. It identifies Renewable Energy Zones (REZs) to tap into high-quality wind and solar areas using economies of scale and providing new employment opportunities in areas selected for the quality of their renewable resource, and their proximity to consumers, existing transmission and available skilled workforces.	The proposed BESS aligns with the ISP's objectives by providing critical grid firming capacity and enhancing transmission infrastructure reliability. The project contributes to the plan's goals of integrating variable renewable energy, supporting grid stability, and facilitating the transition away from coal-powered generation. It exemplifies the ISP's strategy of developing strategic storage assets to manage peak demand and support the evolving electricity network. The subject site is located within a candidate REZ.
Australian Government Net Zero Plan	In response to the Paris Agreement and a global commitment to reduce global temperatures, Australia's Net Zero Plan will guide the transition to net zero greenhouse gas emissions by 2050. The Electricity and Energy Sector Plan aims to transform Australia's energy landscape by 2050 and is anticipated to focus on five key areas: mobilizing investment, enabling electrification, growing low-carbon fuels, building a clean energy workforce, and maximising outcomes for people and businesses.	The development aligns with the Net Zero Plan by supporting grid stability, integrating renewable energy, and providing critical infrastructure near existing substations, the project embodies the plan's goals of emission reduction in the energy sector and decarbonisation of the electricity grid. The facility's strategic location and potential to support multiple states reflects the national approach to decarbonizing Australia's energy system while maintaining reliability and affordability.

Document	Summary	Project Alignment
Climate Change (Net Zero Future) Act 2023	The Climate Change (Net Zero Future) Act 2023 legislates a comprehensive approach to addressing climate change in NSW. It establishes ambitious emissions reduction targets, including a net zero by 2050. The Act creates an independent Net Zero Commission to monitor progress, enshrines guiding principles for climate action, and aims to improve resilience. It provides a clear policy framework aligned with the Paris Agreement, ensuring governmental accountability and signalling a commitment to protecting communities and the environment.	The proposed development aligns with the Act's guiding principles of climate action and creating opportunities for sustainable economic development. The project contributes to reducing carbon emissions, supports the transition to a low-carbon economy, and helps build resilience in the energy system.
NSW Electricity Strategy	The NSW Electricity Strategy aims to transform the state's energy system by improving market efficiency, ensuring reliability, and supporting affordability. It promotes development of Renewable Energy Zones (REZs) setting an Energy Security Target, and encouraging investment in new generation technologies. The strategy seeks to reduce electricity prices, maintain system reliability, and transition towards cleaner energy sources by supporting renewable and firmed generation projects across New South Wales.	The development supports the Strategy by providing critical infrastructure for grid stability and renewable energy integration. It aligns with the strategy's objectives of developing firmed generation capacity and enhancing grid reliability. The project contributes to the state's goal of transitioning to net-zero emissions by 2050 and provides energy to manage peak demand and support variable renewable generation.
NSW Transmission Infrastructure Strategy	The NSW Transmission Infrastructure Strategy aims to transform the state's energy system by improving connectivity with neighbouring states, unlocking renewable energy resources through Energy Zones, and reducing investment barriers. The strategy seeks to facilitate up to 17,700 MW of new electricity generation, potentially attracting $23 billion in private investment, supporting regional development, and ensuring affordable, reliable energy supply as traditional power stations retire.	The proposed development aligns closely with the strategy's objectives by supporting grid reliability, enabling renewable energy integration, and providing critical infrastructure to manage peak energy demands. Located near existing infrastructure, the BESS will help stabilize the electricity network, support the transition away from fossil fuels, and enhance the region's energy resilience and affordability.
NSW Electricity Infrastructure Roadmap	The Electricity Infrastructure Roadmap is a plan for affordable, clean and reliable energy provision through NSW's electricity system infrastructure that supports generation, delivery, storage and firming. The Electricity Infrastructure Roadmap focuses on transition away from coal-fired power stations and replacement with renewable energy sources.	The development supports the Electricity Infrastructure Roadmap's objectives of transition to renewable energy and improvement of grid reliability. Located strategically near existing infrastructure, the project supports the development of Renewable Energy Zones and contributes to the state's goal of achieving net zero emissions by 2050. By providing critical energy storage capabilities, the facility will help integrate

Document	Summary	Project Alignment
		intermittent renewable energy sources into the grid and improve system stability.
Riverina Murray Regional Plan	The Riverina Murray Regional Plan 2041 is a strategic 20-year land use plan for the region. It provides a vision for sustainable development, focusing on environment, communities, and economic growth. The plan addresses key challenges like population growth, climate change, and infrastructure needs, while supporting Aboriginal aspirations and protecting natural assets. It aims to create a diverse, resilient region with strong connections to agriculture, renewable energy, and regional cities.	The development aligns with key objectives of the Regional Plan. The project supports the region's transition to net zero emissions by 2050, contributes to renewable energy infrastructure, enables economic diversification and demonstrates strategic planning for sustainable development. The facility will enhance grid reliability and provide critical infrastructure for New South Wales, South Australia, and Victoria while minimising disruption of agricultural activities.
Wagga Wagga Community Strategic Plan 2050	The CSP is a vision for Wagga Wagga's future, developed through extensive community engagement to reflect local aspirations. It provides strategic direction for development, focusing on four strategic focus areas: Vibrant, Growing, Sustainable and Regional Leadership. The plan aims to guide Council's strategic documents and reflects the community's desire for a thriving, progressive regional city that values cultural diversity, economic opportunity, environmental sustainability, and innovative leadership.	The development aligns with the Community Strategic Plan's objectives. It supports the "Growing" and "Sustainable" strategic focus areas by promoting renewable energy infrastructure, contributing to economic diversification, and advancing Wagga Wagga's commitment to sustainable development. The project demonstrates Wagga Wagga's innovation in the energy sector, supports the goal of becoming a regional leader in sustainable technologies, and aligns with the community's aspiration for infrastructure that drives economic and environmental progress.
Local Strategic Planning Statement (Planning for the Future: Wagga Wagga 2040)	The Wagga Wagga LSPS is a comprehensive 20-year vision for the LGA's growth and development. It focuses on three key themes: The Environment, Growing Economy and Community Place and Identity. The document outlines strategic principles aimed at sustainable urban expansion, protection of natural assets and creation of a vibrant regional capital. It projects the population growing to 100,000 residents.	The development aligns with Wagga Wagga's strategic vision supporting goals of promoting renewable energy, diversifying industry and contributing to the national power grid. It is consistent with the LSPS's objectives of supporting innovative industries, particularly renewable energy, and developing infrastructure that enhances the region's economic potential.

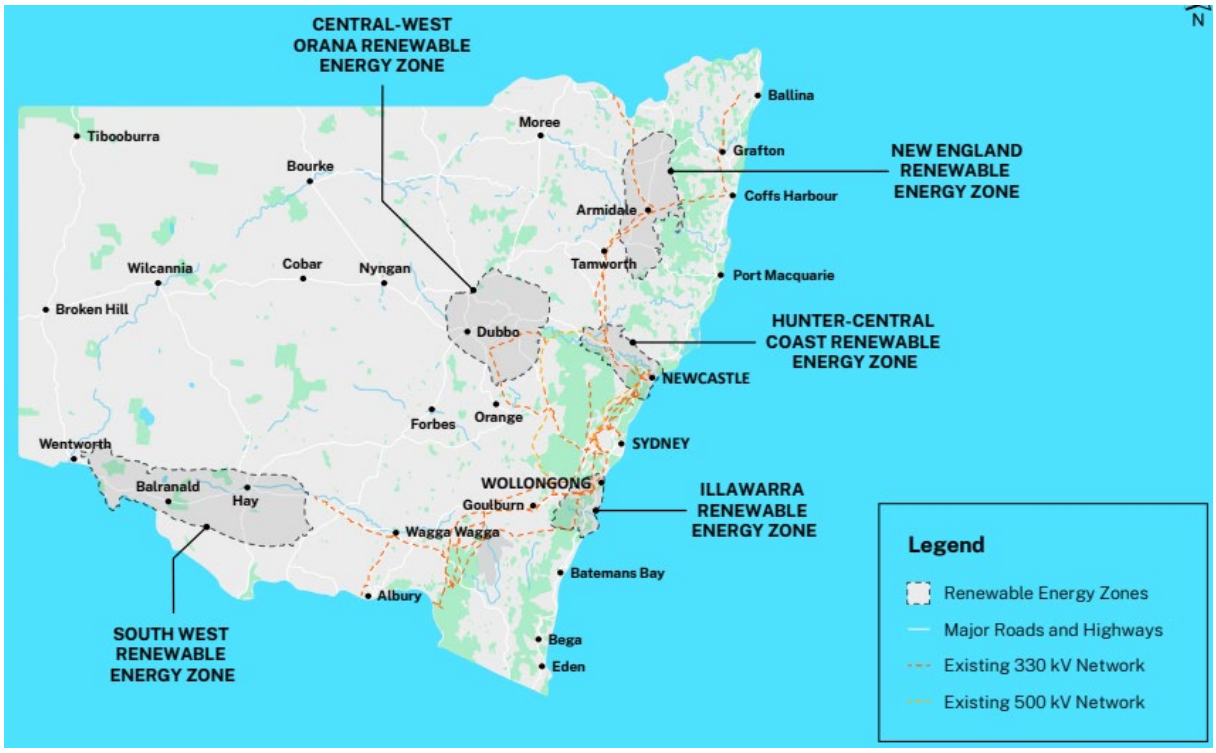


Figure 4 Map of NSW Renewable Energy Zones *(Source: Energy Co)*

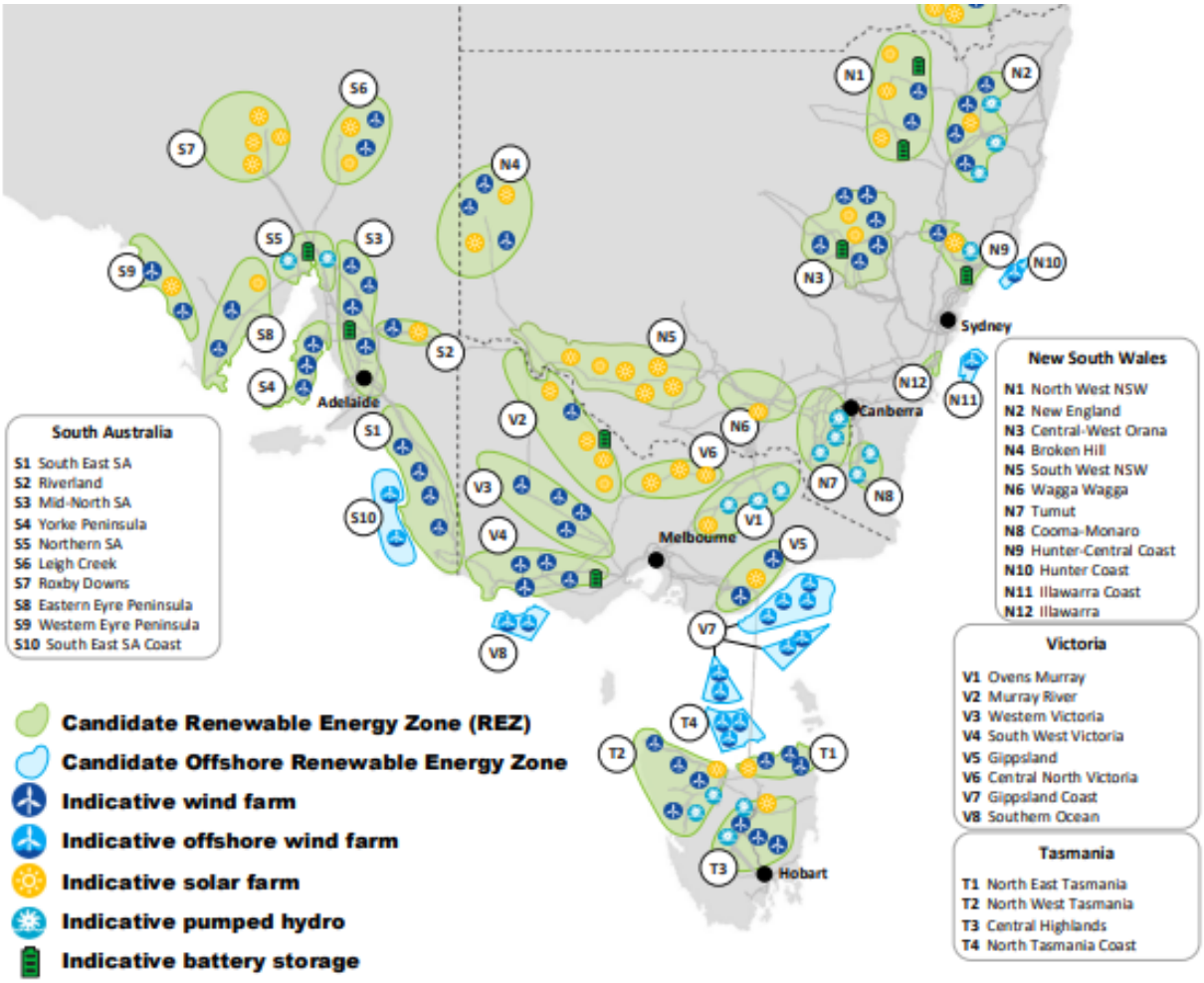


Figure 5 ***Map of Candidate Renewable Energy Zones in which the site is located in the N6 Wagga Wagga Candidate REZ*** *(Source: Integrated System Plan for the National Electricity Market - Appendix 3 Renewable Energy Zones - Australian Energy Market Operator - June 2024)*

2.2 Regional and Local Site Context

The following describes the site context in relation to the:

- energy network
- transport network
- land use context and surrounding sensitive receivers
- water catchment.

Energy Network

The site is located to the east of the South West Renewable Energy Zone (REZ) and within the Wagga Wagga Candidate REZ as shown in Figures 4 and 5 above.

The site is immediately adjacent to the Hume Link high voltage 330/500kV overhead electrical transmission line and associated Gugaa substation being constructed by Transgrid on the adjoining property to the south. Hume Link was approved by the NSW Government as a Critical State Significant Infrastructure (CSSI) project in November 2024. The Federal Minister for Environment approved Hume Link under the EPBC Act in December 2024. The Hume Link is a major electricity transmission project that is critical in enhancing the distribution, capacity, reliability, and efficiency of the national grid and supporting a transition to renewable energy as coal-fired power stations retire. It involves the construction of approximately 360 kilometres of new 500 kV transmission lines connecting key renewable energy zones and infrastructure hubs including Wagga Wagga, Bannaby, and Maragle in the Snowy Mountains, and improving the connection between Snowy Hydro's pumped hydro storage systems and the electricity grid. The proposal would provide the required support for the network in southern NSW, allowing for the increase in transfer capacity between new renewable generation sources and the demand centres of Sydney, Newcastle and Wollongong. Construction is scheduled for completion by 2026, with the northern section of the transmission line (Gugaa to Bannaby) expected to be operational by mid-2026. When completed, HumeLink aims to increase transfer capacity between southern NSW and major load centres within NSW (Sydney, Newcastle and Wollongong), reinforce stability and reliability in the network, and facilitate transition of the network to new generation sources.

Hume Link also involves the development of a Gugaa substation on the adjoining property to the south of the site which is currently under construction. Figures 4 and 5 below shows the Hume Link high voltage power line project with Gugaa substation next to the site.

The locality has a number of renewable electricity generating projects at different stages of planning and development. Aerial images showing surrounding renewable electricity generating projects can be found in Figure 6 below and in **Appendix K**. The status of these renewable electricity generating projects is understood to be as follows:

Operational

- Bomen Solar Farm
- Wagga Wagga North Solar Farm
- Riverina Oils Solar Farm

Approved

- Gregadoo Solar Farm (modification for BESS)

DA Withdrawn

- Uranquinty Solar Farm
- Mates Gully Solar Farm

Proposed in DA

- Livingston Solar Farm and BESS
- Mangoplah BESS
- Belhaven BESS
- Maxwell Downs Solar Farm and BESS
- The Rock Solar Farm
- Arundal BESS (Wagga Energy Park)

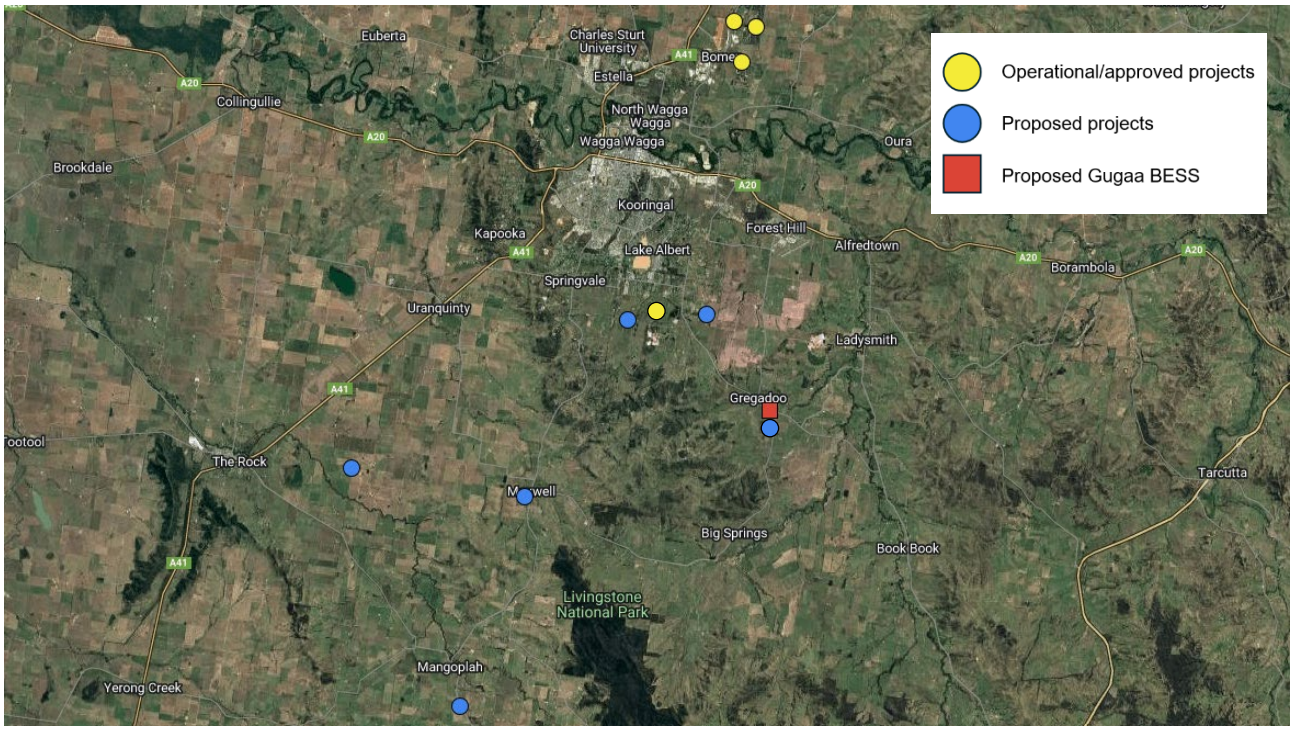


Figure 6 Map showing operational, approved and proposed major renewable energy projects near the subject site

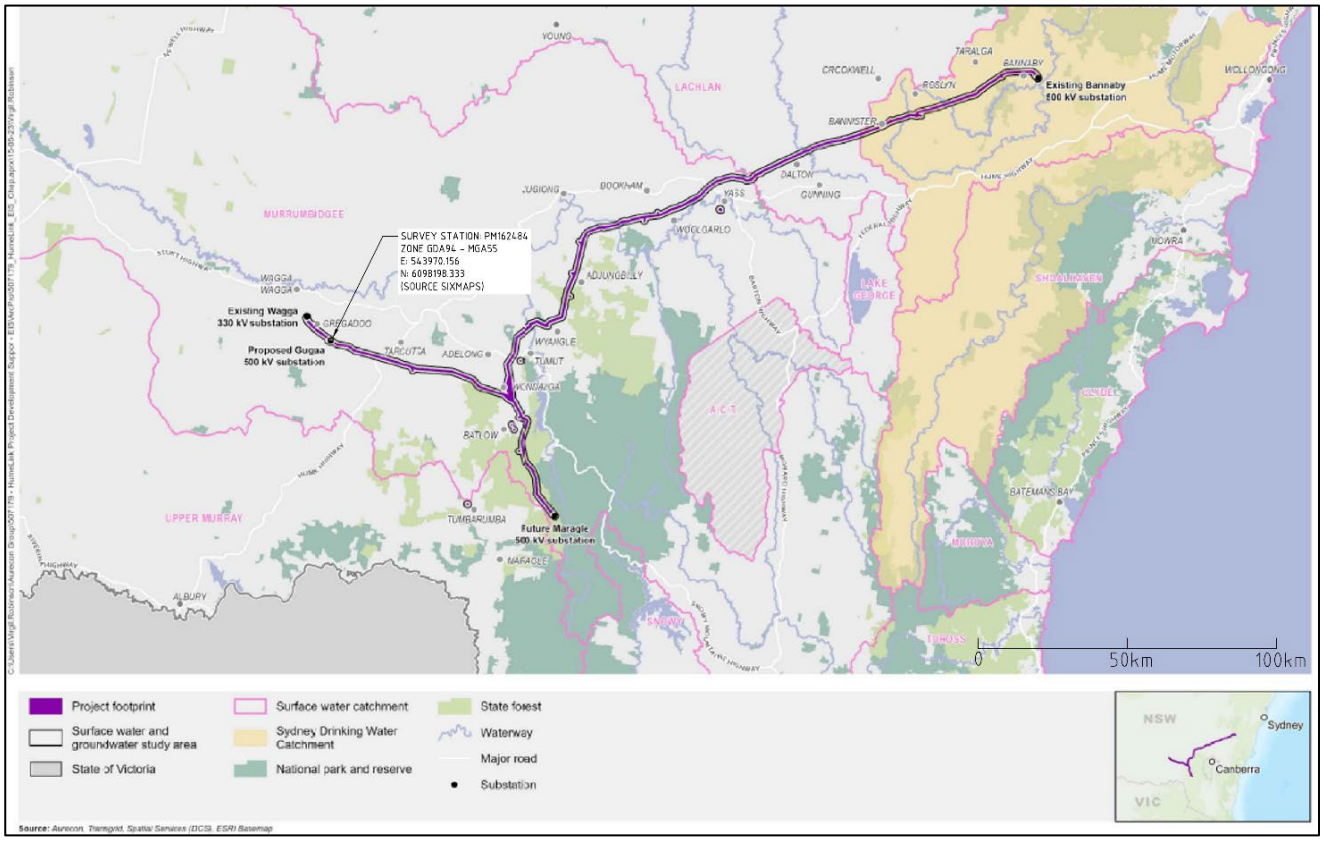


Figure 7 Hume Link power line adjacent to the subject property (Source: Aurecon for Transgrid)

Transport network

Road Network

The main road network in the vicinity of the site includes the following classified roads shown in Figure 8 below:

- Hume Highway 30km to the east
- Sturt Highway 15km to the north
- Olympic Highway 20km to the west.
- Tumbarumba (Regional) Road 1km to the east.

The subject site fronts Livingstone Gully Road which is an unsealed public road and is approximately 540m to and from Gregadoo East Road which is a sealed collector road to and from Wagga Wagga urban area and also connecting to the main road network.

Roads approved for use by B-Double heavy vehicle include the abovementioned Highways and Tumbarumba Regional Road, part of Gregadoo East Road, and Livingstone Gully Road. This provides an approved B Double route between the site, Hume Highway and Sydney.

Figure 8 below shows the road network around the site and the approved B-Double routes.

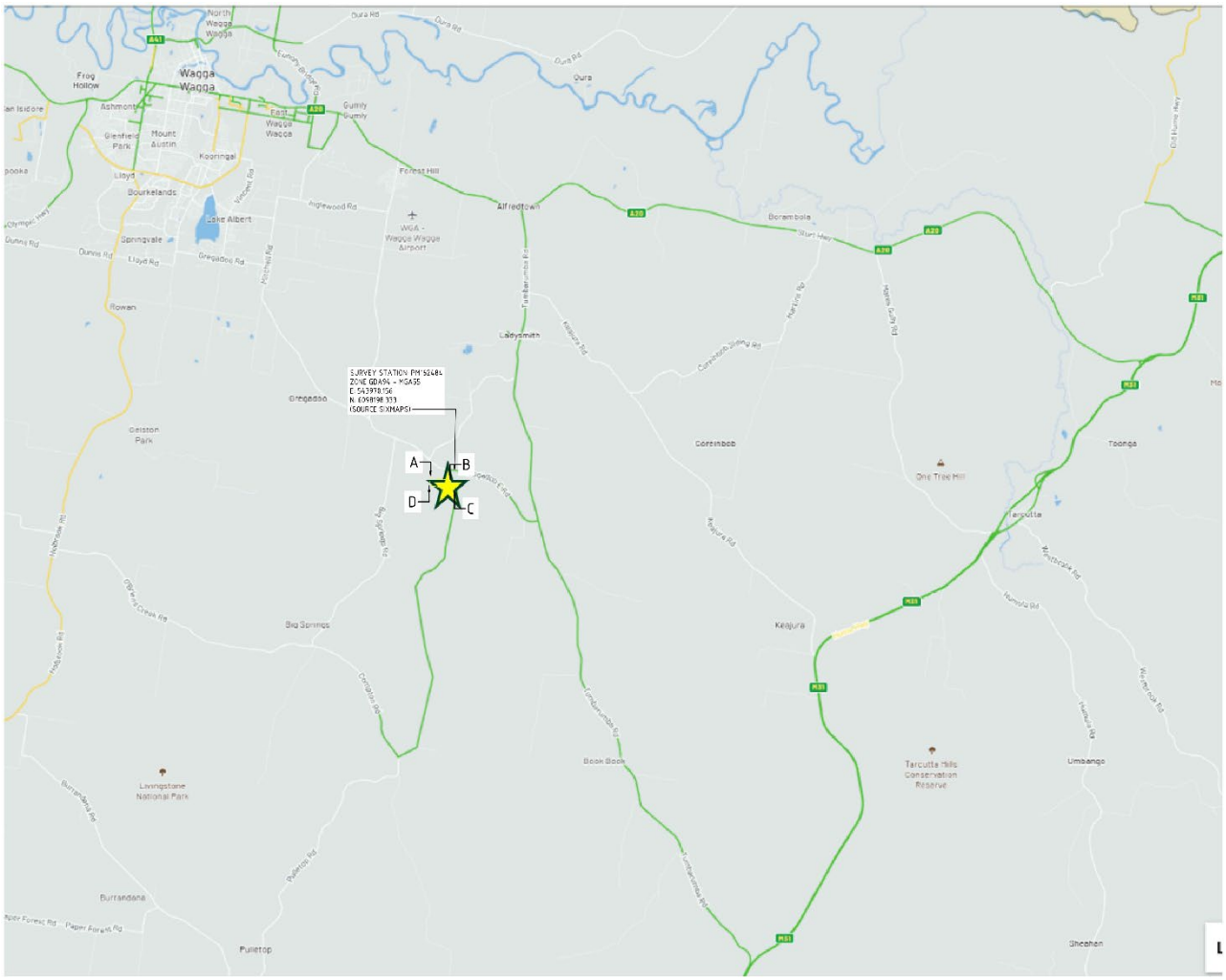


Figure 8 Main road network in the site locality with approved B-Double route shown green and site location marked with yellow star *(Source: National Heavy Vehicle Regulator NHVR Route planner tool)*

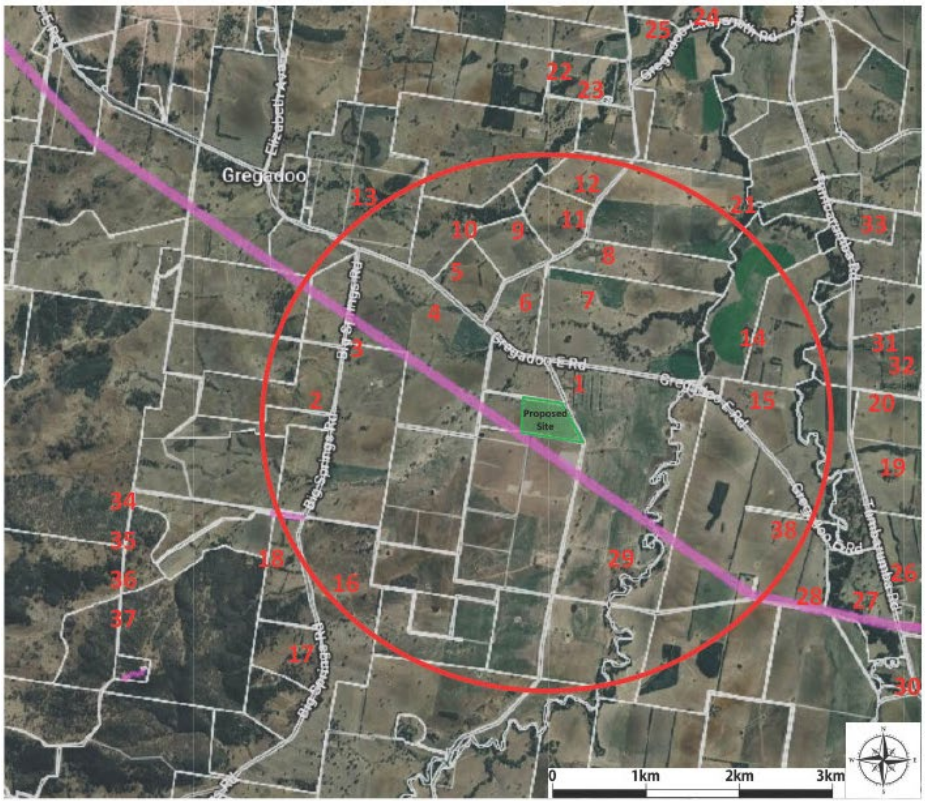
Rail network

The Inland Rail project by the NSW and Federal Governments is under construction and will provide a freight rail line connection between Melbourne and Brisbane that includes Wagga Wagga as a key station point along the route including a Riverina Intermodal Freight and Logistics Hub at Bomen in north Wagga.

The Main Southern railway line provides passenger rail service between Sydney and Melbourne and includes Wagga Wagga station as a key stop on the route.

Land use context and surrounding residences / sensitive receivers

The site is located 15km to the southeast of the Wagga Wagga urban area. The site is not located within or near land mapped by the NSW Government as Strategic Agricultural Land. Figures 9 and 10 and the plans in **Appendix K** show surrounding residences (sensitive receivers) located within a 1km, 3km and 5km radius of the site. There are just two dwellings located within 1km of the site including one farm dwelling on the property of the proposed BESS, and one dwelling approximately 300m to the northeast of the site which is understood to be part of a separately proposed neighbouring solar farm project.



No	Address	Suburb	State/Postcode
1	1071 Livingstone Gully Road	Gregadoo	NSW 2650
2	759 Big Springs Road	Gregadoo	NSW 2650
3	848 Big Springs Road	Gregadoo	NSW 2650
4	607 Gregadoo East Road	Gregadoo	NSW 2650
5	580 Gregadoo East Road	Gregadoo	NSW 2650
6	Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
7	469 Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
8	467 Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
9	466 Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
10	636 Gregadoo East Road	Gregadoo	NSW 2650
11	390 Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
12	366 Gregadoo -Ladysmith Road	Gregadoo	NSW 2650
13	732 Gregadoo East Road	Gregadoo	NSW 2650
14	258 Gregadoo East Road	Book Book	NSW 2650
15	256 Gregadoo East Road	Book Book	NSW 2650
16	604 Big Springs Road	Big Springs	NSW 2650
17	525 Big Springs Road	Big Springs	NSW 2650
18	603 Big Springs Road	Big Springs	NSW 2650
19	8232 Tumbarumba Road	Book Book	NSW 2650
20	8523 Tumbarumba Road	Book Book	NSW 2650
21	Same as No 8	Gregadoo	NSW 2650
22	65 Vincent Road	Gregadoo	NSW 2650
23	98 Vincent Road	Gregadoo	NSW 2650
24	183 Gregadoo-ladysmith Road	Gregadoo	NSW 2650
25	112 Gregadoo-ladysmith Road	Gregadoo	NSW 2650
26	8100 Tumbarumba Road	Book Book	NSW 2650
27	8095 Tumbarumba Road	Book Book	NSW 2650
28	7979 Tumbarumba Road	Book Book	NSW 2651
29	765 Livingstone Gully Road	Big Springs	NSW 2650
30	7760 Tumbarumba Road	Book Book	NSW 2650
31	8374 Tumbarumba Road	Book Book	NSW 2650
32	79 Bulks Road	Book Book	NSW 2650
33	8520 Tumbarumba Road	Book Book	NSW 2650
34	663 Big Springs Road	Big Springs	NSW 2650
35	665 Big Springs Road	Big Springs	NSW 2650
36	667 Big Springs Road	Big Springs	NSW 2650
37	699 Big Springs Road	Big Springs	NSW 2650
38	187 Gregadoo East Road	Gregadoo	NSW 2651

Figure 9 ***Aerial image showing location of residences in the surrounding area and 3km radius (red circle) of the site*** *(Source: Northrop)*

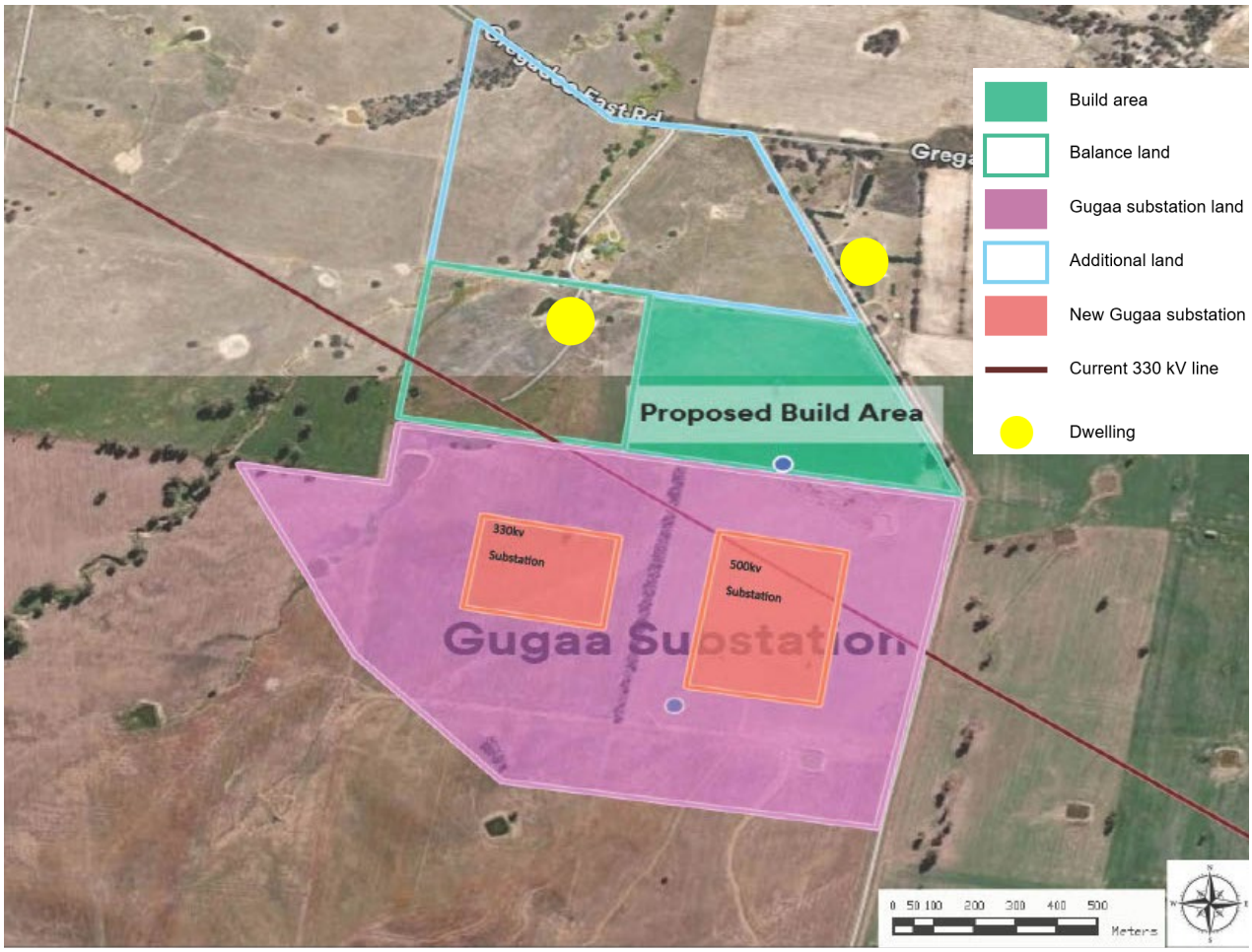


Figure 10 Neighbouring businesses and residential properties within a 1km radius *(Source: Northrop)*

Water Catchment

The site is within the catchment of O'Briens Creek which is approximately 1km to the east and is tributary of the Murrumbidgee River located approximately 16km to the north of the site.

2.3 Site Conditions

A description of the site attributes and environmental conditions is provided below and shown on the maps and diagrams in Figures 11 and 22 further below. These figures are also contained in **Appendix K**.

Attribute	Description
Access	The subject Lot 114 fronts Livingstone Gully Road which is an unsealed public road, and is approximately 540m to and from Gregadoo East Road which is a sealed two lane collector road to the north. A Crown road reserve runs along the northern boundary of the subject Lot 114 on which the roadway is not constructed.
Topography	Gently sloping topography with slopes ranging from 1% to 6% from the high western side of the site between RL238 and RL 232 to the low east side of the site on the site frontage between RL 224 to RL 221. The land is not identified as being subject to land stability issues.
Hydrology	The site is within the catchment of Gregadoo Creek, O'Briens Creek approximately 1km to the east and Kyeamba Creek which are tributaries of the Murrumbidgee River located approximately 16km to the north of the site.

	Two mapped watercourses traverse the west part of the site outside the proposed BESS footprint, namely Big Spring Creek running across the northwest corner identified in the LEP as a sensitive water resource and an unnamed second-order channel through the middle of the subject property. A dam is also on the southeast corner of the site. The site is not identified as flood prone land.
Vegetation & Biodiversity	The site has been largely cleared of native trees and shrubs. Vegetation remaining on Lot 114 includes primarily native and exotic grass pastures and crops, and isolated native and exotic trees including a recently planted wind row along a fence line further behind the rear of the proposed BESS site. The site of the proposed BESS has a cluster of ten eucalypt trees planted less than 20 years ago. Gregadoo Road reserve in front of the site has a row of eucalypt street trees for approximately 50% of the site frontage. The Biodiversity Values Map under the BC Act applies to the riparian corridor running through the northwest corner of the subject Lot 114. The remaining majority of the subject property including the proposed BESS site is not within the Biodiversity Values Map. The LEP Terrestrial Biodiversity Map and LEP Natural Resources Sensitivity Map - Biodiversity Map identify small areas of biodiversity significance / sensitivity near the south east corner of the site. The remaining majority of the subject property is not within these LEP biodiversity maps.
Soils and Agricultural Capability	The site is not located within or near land mapped by the NSW Government as Strategic Agricultural Land. The subject land is identified as Class 3, 4 and 5 under the Statewide land and soil mapping Land and Soil Capability class map which has limitations as agricultural productivity as follows: ► Class 3: Moderate limitations ► Class 4: Moderate To Severe Limitations ► Class 5: Severe Limitations
Heritage	There is no known item or place of Aboriginal heritage significance on or nearby the site in an AHIMS search. There is no heritage item listed in the LEP or State heritage register on or nearby the site.
Bushfire Hazard	The site and its surrounds are bushfire prone land Vegetation Category 3.
Surrounding Land Uses	The site is surrounded by land zoned RU1 Primary Production used predominantly for agriculture and primarily for grazing. The area includes a number of renewable energy projects approved and under construction.
	To the north of the site is the remainder of the subject property holding at 477 Gregadoo East Road comprising Lot 30 DP DP757261. Further to the north is the Gregadoo East Road (collector road) to and from Wagga Wagga urban area, and broad areas of RU1 Zone.
	To the immediate south of the site is a property zoned RU1 which has: 500kV TransGrid electrical transmission line easement Gugaa Substation currently under construction on the adjoining property Proposed SSD for large scale solar farm (SEARs issued). Further to the south is RU1 zone land used predominantly for agriculture.

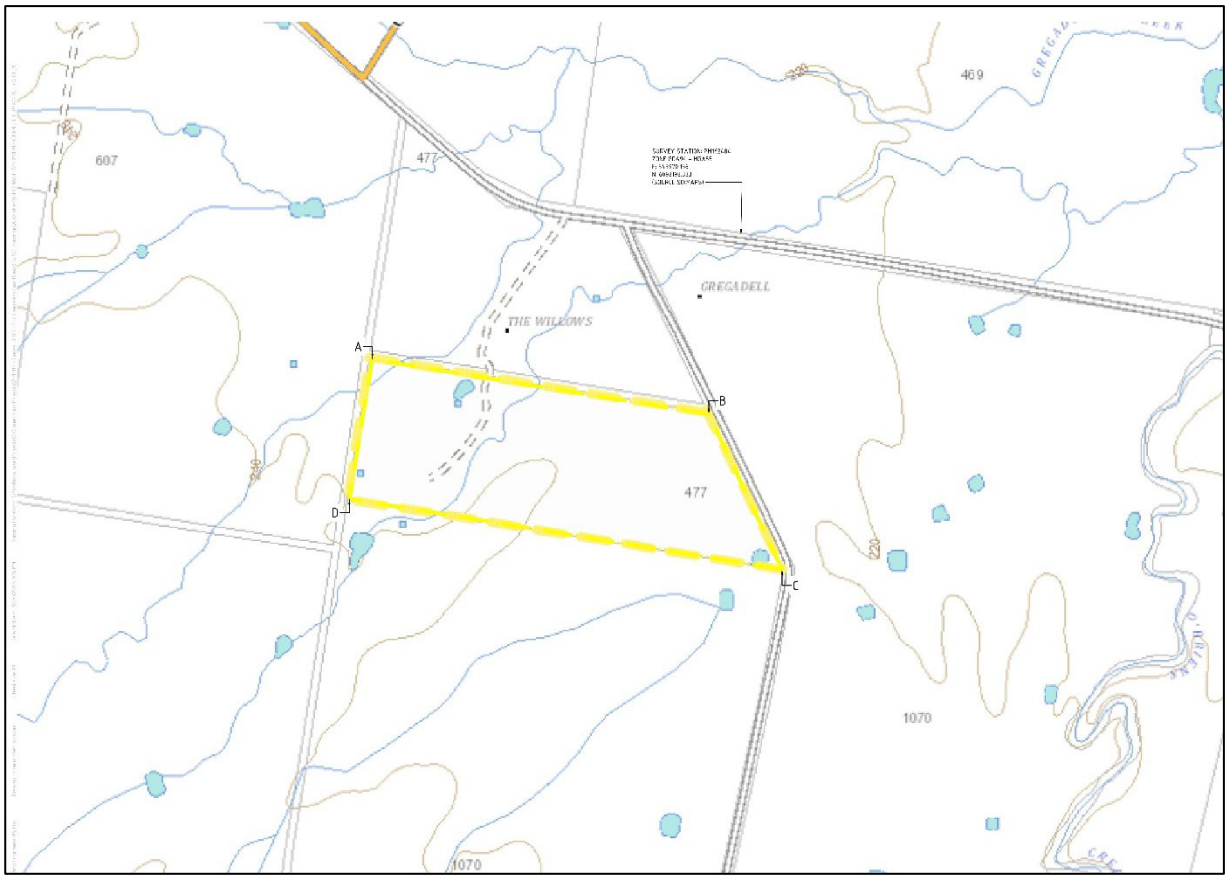


Figure 11 NSW Base Map of the site outlined yellow and its surrounds with cadastral boundaries, contours and water courses *(Source: NSW Planning Portal Spatial Viewer)*

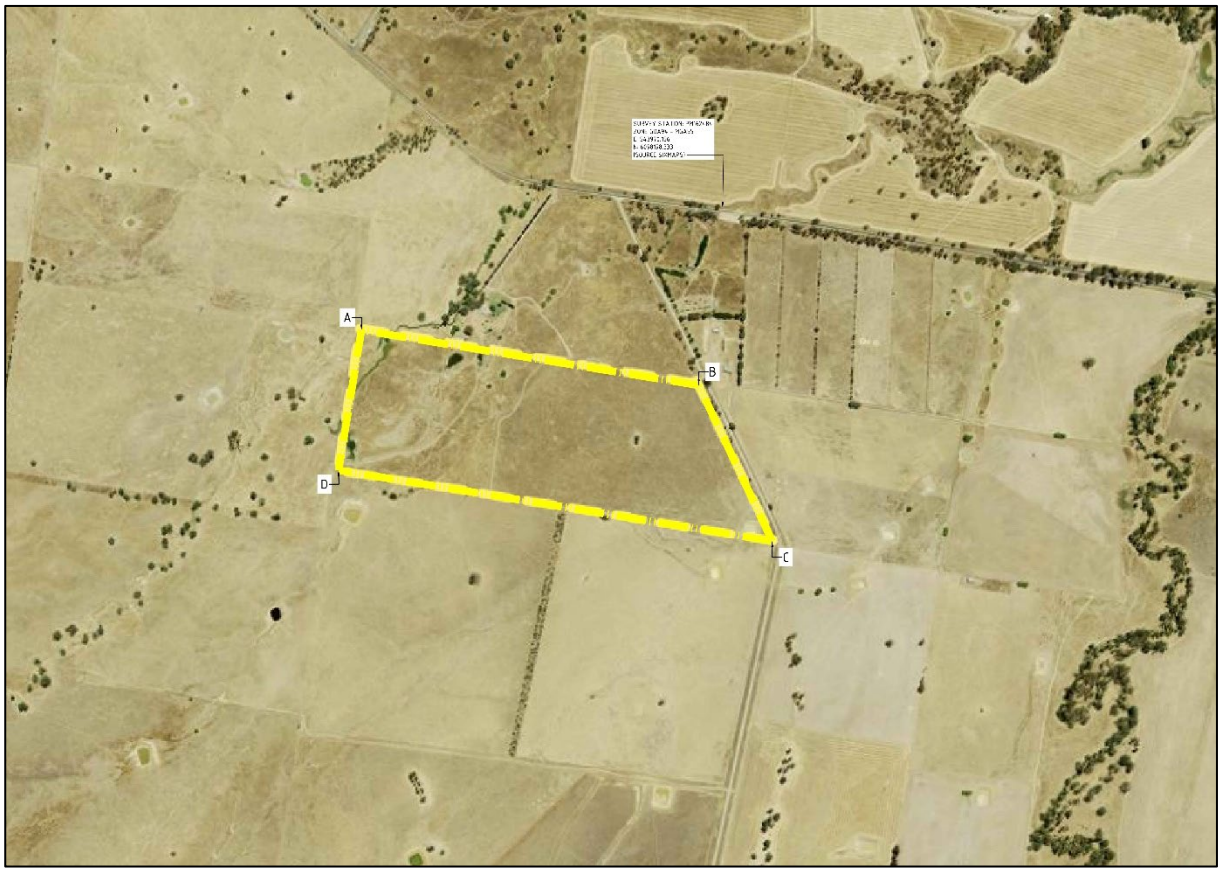


Figure 12 Aerial photo image of the site outlined yellow *(Source: NSW Planning Spatial Viewer)*

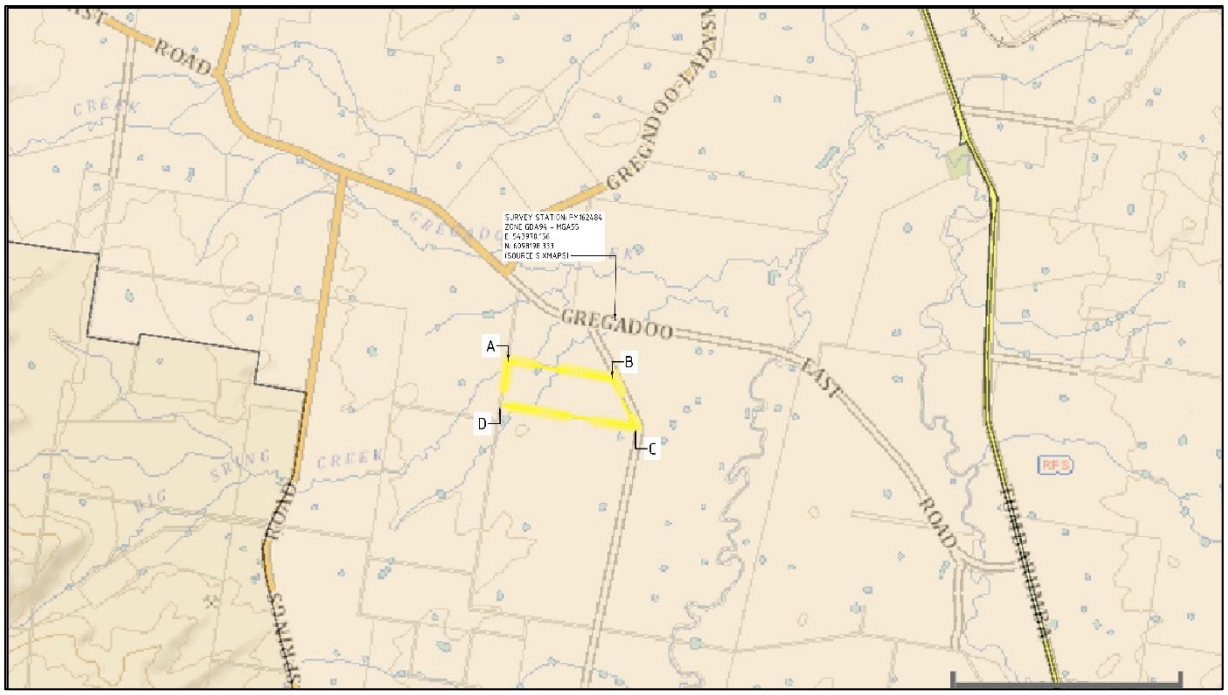


Figure 13 Zoning map of the subject property outlined yellow and its surrounds zoned RU1 Primary Production *(Source: NSW Planning Spatial Viewer)*

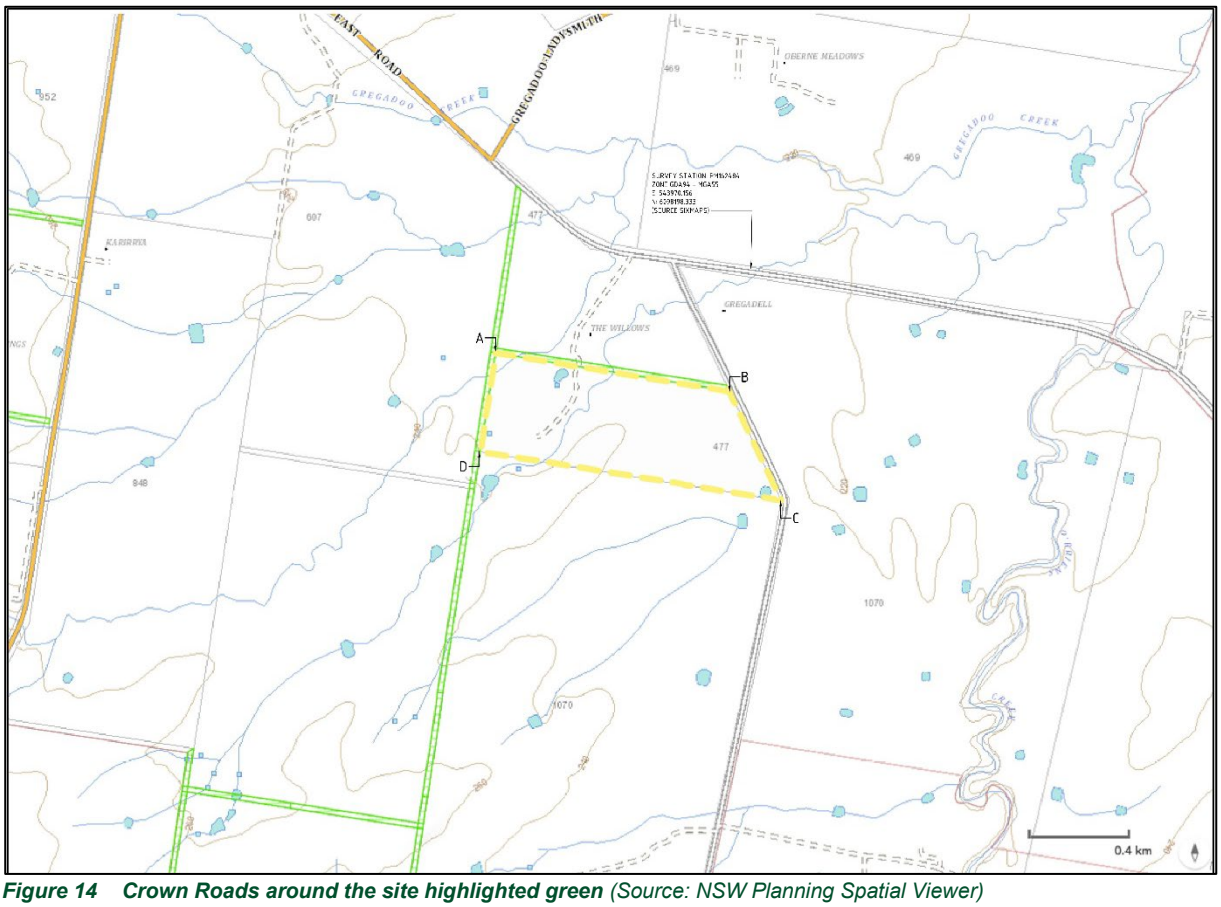


Figure 14 Crown Roads around the site highlighted green *(Source: NSW Planning Spatial Viewer)*

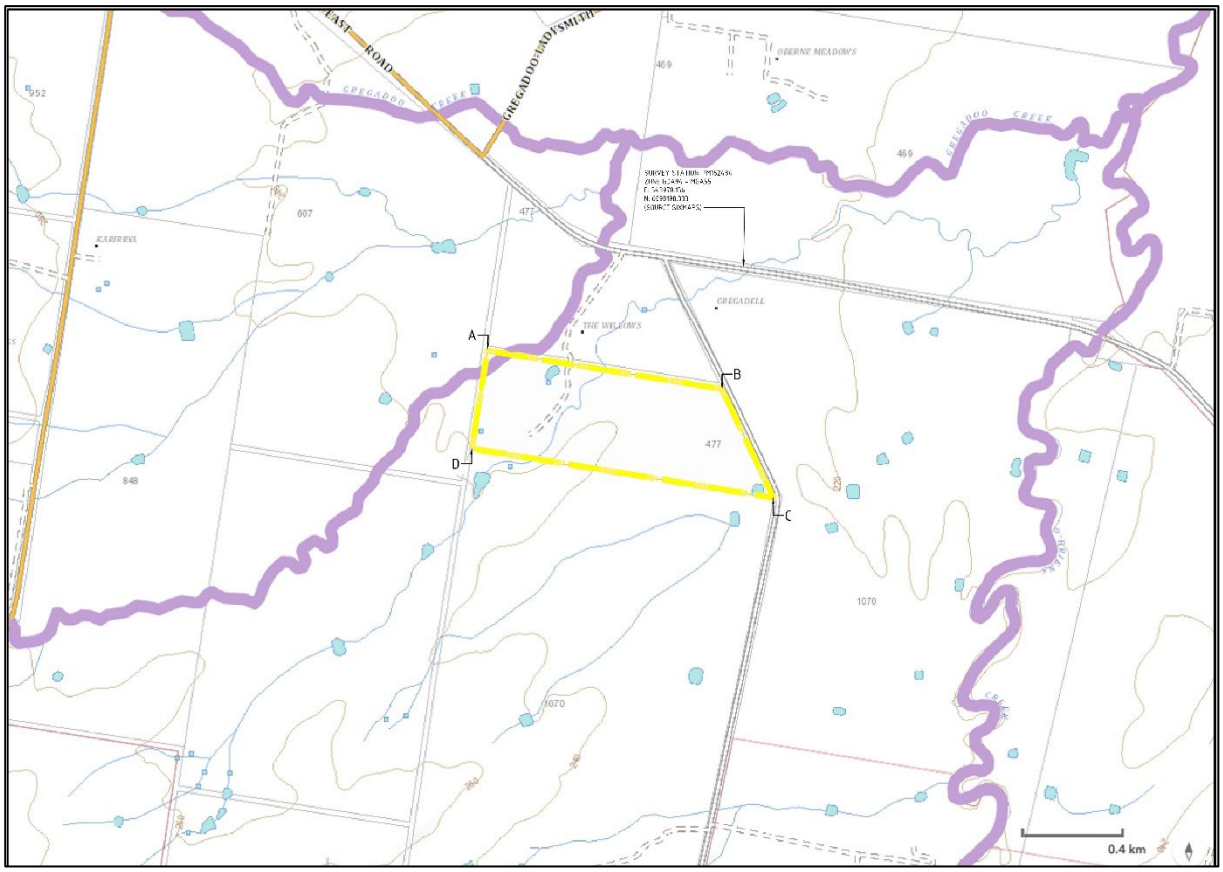


Figure 15 Biodiversity Values Map *(Source: NSW Planning Spatial Viewer)*

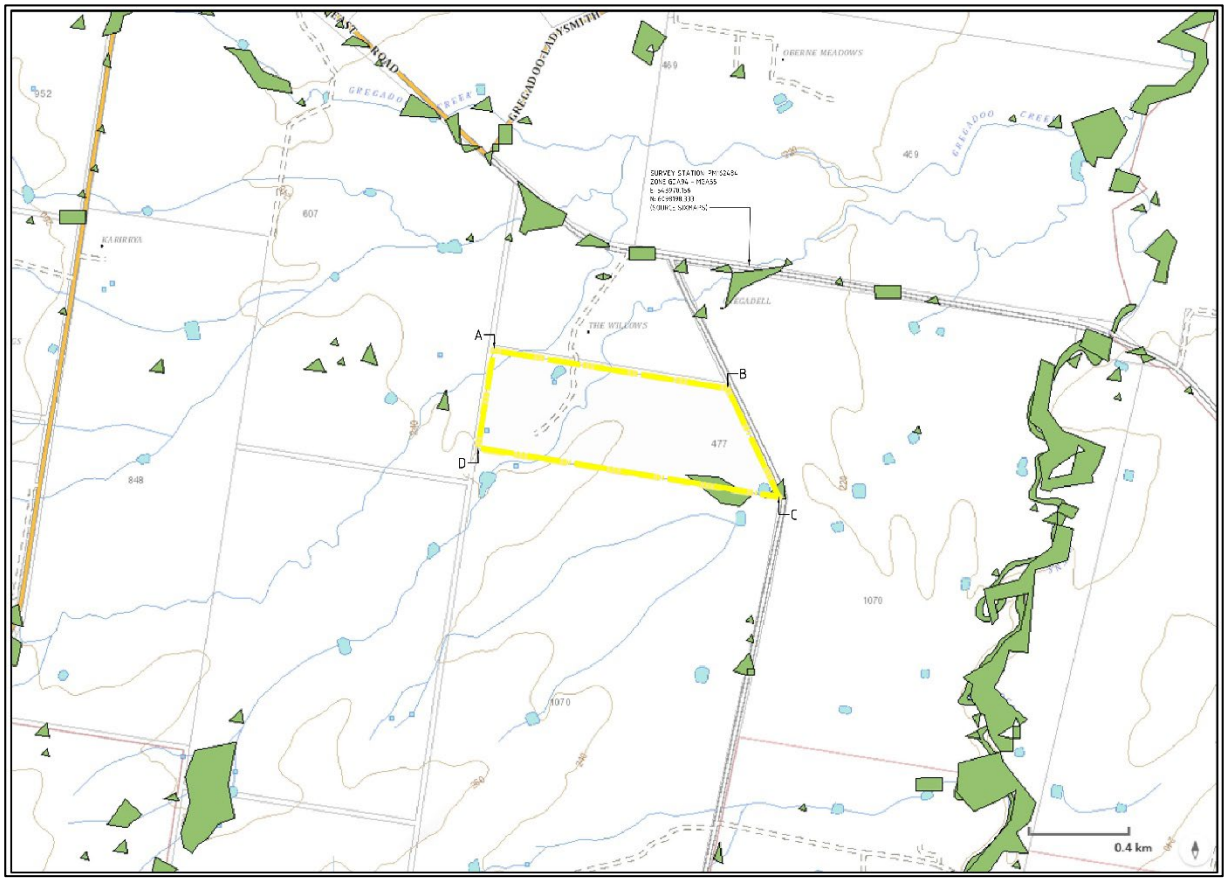


Figure 16 LEP Terrestrial Biodiversity Values Map *(Source: NSW Planning Spatial Viewer)* ***which is duplicated in the LEP Natural Resources Sensitivity Map - Biodiversity***

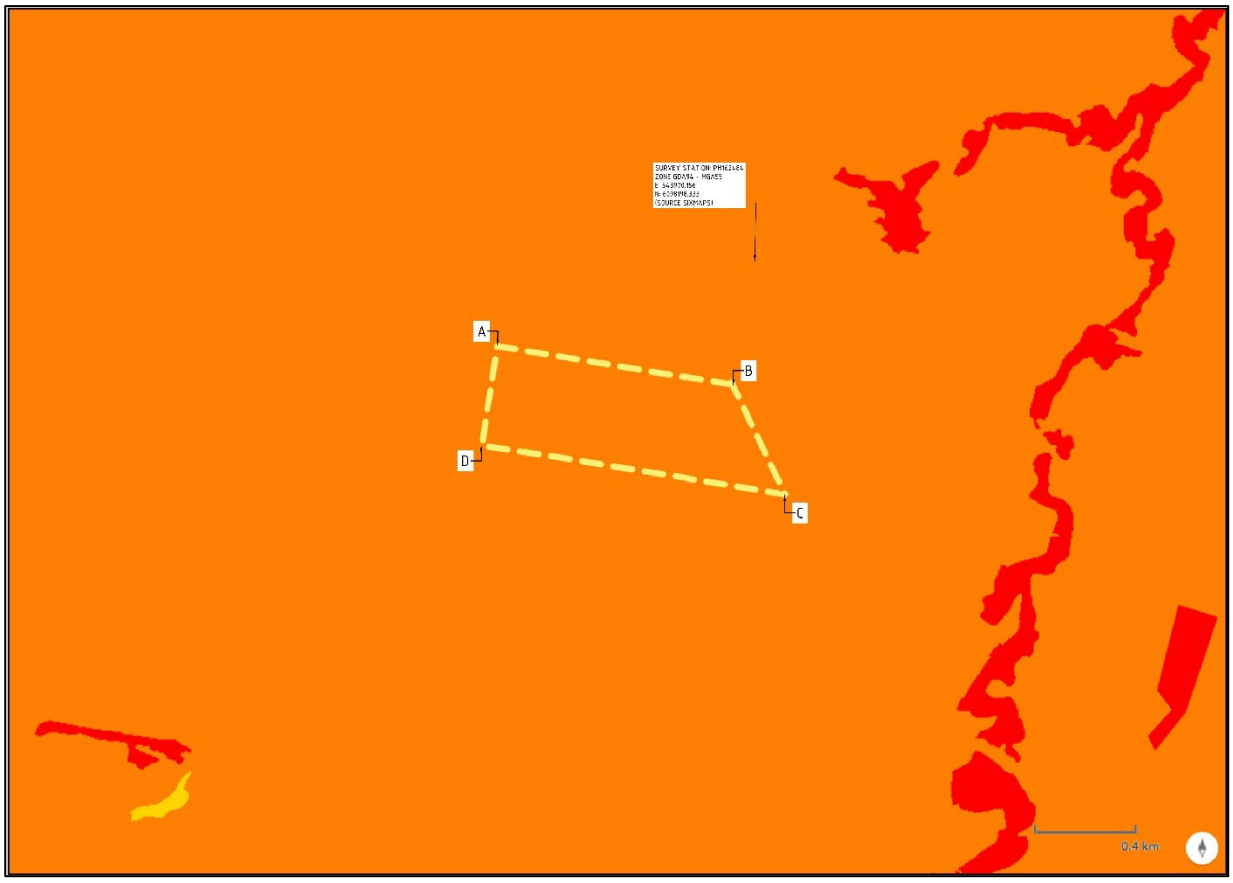


Figure 17 Bushfire Prone Land Map *(Source: NSW Planning Spatial Viewer)*

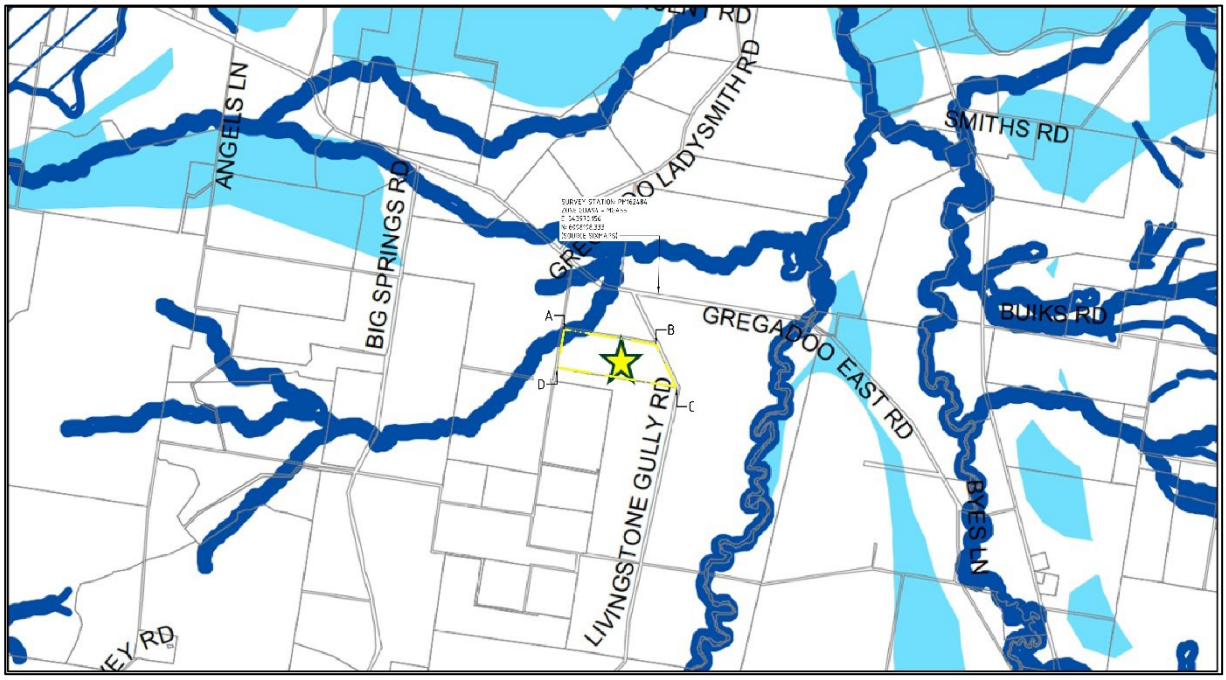
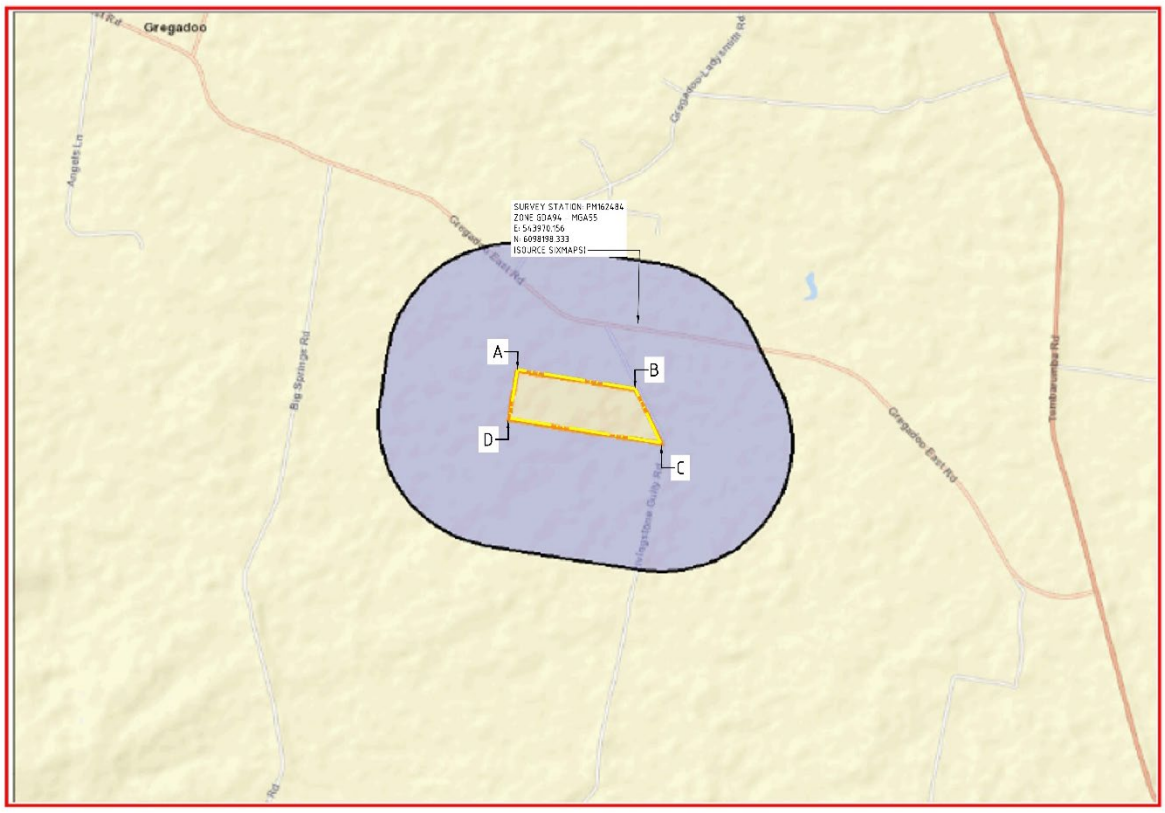


Figure 18 LEP Water Resources Map which is duplicated in the LEP Natural Resources Sensitivity Map – Water



A search of Heritage NSW AHIMS Web Services (Aboriginal Heritage Information Management System) has shown that:

0	Aboriginal sites are recorded in or near the above location.
0	Aboriginal places have been declared in or near the above location. *

Figure 19 AHIMS Search Result

Figure 20 LEP Heritage Map with site shown with yellow star *(Source: legislation.nsw.gov.au)*

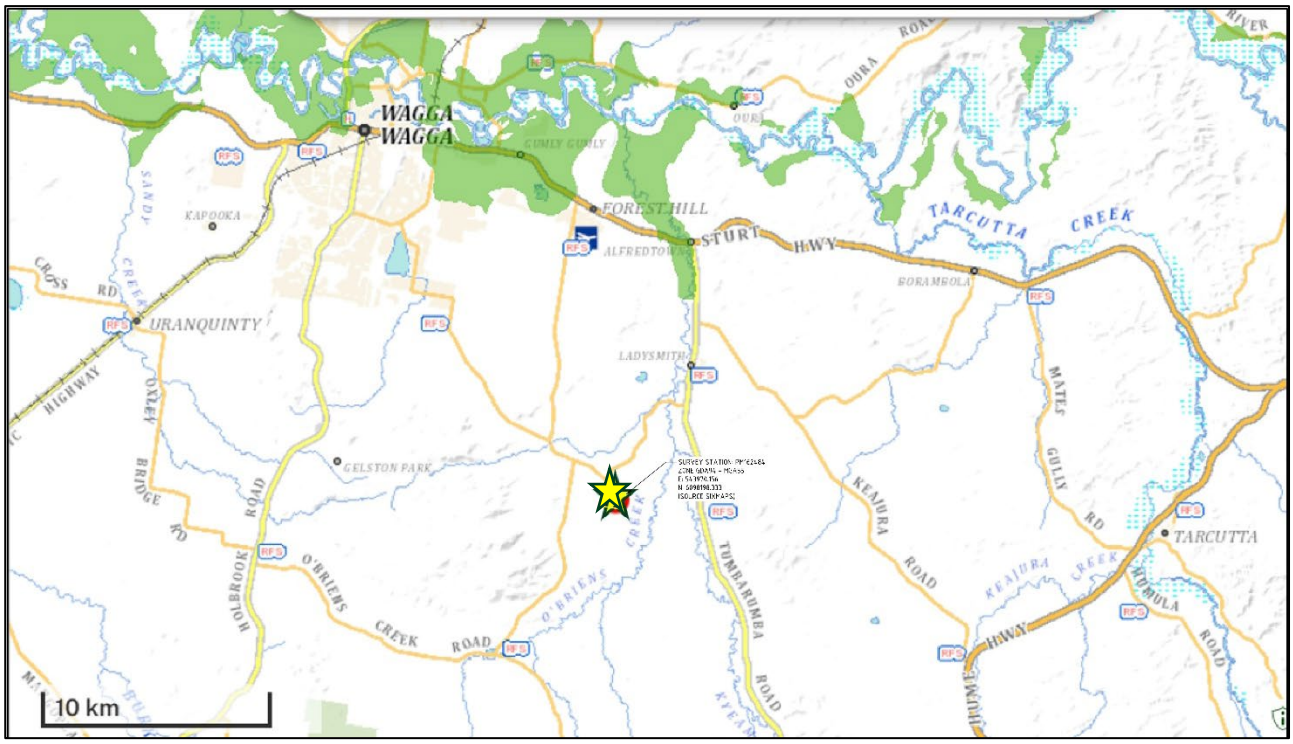


Figure 21 Strategic Agricultural Land map with subject property marked with yellow star and strategic agricultural lands in green *(Source: NSW Government Central Resource for Sharing and Enabling Environmental Data in NSW - SEED)*

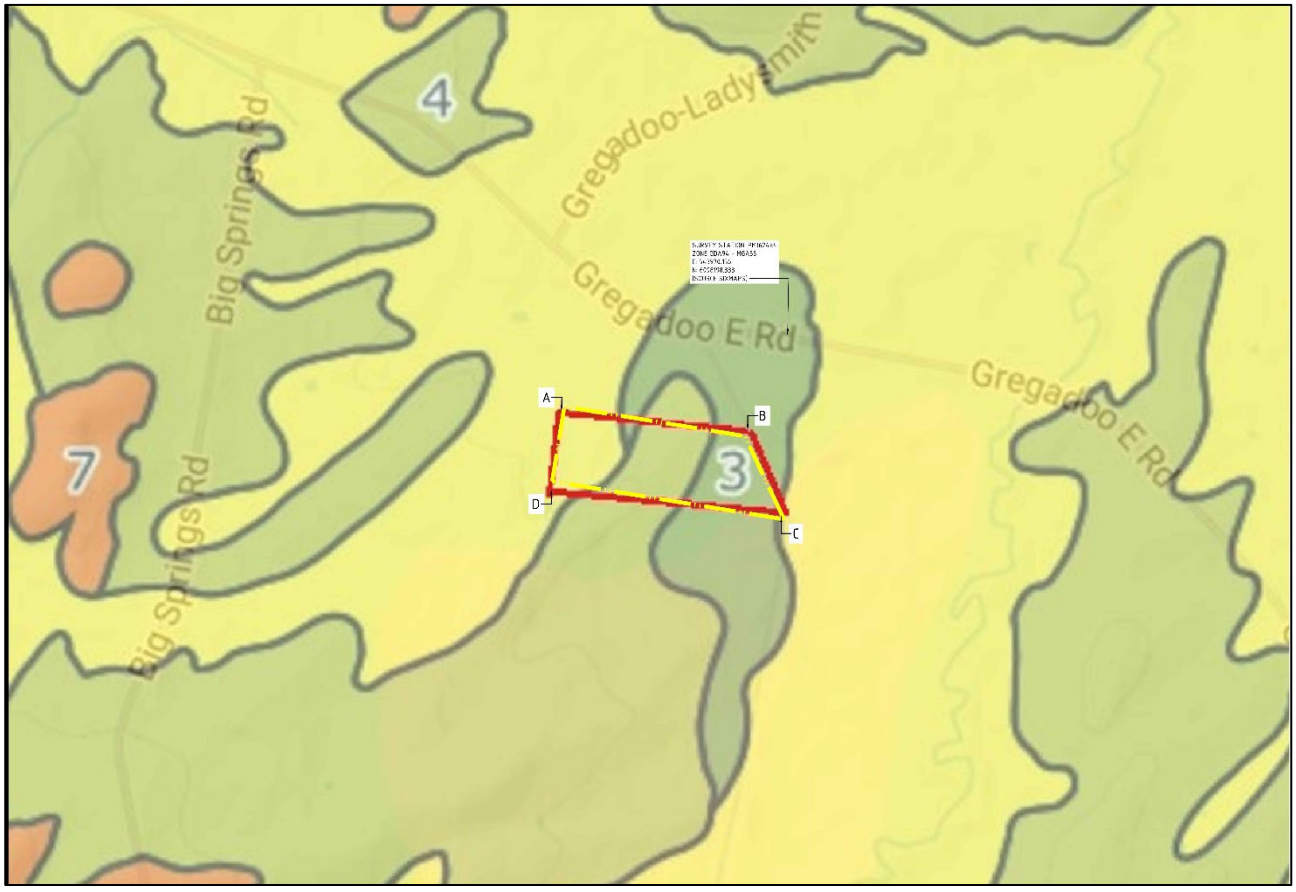


Figure 22 ***Land and Soil Capability class with subject property outlined in red as Classes 3, 4 & 5*** *(Source: NSW Government Land and Soil Information eSPADE v2.2)*

3 Project

3.1 BESS Description

The proposed 'Gugaa BESS' is a 1GW x 4hr facility (in 2 stages) with a proposed connection to the 33/500kV Gugaa substation located on the southern boundary which is a critical part of the Hume Link power line infrastructure that will be core to the NSW, SA and eventually the VIC power network. This project will be an important investment in supporting the national power grid. A preliminary indicative development cost at this stage is around $350 million, with the development cost to be finalised after further design resolution and QS costing.

The proposed Gugaa BESS has a total capacity of up to 1 GW / 4 GWh and comprises approximately 1,024 battery enclosure units each with a maximum estimated energy capacity of 4 MWh. Each unit employs lithium iron phosphate (LFP) battery modules and is equipped with Heating Ventilation and Air Conditioning (HVAC) and a Battery Management System (BMS) for operational control.

The containers will conform to IEC 62619 and the site to AS/NZS 5139. This includes the installation of an active fire protection system within each container.

The Project will involve the construction, operation and decommissioning of a combined BESS and Syn-Con facility and associated infrastructure for the existing terminal station.

Preliminary Development Concept Plans including site layout plan prepared by QGE and civil works plans prepared by Northrop engineers are included in **Appendix B**.

A Civil Engineering Preliminary Site Investigation prepared by Northrop is included in **Appendix C**

The preliminary development concept plans include the following:

Electricity Infrastructure

- Approximately 1,024 lithium (LFP) batteries with modular containers container typically measures 8,800mm x 1,650mm x 2,785 mm, with a total weight of approximately 38 tonnes.
- Medium voltage transformer stations.
- 256 Power Conversion Units (PCUs) with each unit typically measuring approximately 2.5 metres wide by 2.9 metres high, with a depth of 6 metres (equivalent to a 20 foot shipping container for the inverter units). The exact height of these PCUs will be subject to detailed design.
- High voltage substation.
- High voltage transmission line/s.
- Control room and switch gear.
- Auxiliary transformer.
- High voltage steel poles.
- High voltage cabling.
- Internal access roads to connect panels and ancillary infrastructure.

On-site permanent supporting infrastructure

- Site access road and entry.
- Hardstand and internal roads.
- Operations and maintenance (O&M) facility including site office, amenities, equipment sheds, storage and parking areas.
- Switch room.
- Water tank/s.
- Workforce accommodation (potential – if required).

Off-site supporting infrastructure:

- Existing public road and communications network.

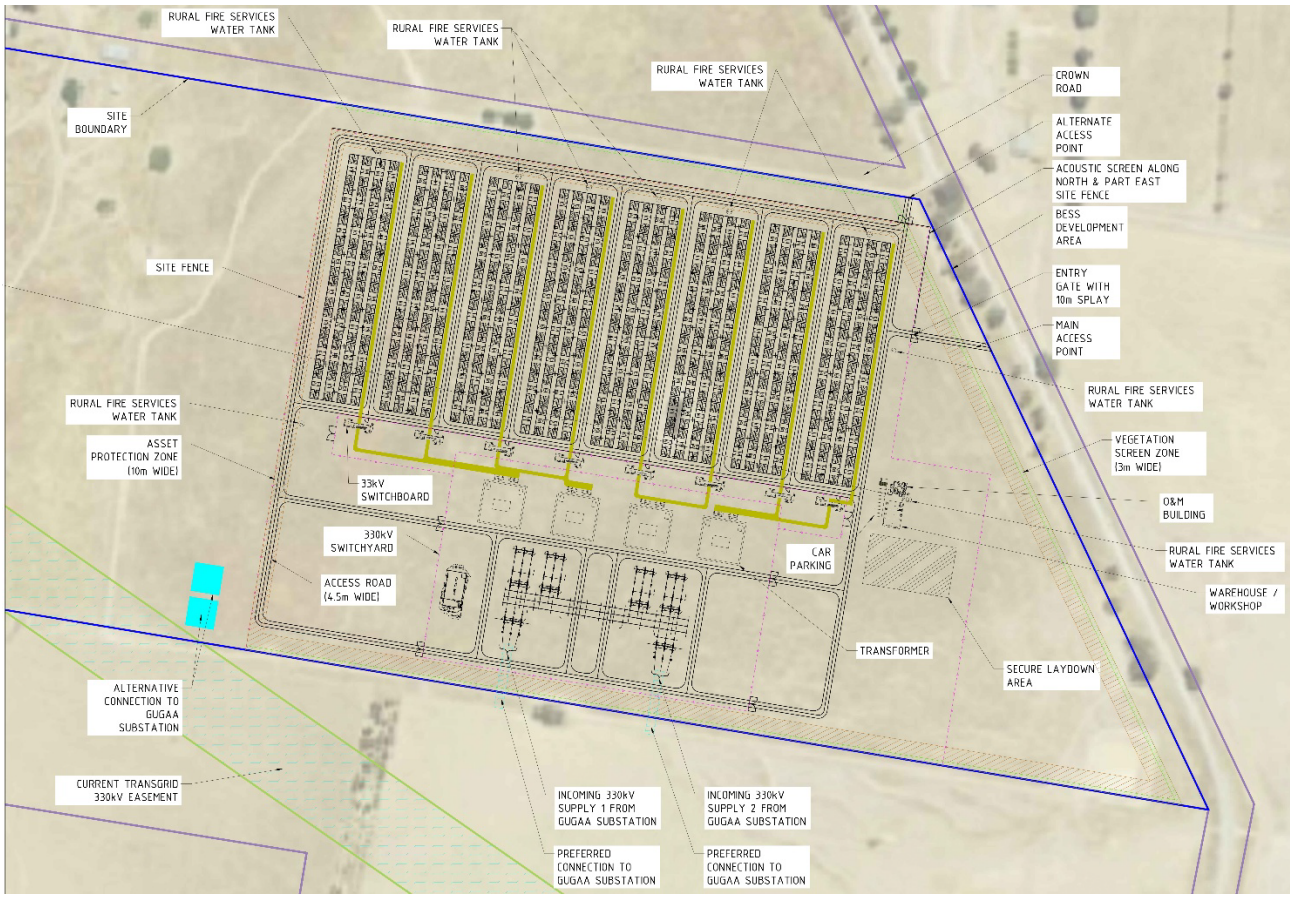


Figure 23 Preliminary draft site layout plan of the proposed BESS

Figure 24 Alternative connection path to future relocated power line easement at southwest corner of the site

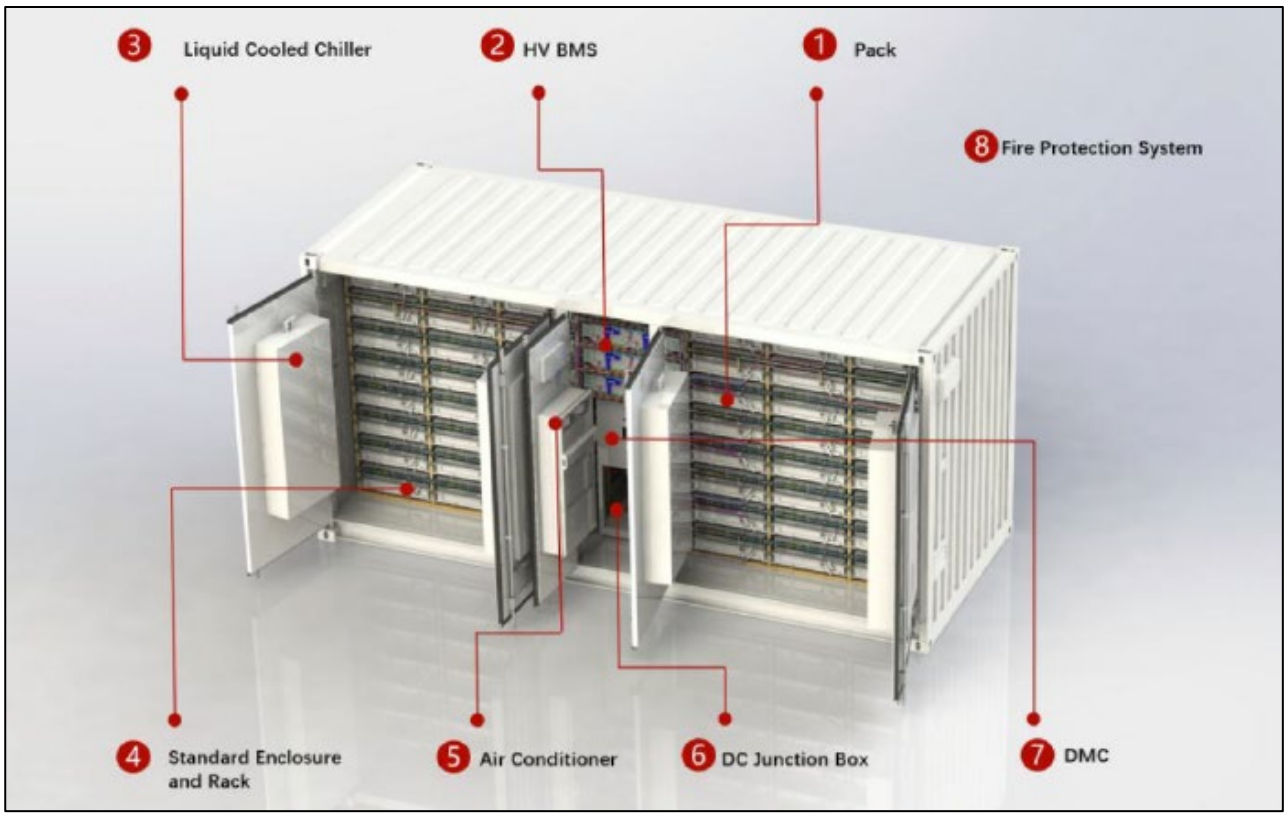


Figure 25 Typical BESS unit

Figure 26 Typical Single Inverter

3.2 Staging of Delivery

The proposed Gugaa BESS is planned to be constructed and delivered over two stages as shown below. It may however end up being constructed all in one stage.

Stage	Description	Timing
1	500mw - 4h 2000MWh	Mid-2028
2	500mw - 4h 2000MWh	2030

The construction phase of the proposed development is expected to be completed over an approximate 12-month period. This timeframe allows for a staged delivery of works including site establishment and civil works, structural and foundation construction, delivery and installation of equipment, electrical works and interconnections, and final commissioning and testing. The program has been developed to ensure sequencing of activities is undertaken efficiently while maintaining compliance with relevant safety, environmental, and regulatory requirements.

3.3 Capital Investment Value / Development Cost

The capital investment value of the project is approximately $350 million. The costing will be confirmed after the design of the proposed BESS is finalised.

3.4 Site Selection and Design Alternatives

The proponent Silo Energy considered three alternate sites as potential locations for the proposed BESS. Each offered a direct connection to the new Gugaa substation. An assessment of these options was undertaken to determine the most suitable site based on availability, planning constraints, environmental considerations and potential amenity impacts.

Land to the south and east of the Gugaa substation (1070 Livingstone Gully Road, Gregadoo) was initially considered a prospective site. However, during the assessment it was identified that the landowner intended to develop their own facility, known as the Livingstone Solar Farm. Given the private ownership of the site and the owner's desire to deliver a similar development, the site was considered unavailable and not investigated further.

Land to the west of the Gugaa Substation (607 Gregadoo East Road, Gregadoo) was initially considered viable from a locational perspective. However, further assessment identified the presence of key biodiversity constraints that would require significant mitigation. In addition, the site would be more visually exposed to the surrounding community during construction and operation. For these reasons, this option was considered less suitable when compared to the subject site and was discarded from the site selection criteria.

Land to the north of the Gugaa Substation (477 Gregadoo East Road, Gregadoo) was ultimately selected as the preferred site. This decision was informed by several key factors, including:

- The property's immediate proximity to the Gugaa Substation
- The lack of easements crossing open countryside
- The classification as 3 and 4 agricultural land under the applicable planning scheme
- Limited and manageable biodiversity constraints that allow the proposed development to be sited away from sensitive areas
- Existing topography and landscape features which provide effect visual screening to surrounding residences
- Flood risk status

On balance, and in line with stringent search criteria adopted by Silo Energy this option represents the most suitable location for the proposed development.

The BESS layout adopts an efficient, modular grid-like arrangement of battery enclosures, inverters, and transformers to optimise land use, minimise internal cabling lengths, simplify construction sequencing and deliveries, and facilitate future maintenance and potential expansion. Alternative configurations were investigated during early design stages and a preferred layout selected and refined in response to key site attributes and constraints including topography, stormwater flow paths, visual amenity, and acoustic impacts. Through iterative collaboration with specialist consultants (civil, hydraulic, landscape, and acoustic engineers), the layout was progressively critiqued and adjusted to balance operational efficiency with effective mitigation of environmental and community impacts, resulting in the current optimised design.Not proceeding with the development of the proposed BESS adjacent to the Gugaa substation would reduce the availability of large-scale energy storage within the regional electricity network. This would limit the system's ability to firm variable renewable energy generation, manage peak demand and provide essential network services such as frequency control, voltage regulation, and system resilience. As a result, the network may remain more reliant on conventional generation during periods of high demand or low renewable output, potentially slowing progress toward broader decarbonisation objectives. This is particularly important as Australia shifts toward electrification of transport, residential, industrial and commercial areas.

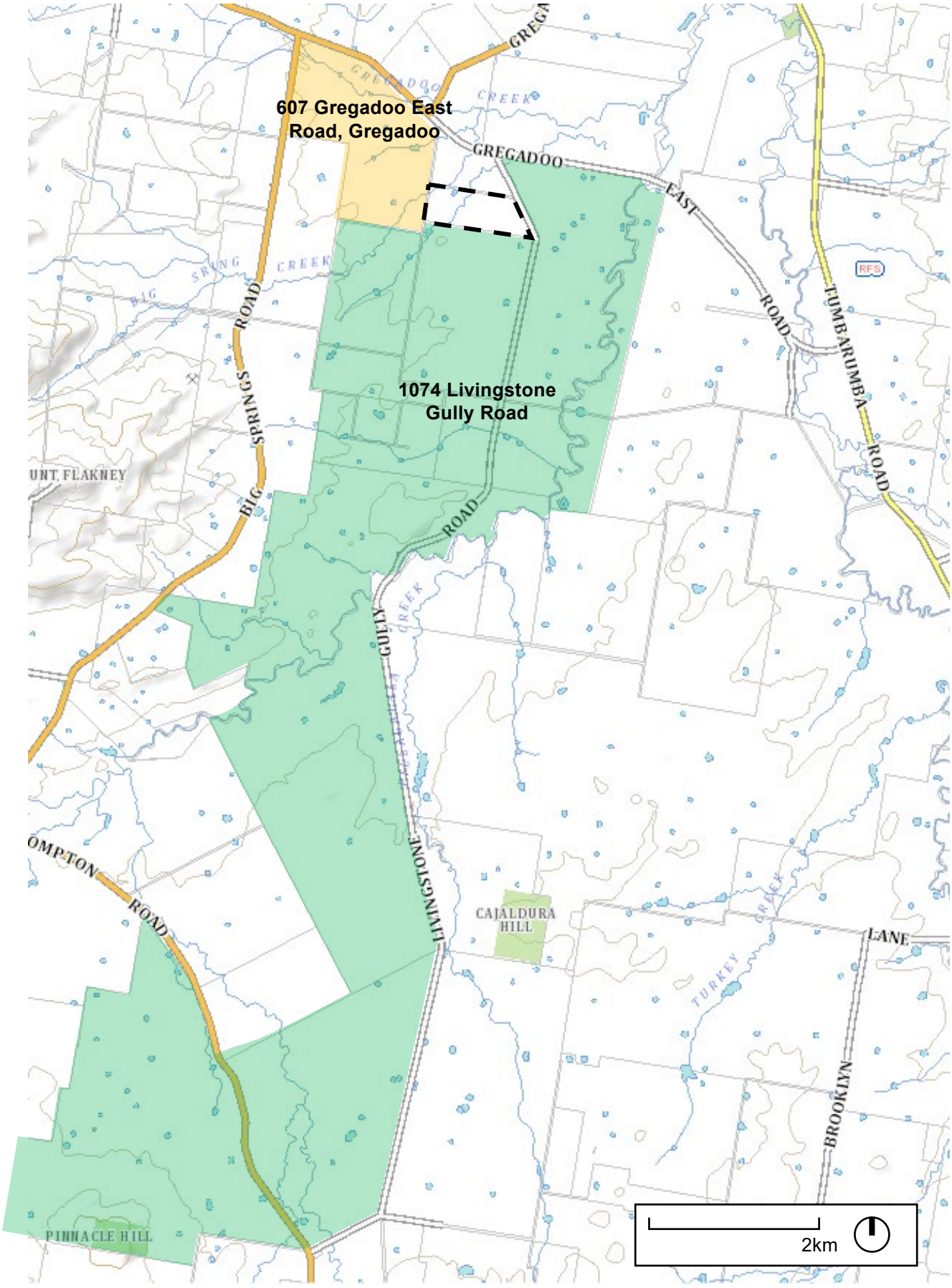


Figure 27 Map showing the proposed site showing adjacent properties considered for selection *(Base map source: NSW Planning Spatial Viewer)*

In addition, failure to deliver the proposed BESS at this highly strategic Transmission Node location would represent a missed opportunity to maximise the efficient use of the recently developed Gugaa substation and associated transmission infrastructure. The absence of the project would forego regional construction and operational employment benefits and reduce the capacity for future renewable energy projects to connect and operate efficiently within the network. This may lead to increased pressure to locate similar infrastructure in less suitable locations, potentially resulting in greater environmental, land use, or amenity impacts than those associated with the proposed site. In addition, the ability for transmission network operators to shift loads and firming support across the NEM and interstate at times of increased demand would be significantly reduced.

3.5 Workforce and accommodation

Based on preliminary consultation with specialist contractors, the construction workforce is anticipated to comprise 50 personnel during the initial stages of works, progressively increasing to a peak workforce of approximately 125 personnel during the peak construction and installation period. Upon completion of construction and commencement of operations, the facility will require an operational workforce of approximately five to seven full-time equivalent employees.

Workforce accommodation

The estimated peak workforce for construction and installation of the proposed development is 125 personnel. A high-level desktop review in the SIA Scoping Report demonstrates that there is sufficient short-term rental accommodation availability in the Wagga Wagga area for some level of workforce. However, there are multiple major energy projects approved and proposed within the area and preliminary discussions with representatives from City of Wagga Wagga Council has identified a potential forthcoming shortfall in worker accommodation and anecdotal evidence of low vacancy rates in short-stay tourism accommodation in the region. The cumulative demand for accommodation from the subject project and similar future development may present vacancy constraints. Options for the development of additional workers accommodation to supplement existing supply and meet the estimated demand are described below:

- **Option 1:** The western side of the subject site has capacity for workers accommodation camps outside the proposed development footprint. Further environmental impact assessment is required to determine the most suitable location and layout for this use.

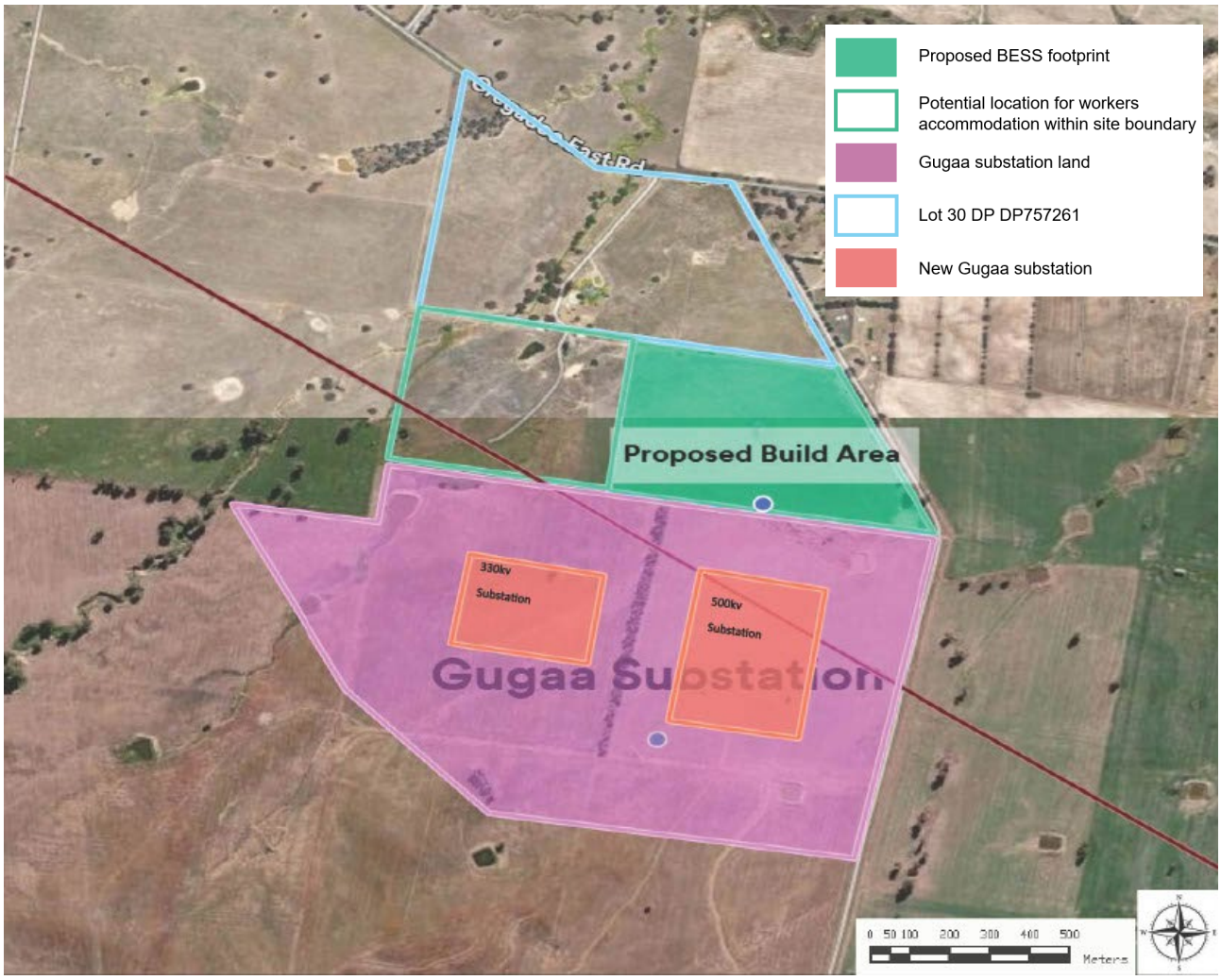


Figure 28 Option 1 - Vacant area on proposed development site

- **Option 2:** There are other major renewable energy projects that have been undertaken or approved in the Wagga Wagga Area that may include temporary workers accommodation facilities for their construction workforce. There is potential to investigate the shared use or reuse of existing accommodation camps in Gregadoo and the surrounding area. This is dependent on the timing of construction periods for these projects, further engagement with the developers and landowners, and the capacity of the accommodation facilities.

- **Option 3:** Additional workforce accommodation may be delivered through joint ventures with Council, State Government and private sector housing developers and operators.

The preferred approach to accommodation for the temporary construction workforce will be and determined at the EIS stage subject to more detailed assessment of potential social impacts and the capacity of nominated sites.

3.6 Electricity Network Connection

The proposed BESS is to connect to Transgrid's major 330/500 kV Gugaa Substation node currently under construction on the adjoining property to the south which forms a key strategic part of TransGrid's HumeLink 330/500 kV transmission line. The BESS is designed to connect into the 330kV side of the substation node. The BESS project involves connection lines to the site boundary only. Transgrid will connect to the boundary on its side as a separate project. The intended connection path is directly south to the neighbouring property

pending approval across an easement along that boundary. The alternative connection path is from the BESS to the future power line easement on the southwest corner of the site as shown in Figure 24.

3.7 Access

The proposed BESS development includes an internal road network comprising a perimeter road and central spine road with driveway access off Livingstone Gully Road in a gap between street trees. The proposed internal road network is 7m wide and constructed with compacted road base material on the surface to a depth of approximately 200mm, with a 6m wide concrete crossover off Livingstone Road into the site for approximately 10m.

During construction, vehicles delivering BESS components and materials and labour will utilise the surrounding road network described in Section 2.2 of this report. Heavy vehicles will access the site to and from the main Sturt Highway / Hume Highway regional road network via Tumbarumba Road and Gregadoo East Road east of the site subject to comply with bridge weight limits on this route, or via Elizabeth Avenue and Gregadoo East Road west of the site. Components that are shipped to Australia and transported to the site will be transport from either Port of Melbourne or Port of Botany in Sydney.

During operation, staff employed at the site and service vehicles are anticipated to use surrounding road network with the route depending on origin and destination of travel

3.8 Landscaping

A landscaping plan is intended to be submitted with the DA to include the following elements:

- use of native/indigenous tree, shrub and ground cover plant species;
- retention of street trees on the site frontage to the extent possible;
- perimeter planting around the BESS site with trees and shrubs to provide visual screening of views of the BESS from its surrounds.

The proposed landscaping strategy will incorporate native plant species in accordance with planning guidelines and the recommendations of the appointed landscape architect. Planting will be concentrated along northern and eastern site boundaries to provide visual screening of the BESS facility from adjoining roads and residences, while maintaining appropriate setbacks and species selection to fully comply with Asset Protection Zone (APZ) requirements. This approach ensures enhanced biodiversity outcomes, rapid screening establishment, and ongoing compatibility with bushfire risk management obligations.

3.9 Water Supply

During the construction phase, bulk water supply for the project (primarily for dust suppression, compaction, and general site use) will be sourced from Riverina Water at a bulk connection point. The designated connection point is the existing Riverina Water bulk connection point located on Elizabeth Avenue, Forest Hill NSW 2651 (outskirts of Wagga Wagga) which is fitted with an 80 mm camlock coupling. Water cartage will be undertaken by licensed contractors in accordance with Riverina Water's bulk water access conditions, ensuring no adverse impacts on local reticulated supply and full compliance with relevant approvals.

During operation, water demand will be minimal and primarily for auxiliary purposes such as equipment washing and fire suppression top-up. This will be met through a combination of:

- retained bulk water carted from the Riverina Water standpipe on Elizabeth Avenue, Forest Hill (80 mm camlock connection), and
- harvested roof runoff from on-site buildings (control room, switchrooms, and maintenance structures), which will be directed to dedicated rainwater tanks via appropriately filtered and piped systems.

This dual-source approach minimises ongoing reliance on potable supply, reduces operational water costs, and aligns with sustainable water management practices for the facility.

3.10 Stormwater Management

A draft stormwater management plan is included in the civil engineering drawings prepared by Northrop engineers included in **Appendix B**. It includes the following stormwater management measures:

- stormwater diversion swale along the western side of the BESS facility footprint that diverts stormwater runoff away from proposed BESS batteries and other electrical elements to stormwater pipes running along the northern and southern perimeter boundaries of the site;
- a pit and pipe network to convey runoff from minor storm events (5-10% AEP / 10-20 year storm) that generally follows under the internal road network
- overland flow during major storm events (1% AEP / 100-year storm) directed via the internal road network,
- internal access roads operating as the primary stormwater conveyance paths directing both underground pipe flows and overland flows to
- bio-detention and treatment basin in the south-east corner.

The proposed stormwater discharge point site naturally grades towards the existing dam located in the south-eastern corner which is intended to act as a stormwater bio-detention and treatment basin. This dam will require enlargement estimated at this time to be approximately by 100% (i.e. double in size) in both surface area and storage volume to provide adequate treatment and detention capacity for the increased impervious surface on the BESS facility.

Further details on preliminary hydraulic calculation and sizing of stormwater infrastructure is in the Civil Engineer Preliminary Site Investigation report in **Appendix C**.

3.11 Waste Water Management

During the construction phase, portable chemical toilets and welfare facilities will be provided on-site to meet worker amenity requirements and Work Health and Safety obligations. All effluent will be contained within sealed tanks, with regular pump-out and off-site disposal undertaken by a licensed liquid waste contractor to an approved wastewater treatment facility. This approach ensures no on-site discharge occurs and minimises any potential odour or other potential environmental impacts.

During operation, sewage and greywater generated by the on-site facilities (control room and welfare amenities) will be treated via a secondary aerobic wastewater treatment system (biocycle or equivalent AWTS) compliant with NSW Department of Planning and Environment standards and City of Wagga Wagga Council requirements. The system will be sized for the low occupant load, with treated effluent irrigated within a dedicated, vegetated land application area located in a low-visibility portion of the site and designed to avoid any off-site discharge. Regular maintenance will be undertaken by a licensed service provider to ensure ongoing performance and full compliance.

3.12 Storage of Dangerous Goods

The operation of the proposed Gugaa BESS will involve storage of some dangerous goods (DGs) on site as shown in the table below. The classes and quantities of DGs provided are indicative and will need to be confirmed in the EIS lodged with the DA.

Item	Class	Description	Estimated Quantity
BESS Units	9	Lithium Batteries	40,000 T
Diesel	C1	Combustible liquid (for refuelling)	(TBC)
Transformer oil	C2	Combustible liquid	1,024 kL (TBC)
Lubricating oil	C2	Combustible liquid	(TBC)
Discharge Capacity	-	-	1,024 MW

3.13 Site Preparation Works

The site preparation works that need to be undertaken in the construction of the proposed Gugaa BESS include the following:

Earthworks

The site generally falls from the highpoint on its west side to the low point on its east side with average slopes ranging from 1% to 6%. Given the size of the proposed BESS facility and the need for near level pads / platforms for supporting the BESS components, earthworks are proposed to create a series of terraces to create level pads for housing the BESS and in particular the rows of battery containers across the site. The design will seek to achieve a balance of cut and fill on the site to avoid the need for importing fill and minimise surplus excavated material for disposal. In effect, this means in general the western side of pads are proposed to be cut into the natural ground and the eastern side of the pads will be constructed on fill. Earthworks are also proposed to enlarge the storage volume and area of the dam on the southeast corner of the site to act as a detention treatment basin to accommodate stormwater runoff from the proposed BESS development.

Concept earthworks cut and fill drawings prepared by Northrop are provided in **Appendix B**.

Vegetation Removal

Removal of 10 eucalypt trees and planted ground cover vegetation in the area covered by the footprint of the proposed BESS development.

Temporary supporting infrastructure

Temporary infrastructure used in supporting the construction of the proposed BESS will include the following:

Construction facilities such as offices, car park and amenities;

- Construction fencing and landscaping works;
- Concrete batching plant;
- Installation of underground and overhead cabling;
- Water sourcing;
- Installing maintenance and environmental managements processes and equipment.

3.14 Management Plans

A Construction Management Plan (CMP) is intended to be prepared and included in the DA/EIS with measures to mitigate and manage potential impacts on the environment and infrastructure from the construction of the proposed BESS. (Refer to Section 6 for the matters to be considered for inclusion in the CMP.)

An Operational Management Plan (OMP) is intended to be prepared and included in the DA/EIS with measures to mitigate and manage potential site safety considerations, potential hazards and potential environmental impacts from the proposed BESS. (Refer to Section 6 for the matters to be considered for inclusion in an OMP.)

3.15 Decommissioning

At the end of the operational life of BESS elements, decisions will be made to either upgrade elements or decommission the facility.

Decommissioning is to ensure the land remains available for future uses which may include returning to agriculture or other rural activity permissible in the zone. Should decommissioning proceed, all above-

ground infrastructure associated with the Project will be dismantled and removed, with the site rehabilitated to pre-existing land use to the extent practicable.

The disposal and recycling of BESS infrastructure will comply with the waste management legislation and requirements at the time, with a focus on minimising landfill contributions by adhering to best-practice sustainability principles.

If maintaining and re-powering of the solar facility is proposed, a comprehensive stakeholder consultation process will be initiated, and all necessary approvals will be obtained to ensure the project aligns with regulatory and community expectations.

3.16 Proposed DA Documentation

The following documentations is intended to be submitted with the DA for the proposed Gugaa BESS:

- Site Survey
- Site Analysis Plan
- BESS Design Plans including site layout plan, earthworks plan, stormwater management plan, landscape plan
- Civil Engineering Statement;
- Environmental Impact Statement
- Economic Impact Assessment
- Social Impact Assessment
- Visual Landscape Impact Assessment
- BDAR Waiver Request
- Aboriginal Cultural Heritage Assessment
- Non-Aboriginal Heritage Assessment
- Traffic Impact Assessment
- Bushfire Assessment
- Noise and Vibration Assessment
- Preliminary Hazard Analysis and Emergency Management Plan
- Phase 1 Preliminary Site Contamination Assessment
- Construction Management Plan
- Operational Management Plan
- Cost Report
- Landowner's Consent.

4 Statutory Context

This section of the Scoping Report describes the planning legislation and statutory instruments that provide the planning approval and environmental assessment framework for the proposed Gugaa BESS State significant development (SSD).

Matter	Statutory Provisions applying to Proposed Gugaa BESS SSD
Power to grant consent	The power to grant consent including the approval pathway and identification of the consent authority are specified in the following: ► *Environmental Planning and Assessment Act* 1979 (EP&A Act); ► *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation); ► *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP).
- Approval Pathway	The approval pathway for the proposed Gugaa BESS is via a Development Application for State significant development (SSD) under the following planning legislation and statutory instruments which set out the DA requirements and the assessment and approval process: ► Part 4 including in particular Division 4.7 of the EP&A Act; ► Part 3 of the EP&A Regulation; ► Chapter 2 Part 2.2 of Planning Systems SEPP.
	Section 2.6 and Schedule 1 Item 20 in the Planning Systems SEPP declare development for the purpose of 'electricity generating works' that has an estimated development cost of more than $30 million (which includes the proposed Gugaa BESS) as being SSD as quoted below" ***"20 Electricity generating works and heat or co-generation*** *Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that—* *(a) has an estimated development cost of more than $30 million"*
	'Electricity generating works' is defined in the Planning Systems SEPP as per the definition in the *Standard Instrument (Local Environmental Plans) Order 2006* and the *Standard Instrument—Principal Local Environmental Plan (2006 EPI 155a)* which includes battery storage facilities as follows: *"**electricity generating works** means a building or place used for the purpose of—* *(a) making or generating electricity, or* *(b) electricity storage."*
- Consent authority	Section 4.5 of the EP&A Act and Section 2.7 of the Planning Systems SEPP specify the consent authority for SSD which includes the proposed Gugaa BESS as being either the Minister for Planning or the Independent Planning Commission depending on the type and number of submissions made on the SSD during the public exhibition period.
Permissibility	The proposed Gugaa BESS is permissible as an 'electricity generating works' under both the *Wagga Wagga Local Environmental Plan 2010* (Wagga LEP) and *State Environmental Planning Policy (Transport and Infrastructure) 2021* (T&I SEPP).

	The Wagga LEP zones the subject site RU1 Primary Production. Energy generating works such as the proposed Gugaa BESS are permissible with consent in the RU1 zone on the site.
	The T&I SEPP (Chapter 2 Part 2.3 Division 4) specifies that electricity generating works (other than solar energy systems) such as the proposed Gugaa BESS are permissible with consent on land zoned RU1 Primary Production.
Other approvals	The following legislation has approval requirements that need to be addressed:
	The *Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act)* include requirements for approval for significant impact on matters of national environmental significance (MNES). There are no MNES present at or near the site that will be impacted.
	The *Roads Act 1993* requires approval for any roadwork that may be required by roads authorities for the proposed development which is anticipated to be condition of consent to repair any damage to the roads from heavy vehicles involved in the construction and materials delivery stage of development.
	Approval from the Australian Energy Market Operator under the National Electricity Law will be needed after a development consent is granted for the BESS.
	Approval from Transgrid for connection of the proposed Gugaa BESS to Transgrid's Gugaa substation will be needed after a development consent is granted for the BESS.
Pre-conditions to exercising the power to grant consent & **Mandatory matters for consideration**	The following legislation and planning instruments include specific matters that need to be considered in the assessment of the DA prior to the granting of consent to the proposed BESS:
	The *Biodiversity Conservation Act 2016* includes requirements for biodiversity assessment. In this case, a biodiversity assessment waiver request is provided in **Appendix F** of this Scoping Report.
	The EP&A Act specifies in Section 4.15 the matters that must be taken into consideration by the consent authority in the determination of a DA which includes environmental planning instruments, environmental impacts, site suitability, public submissions, and the public interest.
	State Environmental Planning Policy (Resilience and Hazards) 2021 includes the following provisions: ► Chapter 3 Hazardous and Offensive Development requires consideration to be given to a preliminary hazard analysis prepared by the applicant, and guidelines published by the Department of Planning relating to hazardous or offensive development, any feasible alternatives to the development and its location, and future use of the land and its surrounds. ► Chapter 4 Remediation of Land requires the consent authority to consider whether the subject land is contaminated, and whether it is suitable or can be remediated and made suitable for the proposed land use.
	The *Wagga Wagga Local Environmental Plan 2010* (Wagga LEP) includes the following specific matters for consideration ► RU1 Primary Production Zone objectives ► Section 7.1A Earthworks ► Section 7.3 Biodiversity ► Section 7.5 Riparian lands and waterways

5 Engagement

Silo Energy is committed to engaging with surrounding residents and stakeholders as it prepares a State Significant Development Application for the proposed Gugaa BESS.

Elumni Consulting, a community consultation specialist, has been engaged by the applicant Silo Energy to prepare an engagement plan, conduct community and stakeholder consultation, and document the consultation outcomes on the proposed BESS.

5.1 Engagement Plan

A Draft Engagement Plan prepared by Elumni Consulting is included at **Appendix D**. It has been prepared consistent with the *NSW Engagement Guidelines for Major Projects* and taking into account the site context, nature and scale of the project, Government stakeholder agencies, and preliminary knowledge of community views. The Draft Engagement Plan includes:

- The purpose of engagement
- The engagement approach
- Stakeholders including relevant authorities and government agencies, Transgrid, City of Wagga Wagga Council, residents and landowners of properties within a 3 km radius, community groups, local RFS and Landcare and the broader community
- Future engagement activities
- Program with intended engagement timeframe and indicative engagement work plan

A comprehensive Engagement and Consultation Strategy including stakeholder analysis will be prepared.

Under the Draft Engagement Plan, future engagement activities will occur in four phases covering submission of the Scoping Report, pre-lodgement of the SSDA and post-exhibition. This will entail:

Phase 1

- Completion of the Engagement Plan

Phase 2 – Submission of the Scoping Report

- Letter to selected neighbouring residents and landowners to notify submission of Scoping Report
- Update to dedicated project page on the Silo Energy website
- Initial discussions with adjacent landowners - Transgrid and solar farm proponents
- Initial engagement with local RFS and Landcare groups
- Briefing of Wagga Wagga City councillors

Phase 3 – After issue of SEARs and during finalisation of the SSDA

- Individual and small group meetings with the identified stakeholders
- Local community information session

Phase 4 – Exhibition of the SSDA

- Update to project page on the Silo Energy website with link to DPHI portal
- Letters to stakeholders with notification of public exhibition

The Draft Engagement Plan will be refined and updated to reflect the Secretary's Environmental Assessment Requirements when they are issued. A complete Engagement Outcomes Report will be prepared for the SSDA.

5.2 Engagement Monitoring, Review and Adaptation

The following measures will be implemented by the engagement team to monitor and review the effectiveness of engagement, ensuring that it can be adapted to encourage community participation throughout the development of the project:

- Seeking feedback from Council on what engagement approaches work effectively with their rural communities
- Pursue a highly targeted approach with site neighbours and those within a 3km radius of the site in addition to opportunities for broader engagement
- Testing communications and engagement preferences with community stakeholders once engagement beings
- Survey awareness of the project and accessibility of engagement after the initial round of engagement
- Employ a number of engagement approaches to ensure accessibility and opportunities for participation

5.3 Consultation to Date

The engagement team are committed to ensuring that neighbours first learn about the proposal from the proponent team. The consultation activity carried out to date includes the following:

- An initial meeting with City of Wagga Wagga Council's manager of development assessment, the proponent Silo Energy, and APP on the Gugaa BESS project was held on 22 July 2025. The key outcomes of the meeting and Council advice on the project are summarised in Section 5.4 below.
- Silo Energy has landowner agreement and consent to lodge the DA.
- Contact with the neighbouring landowners – Transgrid and the solar farm planning team.
- Initial contact with surrounding residents via registered letters to 39 properties within a 3km radius of the site.
- One-on-one discussions with four neighbours via phone and email.
- Contact with Aboriginal parties, including the Wagga Local Aboriginal Land Council.
- Technical consultants are engaging government agencies and utility services providers relative to their project discipline including Transport for NSW, Rural Fire Service, City of Wagga Wagga Council.
- The proponent Silo Energy has had meetings with both TransGrid and AMEO and is in the advanced stage of acceptance by AEMO as a registered market participant (developer).
- A dedicated project page with information about the proposal and forthcoming planning process is publicly available on the Silo Energy website.

5.4 Initial Meetings with City of Wagga Wagga Council

An initial meeting on 22 July 2025 with City of Wagga Wagga Council's manager of development assessment provided the following advice on the proposed Gugaa BESS:

- Council is aware of community concerns at the lack of information on renewable projects to respond to and the number of projects in the region.
- Community stakeholders should be consulted in the initial stages of the project and informed in the consultation they are being consulted in initial stages, as it has been apparent on other similar projects that the community feel these projects are already approved and they get no say.
- Council requests it to be notified / consulted on the consultations carried out with the local community, including receiving copies of mailout / notifications to surrounding landowners and community stakeholders, and meeting with Council when meeting the local community.
- The Rural Fire Brigade should be consulted given the fire safety concerns that are being raised in relation to BESS projects.
- Council planners recognise the site adjacent to a substation is somewhat suited to the proposed BESS. However, Council planners did not indicate whether or not they are supportive of the proposed BESS.

A subsequent meeting was held on 12 November 2025 with senior strategic planning and engineering staff in Council who provided the following comments on the proposed BESS development and to be addressed in the EIS and DA process:

Prime agricultural land

- Agricultural land classes 1 and 2 are not supported by Council for use for energy projects. Use of Class 3 land is to meet particular requirements specified in solar energy guidelines.

Accommodation for construction workers

- Accommodation for workers is a significant concern as there are a number of existing and proposed development projects including energy projects and defence projects in the area from which workers are taking up tourist accommodation in Wagga resulting in shortage of accommodation for tourists and for people attending special events in and around Wagga. Options to provide additional workforce construction are outlined in Section 6.13 of this report and will be addressed in the EIS.

Aboriginal cultural heritage assessment

- An Aboriginal cultural heritage assessment should be included, and local registered Aboriginal parties should be consulted on it.

Traffic

- The road route between the site and regional highways via Tumbarumba Road and Gregadoo East Road has two weight limited bridges restricting heavy loads and OSOM vehicles.
- Council preferred road access route for OSOM vehicles between the site and regional highways is via Elizabeth Avenue and Gregadoo East Road (as used by vehicles associated with the construction of the adjacent Gugaa substation) or via Baker's Lane to Elizabeth Avenue and Gregadoo East Road.

Stormwater

- A stormwater legal point of discharge from the site is to be identified.
- Stormwater discharge from the site is not to create erosion or sedimentation on neighbouring properties.

Water supply

- The nearest potable water supply to the site is on Elizabeth Ave.

Waste water / sewer

- There is no where in Wagga to dispose of waste water / sewer effluent from the site, with the nearest effluent disposal place at Gundagai.

Dust from construction activity

- Dust on Livingstone Gully Road from vehicles used in the construction of the adjacent Gugaa substation is a concern for the local community.

Community Engagement

- A community engagement plan is encouraged.
- As of 2026, Councillor briefing sessions / workshops are no longer available, based on directions issued by the NSW Government. Public forums will be available to address items in Council business papers.

Community Benefit scheme

- Council is in the process of preparing a community scheme for energy and other major projects.

Management plans

- Management plans for construction and operation stages should be considered.

5.5 Preliminary Feedback from Local Community

Elumni Consulting has provided the following statement on the status of community stakeholder engagement carried out to date.

A key focus of the draft engagement plan is to contact nearby residents and community members to:

- notify them of the forthcoming planning process for the BESS
- inform them of the imminent lodgement of the Scoping Report
- invite them to contact the engagement consultant and register interest in the consultation program.

On 29-31 August 2025, 38 registered letters were sent to all properties within a three-kilometre radius of the location of the proposed BESS. Of these 6 letters have been returned and alternative methods of informing these landowners /residents are being pursued. To date four residents have contacted the engagement team and noted their interest in being part of the ongoing engagement.

The proponent Silo Energy has communicated directly with Transgrid and the planner for the neighbouring proposed Livingstone Solar Farm and BESS. They also met with planning officers from City of Wagga Wagga Council to introduce the proposal. Initial contact has also been made with the Wagga Local Aboriginal Land Council.

Issues raised to date that will be further discussed during consultation and considered in future planning include:

- Loss of agricultural land
- Cumulative impacts of numerous renewable and transmission related projects in the immediate area
- Contamination of local waterways
- Visual impacts
- Noise impacts
- Fire risks
- Impacts on safety and condition of local roads
- Benefits for surrounding community
- Compensation for adjacent landholders
- Use of surplus land on the proposed site
- Specific detail about the actual location of the batteries
- Accuracy of maps indicating use of land within the vicinity of the BESS
- Reservations about the need for renewables
- Construction workforce accommodation.

6 Proposed Assessment of Impacts

6.1 Key Environmental, Social and Economic Matters

Section 6 of this Scoping Report below outlines the key environmental impact considerations proposed to be addressed in an Environmental Impact Statement (EIS) to accompany a Development Application (DA) for the proposed Gugaa BESS. It is intended that the level of environmental impact assessment and community engagement carried out for the proposed Gugaa BESS DA be proportionate to the scale and likely impacts of the project.

6.2 Matters Requiring Further Assessment in the EIS

6.2.1 Electricity System Security and Reliability

The proposed 1 GW / 4 Mh Gugaa BESS will significantly improve security and reliability of the National Electricity Market (NEM) in southern NSW by potentially providing:

- **Fast frequency response (FFR)** and synthetic inertia within <1 second, helping arrest frequency deviations and maintain system stability as coal plants retire;
- **Grid-forming capability** via advanced inverter technology, enabling the BESS to independently establish and regulate voltage and frequency, supporting black-start and islanding scenarios if required;
- **Essential system strength and voltage control**, countering the reduction in fault-level contribution from retiring synchronous generators in the South West REZ and Riverina area;
- **Energy firming and arbitrage services**, shifting large volumes of low-cost renewable energy from peak solar periods to evening peaks, reducing unserved energy risk and price volatility;
- **Network support services** including congestion management, FCAS (all eight markets), and inertia provision, directly enhancing transfer capacity unlocked by HumeLink and Energy Connect.

By delivering these services at the new Gugaa 500/330 kV hub, the facility will materially strengthen the resilience of the NSW transmission network, facilitate higher renewable penetration targets, and lower the probability and consequence of supply interruptions across the southern NEM.

6.2.2 Land Use Compatibility / Suitability

The site location of the proposed Gugaa BESS is considered highly suitable in the following respects:

- The site adjoins the Hume Link high voltage power line power line and Gugaa substation currently under construction, and is located in an area that is the subject of existing and proposed renewable energy projects and a proposed renewable energy zone. The proposed BESS is suitably located for efficient and synergistic use of land and provision for energy infrastructure with ready connection to the power grid on adjoining property.
- The location has a relatively low density and large separation distances between land uses potentially sensitive to its impacts including in particular to residential receivers as shown in Section 2.2 above. There are just two dwellings within 1km of the site including one dwelling on the subject property and one dwelling 300m to the northeast which is understood to be part of a neighbouring solar farm project.
- The site is not within the areas mapped by the NSW Government as strategic agricultural land, and is not prime Class 1 or 2 agricultural land.
- There is no known environmentally sensitive land, heritage item or high risk natural hazard on or around the site. The site has a suitable gentle sloping topography with no vegetation or habitat of significant biodiversity value, no known heritage items or places. It is not flood prone or subject to land instability.

The key environmental impact considerations associated with the proposed BESS are addressed below.

6.2.3 Landscape and Visual Impact

A Landscape and Visual Impact Assessment prepared by GBD Landscape Architecture will be prepared to inform the design of the proposed Gugaa BESS and as input into the EIS. GBD has provided the following preliminary desktop review and statements on the scope of the visual impact assessment.

A standard assessment of the Project's impact on the BESS site and surrounding visual landscape will be undertaken in the form of a Landscape and Visual Impact Assessment (LVIA) which will also include consideration of potential cumulative impacts associated with the Gugaa 500kV substation as well as other similar scale projects within the surrounding landscape.

While there are no Commonwealth, NSW or local government planning policies, guidelines or standards directly applicable to guide the visual assessment of BESS projects, the LVIA would be prepared with reference to the requirements and procedures outlined in the following guidelines:

- Guideline for landscape character and visual impact assessment, Environmental impact assessment practice note EIA–N04, Centre for Urban Design, TfNSW Version 2.3, June 2023
- Guidelines for Landscape and Visual Impact Assessment, Landscape Institute and Institute of Environmental Management & Assessment 2013.

The LVIA will adopt a methodology comprising on-site assessment, digital modelling and the development of visualisations to provide an understanding of the Project's expected visual impact and prominence.

The LVIA will also provide a number of potential mitigation measures to be employed during construction and operation. For similar battery projects, a range of vegetative screening measures are typically suggested to help mitigate the Project's visual prominence.

Existing Environment

The Project Site and surrounding landscape is characterised by agricultural production and grasslands with occasional gullies and creek drainage lines meandering throughout the broader landscape. The Project Site is largely cleared grazing land which rises gently from east to west with moderate to long distances to surrounding dwellings not associated with the Project. Direct views to the BESS site are generally restricted to an adjoining local road corridor.

A desktop study to locate dwellings from a satellite aerial image identified less than 10 dwellings within 2 kilometres of the Project Site. In addition to these dwellings, the desktop study noted three local roads including the Livingstone Gully Road (unsealed) alongside the Project Site eastern boundary, the Gregadoo East Road and Gregadoo Ladysmith Road to the north of the Project Site.

The Project Site is located adjacent to, and to the north of the approved Transgrid 330/500kV Gugaa substation. The substation would include seven new 500/330 kV transformers and three 500 kV reactors, occupying an area of approximately 22 hectares.

The HumeLink Landscape Character and Visual Impact Assessment noted the Gugaa 500kV substation would '*introduce large scale construction activity, particularly associated with the proposed Gugaa 500 kV substation and adjacent Gregadoo Road compound (C06), resulting in moderate magnitude of change and a moderate-low landscape impact during construction'* (HumeLink Landscape Character and Visual Impact Assessment, Iris 20 July 2023).

Potential Impacts

The Project will represent a change to the existing visual character of the BESS site and the surrounding landscape; however, the presence of the Gugaa 500kV substation will result in a degree of 'visual blending' between the projects, allowing some components of the BESS project to be visually absorbed without creating significant visual impacts in their own right.

While ongoing design iterations of the BESS Project may involve some visual screening to minimise potential visual impacts, the bulk and form of the main Project components, particularly the battery housing units,

inverters and transmission connection may be visible from some limited locations within the existing landscape.

While the Project Site is relatively distant from the majority of nearby sensitive receptors, particularly residential properties, the BESS site itself and the surrounding landscape would lend visual prominence to the Project from proximate roads and particularly on Livingstone Gully Road which also provides direct and prominent views toward the Gugaa 500kV substation site.

The desktop study noted that the majority of dwellings within 2km of the Project Site would not have direct views toward the BESS site due to intervening vegetation and/or local variations in topography.

Impact Mitigation

The measures being considered for minimising the impact of the proposed BESS on the visual landscape include the following:

- orientation of the BESS elements and in particular the rows of battery containers generally in line with the contour of the natural topography;
- earthworks creating a series of level terraced platforms for the battery container rows which step up/down generally in line with the contour of the natural topography;
- earthworks creating level pads / platforms for battery container rows that includes excavation on the upper slope side of the battery container rows which reduces the height of the battery containers to sit down more into the natural landscape;
- perimeter planting of native tree and shrub species to provide a visual screen around the BESS facility;
- sensitive design of any acoustic barriers to blend in with the facility and landscape;
- large separation distances to sensitive receivers.

6.2.4 Traffic, Transport and Accessibility

A Traffic Assessment prepared by the traffic engineers at Amber will be prepared and submitted as part of the EIS for the proposed Gugaa BESS. A Preliminary Traffic Assessment with OSOM Route Assessment prepared by Amber is included in **Appendix E** of this Scoping Report.

Existing Environment

The existing road network is shown in the appended Preliminary Traffic Assessment and in the map above in Figure 8 in this Scoping Report. The site has direct road access off Livingstone Gully Road with connections to Wagga Wagga and the regional road network as follows:

- road access between the site and Wagga is via Livingstone Gully Road and Gregadoo East Road;
- road access between the site on Livingstone Gully Road and the Sturt Highway / Hume Highway regional road network is via either;
  - Tumbarumba Road and Gregadoo East Road east of the site;
  - Elizabeth Avenue and Gregadoo East Road west of the site.

The road classifications and conditions along the above routes are as follows:

- Livingstone Gully Road is an unsealed gravel local road of two way width.
- Elizabeth Avenue and Gregadoo East Road are two way sealed local collector roads.
- Tumbarumba Road is a classified regional road sealed with two-way lanes.
- Sturt Highway is a classified highway with sealed two-way lanes and passing lanes in parts.
- Hume Highway is a classified highway with separate carriageways and multiple lanes.

The road route east of the site providing connection with the Sturt Highway or Hume Highway via Tumbarumba Road, Gregadoo East Road and Livingstone Gully Road is an approved route for B-Double and NHVR Oversize Overmass (OSOM) load carrying heavy vehicles. However, road bridges over Tools Creek on Tumbarumba Road and road bridges over O'Briens Creek and Kyeamba Creek on Gregadoo East Road on this route are understood to have specific weight limitations for heavy vehicles which will need to

be investigated in further detail in the preparation of the DA and EIS to determine the capacity of the bridges to support heavy vehicles transporting plant and materials for the construction of the proposed BESS.

The road route west of the site providing connection with the Sturt Highway or Hume Highway via Elizabeth Road, Gregadoo East Road and Livingstone Gully Road is understood to be used by heavy vehicles associated with the construction of the Gugaa substation on the adjoining property to the south of the site, and does not involve any road bridges with weight limitations.

Potential impact

The appended Preliminary Traffic Assessment identifies the type and volume of traffic generation from the proposed BESS development and traffic routes to be used at each stage of the project, and includes a preliminary assessment of the capacity of the road network to accommodate the traffic and the further analysis and assessment work to be completed for the DA and EIS.

The Preliminary Traffic Assessment identifies the scope of traffic generated by the project as comprising the three distinct stages of the project being construction, operation and decommissioning with expected traffic generation as follows:

- Construction stage will generate the peak traffic of the project from vehicles associated with workers accessing the project area and the delivery of raw materials and plant.
- Operation of the plant is expected to generate a low amount of traffic associated with maintenance workers accessing the project each day that can be accommodated on the road network with little change to the road environment.
- Decommissioning is anticipated to generate a similar level of traffic to the construction stage.

The construction of the BESS involves the use of B-Double and NHVR Oversize Overmass (OSOM) load carrying heavy vehicles to deliver the BESS plant components to the site. It is estimated at this time that there will be a need for approximately four OSOM vehicle movements to deliver the plant onto the site and four OSOM return vehicle movements out of the site. An OSOM Route Assessment is provided in **Appendix E** which shows the capacity of key intersections to accommodate B-Double and NHVR Oversize Overmass (OSOM) load carrying heavy vehicle manoeuvres along the different road route options between the site, regional road network and ports at Melbourne and Sydney. It includes some wheel overrun onto the road verge on particular intersections nearby the site and the onto traffic islands in the Sydney and Melbourne metropolitan areas.

The detailed Traffic Assessment submitted with the EIS will include a full and complete traffic impact assessment of traffic generation and impacts associated with the construction and operation of the proposed BESS including existing traffic surveys at key intersections, assessment of road and intersection performance, and addressing cumulative traffic impacts of the proposed Gugaa BESS and adjacent Gugaa substation.

Impact Mitigation

The need for any impact mitigation measures and type of measure will be determined after the issue of SEARs and in the preparation of a detailed traffic impact assessment and EIS for the DA.

Construction stage: It is anticipated that the main impact mitigation measures will be associated with the construction stage of the proposed BESS and in particular involve road function and safety management associated with OSOM vehicle movements, and maintaining the condition of roads used by heavy vehicles during and after the construction period.

Operation stage: It is anticipated that the low traffic generation from the operation of the proposed BESS is not likely to generate a need for any road or intersection improvements. This will however depend on the findings of the detailed traffic impact assessment to be prepared for the DA and EIS which will also address cumulative traffic generation from the adjacent Gugaa substation currently under construction. Should the detailed traffic impact assessment prepared for the DA and EIS find road improvement measures are needed to accommodate the traffic generated, these measures will be detailed in the assessment report.

6.2.5 Water

Stormwater

Existing Environment

The site of the proposed BESS on the eastern half of the Lot 114 site currently has stormwater sheet runoff according to the existing topography / slope which runs to the low part of the site along Livingstone Road on the eastern frontage and in particular to the lowest point in a dam on the southeast corner of the site.

It is understood that any stormwater running out of the site would drain into road side swale type channel along the side of Livingstone Gully Road and into the existing creek network and O'Briens Creek tributary to the Murrumbidgee River located approximately16km to the north of the site.

Potential Impacts

Potential impacts of the development of the proposed BESS include increased stormwater runoff and pollution of water quality particularly from sedimentation in downstream waterways from both construction and operation of the proposed BESS.

Impact Mitigation

A stormwater management plan and report prepared by Northrop engineers with measures to manage quantity and quality of water discharging from the site of the proposed BESS including an erosion and sediment control plan for the construction stage of the development will be submitted with the DA and EIS.

A draft stormwater management plan is included in the civil engineering drawings by Northrop included in **Appendix B**, and a Civil Engineering Preliminary Investigation Report that includes a description of the draft plan prepared by Northrop is in **Appendix C** of this Scoping Report. In essence, the draft plan is to include to convey runoff from minor storm events (5-10% AEP / 10-20 year storm) through a pit and pipe network under the internal roads with overland flow during major storm events (1% AEP / 100-year storm) directed on the internal road network as the primary stormwater conveyance paths directing both pipe flows and overland flows to a proposed stormwater bio-detention and treatment basin in the south-east corner of the site from which any overflow will discharge into existing swales along Livingstone Gully Road and into existing creek lines and waterways.

Waste Water

During operation, sewage and greywater generated by the on-site facilities (control room and welfare amenities) will be treated via a secondary aerobic wastewater treatment system (biocycle or equivalent AWTS) compliant with NSW Department of Planning and Environment standards and City of Wagga Wagga Council requirements. The system will be sized for the low occupant load, with treated effluent irrigated within a dedicated, vegetated land application area located in a low-visibility portion of the site and designed to avoid any off-site discharge. Regular maintenance will be undertaken by a licensed service provider to ensure ongoing performance and full compliance.

Flooding

Existing Environment

The subject site is not identified as flood prone land. There are two waterways mapped on the site away from the proposed development footprint. This includes Big Spring Creek which runs across the northwest corner and an unnamed waterway that runs through the middle of the subject property. These waterways drain to Gregadoo Creek into Obriens Creek, Kyemba Creek and the Murrumbidgee River. There is also a dam on the southeast corner of the site.

The site is within the Wagga Wagga Revised Murrumbidgee River Flood Study Area though it is not identified as impacted by flooding.

Wagga Wagga Council's Major Overland Flow Floodplain Risk Management Study and Plan provides information on catchments within Gregadoo.

Potential Impacts

As detailed in the Preliminary Site Investigation in **Appendix C,** there is no published mapping for flooding associated with the two watercourses on the site, and Council has not yet confirmed if any detailed studies applicable to the subject site exist.

Based on the available flood mapping and indicative site plans, the proposed development is unlikely to be impacted by flooding from the waterways. Conversely, the proposed works are unlikely to exacerbate flood risk on the site or to adjoining properties.

Impact Mitigation

Th Preliminary Site Investigation prepared by Northrop in **Appendix C** recommends further assessment of flood extents and numeric Flood Planning Levels across the site to support the EIS. This entails obtaining property-specific flood data through a formal Flood Information Request or a Section 10.7 Planning Certificate.

6.2.6 Heritage

An Aboriginal and Historic Heritage Scoping Report prepared by Austral Archaeology is in **Appendix G** and includes the following findings and conclusions.

Potential Impact on Aboriginal Heritage

An Aboriginal Cultural Heritage Assessment (ACHA) is to be undertaken in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), the *Guide to Investigating, assessing and Reporting on Aboriginal Cultural Heritage in NSW* (Office of Environment and Heritage 2011) and the *Aboriginal Cultural Heritage Consultation Requirements for Proponents* (Department of Environment, Climate Change and Water NSW 2010a) [Consultation Requirements].

Background research carried out by Austral associated with its scoping assessment did not identify any previously recorded Aboriginal sites within the study area.

A survey has been carried out by Austral on 20 August 2025 as part of its scoping assessment to confirm any archaeological surface and/or subsurface potential on the site study area. The pedestrian survey covered the entirety of the study area, with a particular focus on the portions identified as having archaeological sensitivity being terraced landforms within proximity to Big Spring Creek and an ephemeral drainage line running through the western portion of the study area. No Aboriginal sites were identified. Four (4) potential archaeological deposits (PADs) were identified on landforms adjacent to Big Spring Creek and the ephemeral drainage line. As these 4 PADs are not within the proposed development footprint, no test excavation program is required. If the proposed works design changes during the duration of the project, any PADs that are subject to impact will require an archaeological test excavation program to determine whether Aboriginal objects are present.

Potential Impact on Historic Heritage

There is no heritage item listed under the Wagga Wagga LEP or State Heritage Register located on or adjacent to the subject site.

A historic heritage survey was also conducted by Austral on 20 August 2025 by Austral Senior Archaeologist, Brendan Fisher. The pedestrian survey covered the entirety of the study area. No historic heritage sites

were recorded during the survey, and the study area was assessed as having low historic archaeological potential.

Impact Mitigation

A full ACHA will be prepared in consultation with stakeholders as part of the preparation of the DA and EIS for the proposed BESS. If the ACHA reveals an item or place of Aboriginal heritage significance, a range of heritage impact mitigation measures will be considered and a preferred measure recommended in consultation with stakeholders.

A protocol on unexpected finds will be implemented as a condition of the consent to ensure that any potential heritage item found unexpectedly during construction of the BESS will be managed appropriately in accordance with relevant guidelines.

6.2.7 Contamination and Remediation

A Preliminary Site Investigation (PSI) is to be prepared by APP Environmental Services as input into the EIS for the proposed Gugaa BESS. APP Environmental Services has advised of the following scope for the PSI.

The primary aim of the assessment is to identify any past or present potentially contaminating activities at the site or its surrounds, and to make a preliminary determination of whether contamination conditions may exist that could affect future development for the purposes of the BESS.

The objectives of the PSI are:

- Assess current site conditions and land use through a site walkover inspection
- Appraise historical site uses via review of historical records
- Identify potential contamination sources, areas of environmental concern, and contaminants of potential concern

To meet these objectives, the following tasks are to be undertaken:

- Site Inspection: A walkover was conducted to observe current land use, surface conditions, and any visible indicators of contamination
- Site History Review: Historical land use was assessed through aerial imagery, stakeholder interviews, and public records
- Title and Property Records: Current and historical title searches, deposited plans, and ownership records were reviewed to identify activities that may have introduced contaminants
- Planning Certificate Review: Section 10.7 (2 & 5) certificates were obtained from the local council to identify zoning, land use constraints, and any contamination notices
- SafeWork NSW Licensing Records: Where relevant risks were identified, records were reviewed for any licenses related to the storage of dangerous goods, including fuel
- Lotsearch Pty Ltd Environmental Risk and Planning Report: This report was purchased and reviewed to support the environmental assessment. Key data evaluated included:
- Regional geology and soil landscape, including acid sulfate soil risk
- Registered groundwater bores
- Historical aerial photographs
- NSW EPA contaminated land records
- Historical business activities on-site and in the immediate surrounds
- Salinity, heritage items, ecological constraints, and other planning-related considerations relevant to the development of a conceptual site model.

Existing Environment

Based on preliminary findings of desktop review, stakeholder engagement, and site inspection, the potential for contamination at the site is considered low. Anecdotal evidence and visual observations suggest that past activities, such as fuel storage, chemical use, minor filling, and the presence of a burn pit may have

occurred on other parts of the subject property, but these are not located within the proposed BESS development footprint and are unlikely to appear to have resulted in significant contamination.

No widespread indicators of contamination were observed during the site walkover, and no formal contamination notices were identified in the reviewed documentation. As such, soil sampling is not currently proposed.

Potential Impact

Potential for contamination on the site of the proposed BESS footprint is limited to unexpected finds given the findings of the preliminary assessment of the site above.

Impact Mitigation

Contamination risks would be proposed to be managed through the implementation of a Construction and Environmental Management Plan (CEMP) and an Unexpected Finds Protocol. These measures will ensure that any unforeseen contamination encountered during construction is identified and appropriately addressed.

Should future design changes result in ground disturbance within or adjacent to identified areas of environmental concern, targeted soil sampling and further investigation would need to be considered to assess potential risks and inform appropriate mitigation strategies.

6.2.8 Bush Fire Risk

A specialist Bushfire Assessment is to be prepared by Peterson Bushfire as input into the EIS and to inform the design of the proposed BESS facility. Peterson Bushfire has provided the following statements on the scope of the bushfire assessment.

Existing Environment

The entire site and surrounding lands are mapped as ‘bushfire prone land’ which is reflective of the potential grassland hazard presented by the farming district. An SSD application is therefore to comply with the NSW Rural Fire Service (RFS) document ‘Planning for Bush Fire Protection 2019’.

Potential Impact

An inspection of the site and surrounding bushfire hazard occurred on 20th August 2025, and it can be confirmed the only hazard consists of a potential grassland hazard from surrounding paddocks. The locality is predominantly cleared and there is minimal wooded vegetation with the only example being small, scattered stands of trees along drainage depressions located more than 500 m from the site. This is characteristic of the wider district. The bushfire risk at the site does not preclude the development of the proposed BESS facility.

Impact Mitigation

Based on the potential grassland hazard, it is expected that the project will require the preparation of a Bushfire Assessment and Management Plan that demonstrates compliance with ‘Planning for Bush Fire Protection 2019’. Specific matters that would typically be addressed within such a report are:

- risk assessment of fire impact to and from the project; and
- bushfire protection measures to address the risk and ensure compliance with ‘Planning for Bush Fire Protection 2019’.
- Bushfire protection measures to be considered will include:

- Asset Protection Zones (including 'defendable space')
- Access layout including road widths and provision of perimeter roads
- Water supply for fire-fighting
- Vegetation management
- Identification of hazards that may affect fire-fighting operations
- Emergency management arrangements including 24hr contact details

6.2.9 Waste Management

A Waste Management Plan will be prepared and submitted as part of the EIS addressing waste generated by earthworks, construction and ongoing operation of the proposed BESS facility. The WMP will be prepared consistent with the requirements of Wagga Waga City Council, and include estimated volumes of waste generated and proposed means of managing and disposing waste consistent with the waste management hierarchy of avoid, reduce, reuse, recycle, treat and dispose. The WMP will include proposed measures for minimising waste generation, reusing waste, sorting waste into different waste streams including recyclable materials, and disposal and licensed resource recovery and waste management facilities.

6.2.10 Social Impact

A Social Impact Assessment (SIA) prepared by Hill PDA is intended to inform the planning, design and ongoing operational management of the proposed Gugaa BESS and form part of the EIS to be lodged with the DA.

Hill PDA has prepared an SIA Scoping Report and Worksheet which are included in **Appendix J** of this The SIA Scoping Report includes a description of the following:

- existing social environment, community profile, sensitive receivers around the site, and accommodation for workers in the locality;
- potential social impacts (positive and negative) at construction and operational stages of development;
- assessment approach to be used in the SIA that is in accordance with DPHI's *Social Impact Assessment Guideline for State Significant Development Applications*, and using a social impact significance matrix and identifying the sources and means of inputs into the assessment; and
- scoping worksheet using the template in the SSD SIA Guidelines that includes measures being considered to mitigate potential negative impacts.

6.2.11 Economic Impact

An Economic Impact Assessment (EIA) prepared by Hill PDA is intended to consider potential economic impacts associated with the proposed Gugaa BESS and form part of the EIS to be lodged with the DA.

Hill PDA has advised the intended the intended scope of the EIA based on the proposal, site context and review of similar large-scale energy projects are as follows:

- 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.
- 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, having regard for the Benefit-Sharing Guideline 2024 and Private Agreement Guideline 2024.
- A qualitative analysis of potential economic benefits of the proposal relating to grid stability and reliability, grid deferral and infrastructure savings, and backup power and resilience.
- A cumulative impact assessment of nearby similar large-scale developments.

Employment estimate methodology

Employment during the operational phase would be estimated by applying workspace ratios sourced from the NSW Common Planning Assumptions; or provided by the Client. Indirect employment would be estimated using the Australian National Accounts Input-Output tables 2022-2023

Employment during the proposal construction phase would be based on the provided estimated development cost and Australian National Accounts Input-Output tables 2022-2023.

Economic assessment methodology

The proposed methodology and sources used to estimate the economic impacts of the proposal are as follows:

Direct impacts - Direct economic impacts are those generated by the uses on-site. These metrics would be estimated using various sources, including IBIS World 2023 reports, ABS Input-Output tables and workspace ratios sourced from the NSW Common Planning Assumptions.

Indirect impacts - Indirect impacts (or economic multipliers) refer to the level of additional jobs and economic activity generated and/or supported by a source industry. There are two types of effects captured by multipliers:

Production induced effects, which are made up of:

- *First round effects:* which are all outputs and employment required to produce the inputs for the source industry, and:
- *Industrial support effects:* which is the induced extra output and employment from all industries to support the increased production by suppliers in response to increased sales.

Consumption induced effects which relate to the demand for additional goods and services due to increased spending by the wage and salary earners across all industries, arising from employment.

These metrics would be estimated using the Australian National Accounts Input-Output tables 2022-2023.

Limitations with multipliers - Both the ABS and the NSW Treasury Employment Calculator identify several limitations with input-output multipliers, or at least shortcomings in typical interpretations of the multipliers, which generally result in an overestimation of impacts. The main shortcomings or limitations are as follows:

- Production induced impacts can leave the impression that extra output can be produced without taking resources away from other activities.
- Multipliers assumed fixed input ratios and hence measure impacts based on average effects rather than marginal effects.
- The impacts are nationwide and are not regional or local impacts, which would be smaller.
- Other limitations are described in both the NSW Treasury Guide and on the ABS website.

Performance measures - Economic activity is assessed by examining economic impact metrics (or performance indicators) described in the table below.

Metric	Description
Output	Output is a gross measure of the total sales generated by the types of land uses present on the Site or in the Project.
Employment	Employment generated and supported by the types of land uses present on the Site or in the Project. Employment is expressed as Full-Time Equivalent (FTE).
Wages	The wages and salaries paid to employees on the Site or in the Project.
Gross Value Added	Gross value added (GVA) of an industry refers to the value of outputs less the costs of inputs. It measures the contribution that the industry makes to the country's wealth or gross domestic product (GDP).

The EIA is to be consistent with the Benefit-Sharing Guideline Guidance for large-scale renewable energy projects (NSW DPHI, 2024), Private Agreement Guideline 2024 (NSW DPHI, 2024), and Cumulative Impact Assessment Guideline (NSW DPHI, 2022).

6.2.12 Biodiversity

MJD Environmental has been engaged to address the biodiversity assessment aspects of the proposed Gugaa BESS and input into the DA EIS. A Biodiversity Waiver Request prepared by MJD is included in **Appendix F** of this Scoping Report. It has been prepared in accordance with the NSW Government Biodiversity Development Assessment Report Waiver website (DEH 2025) and presented consistent with "*Table 1 Biodiversity Development Assessment Report waiver request information requirements*" and "*Table 2: Impacts of the proposed development on biodiversity values*" of the website.

Existing Environment

MJD inspection of the site revealed the following:

- The majority of the vegetation within the site was observed to be in poor condition, comprised of two pasture areas including exotic sown *Hordeum distichon* (Two Row Barley) covering the eastern section and heavily grazed pasture in the western section. Overall, the diversity within the pasture is very low, with no native groundcover species observed in the sown areas.
- The centre of the site supports a patch (0.05ha.) of native canopy trees consisting of *Eucalyptus polyanthemos* and *Eucalyptus melliodora*. No hollows or mistletoe were observed within this patch of trees. This patch of native trees was not considered commensurate with Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed critically endangered ecological community (CEEC) *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, as it was not observed to have a native ground layer consisting of at least 50% native perennial vegetation cover.
- The site contains poor condition habitat that is unlikely to support threatened flora, particularly with the high degree of pasture improvement and grazing pressure of the current management regime.
- The site does not contain habitat important for the lifecycle of threatened fauna species. It is anticipated that only foraging activity is expected for a few highly mobile species given that there were large hollows observed outside the boundary of the site along the road easement. However, no breeding activity is expected for threatened fauna species.
- The vegetation in the westernmost paddock (not proposed for the BES) is represented by heavily grazed pasture, with a second order stream that has fringing native vegetation including *Juncus usitatus* and *Carex appressa*. Although heavily disturbed by livestock, frog activity was observed along the stream.

Potential Impact on BESS Site

The construction of the proposed BESS development will impact a small amount of native vegetation in the form of mature eucalypt canopy trees with no potential fauna habitat. Given that no significant fauna habitat features were observed, impacts to threatened species and/or habitat, or threatened ecological communities are unlikely to occur. The proposed development is not considered to impact habitat connectivity within the site or surrounding area. The proposed BESS facility does not seek to expand beyond the site boundary which contains sown pasture, and therefore no indirect impacts are expected to occur to flora and fauna off site.

Potential Impact of Ancillary Activity

It is expected that there will be no need for any impact on vegetation outside the proposed BESS footprint associated with its construction. The proposed BESS footprint includes adequate areas for construction related infrastructure and materials.

The proposed BESS development includes the following ancillary activities with potential to impact on flora and fauna:

- a power line connection between the proposed BESS on the site and the Gugaa substation on adjoining land to the south
- wheel overruns of oversized heavy vehicles onto the road verge on particular intersections nearby the site in the delivery of oversized BESS components during construction of the proposed BESS (as shown on the OSOM heavy vehicle swept path diagrams in the OSOM Route Assessment at **Appendix E**).

The Biodiversity Waiver Request prepared by MJD finds that the power line connection between the proposed BESS and adjacent Gugaa substation and the wheel overruns of oversized delivery vehicles onto the road verge will not have a significant impact on flora or fauna and are appropriate to include in a biodiversity waiver.

Impact Mitigation

The siting and design of the proposed BESS and the ancillary activities of OSOM heavy vehicle routes and power connection to the Transgrid Gugga substation have no significant impact on threatened flora or fauna or on significant biodiversity values as described in the Biodiversity Waiver Request prepared by MJD in **Appendix F** of this Scoping Report. Given the above information, it is considered the application of a biodiversity assessment waiver issued with the SEARs is appropriate for the current proposal.

6.2.13 Noise and Vibration

A Draft Noise and Vibration Assessment prepared by Assured Environmental (AE) to inform the planning, design and management of the proposed Gugaa BESS is included at **Appendix H** and is intended to be finalised after the issue of SEARs to form part of the EIS lodged with the DA. AE has provided the following preliminary review and description of the methodology to be used in preparing the Noise and Vibration Assessment.

The Noise and Vibration Impact Assessment is prepared in accordance with the:

- NSW Interim Construction Noise Guideline (DECC 2009).
- NSW Noise Policy for Industry (EPA 2017).
- NSW Road Noise Policy (DECCW 2011); and
- Assessing Vibration: A Technical Guideline (DECC 2006).

Existing Environment

The Subject Site is zoned RU1: Primary Production and is situated in a rural area and setting where existing land uses are predominantly for agricultural purposes with the adjoining property to the south currently being developed for the Gugaa substation.

There are existing dwellings located in the broad vicinity of the proposed BESS as identified in Figure 9 of this Scoping Report and with georeferenced map within a 5km buffer of the project site in the Draft Noise and Vibration Assessment. Sensitive uses have been determined based on the land zoning and aerial imaging. There are only two sensitive residential receptors located within 1 km of the site as shown in the drawings in **Appendix K**, one of which is a house at the property on which the Gugaa BESS is proposed.

The existing noise environment at the nearest dwellings is that of a typical rural area, dominated by natural noise sources such as foliage, birdsong, distant traffic, occasional localised agricultural sources, and with construction vehicles associated with the adjacent Gugaa substation development.

Potential Impacts

Noise and vibration expected to be generated by the construction and operation of the proposed BESS with potential to impact on nearby sensitive receivers is described in the draft Noise and Vibration Impact Assessment in **Appendix H** as including the following:

Construction Noise and Vibration

Construction Stage	Potential Noise Sources
Site Establishment and Civil Works	Front end Loader, Dump Truck, Excavator, Grader, Compactor, Diesel Generator, Heavy truck vehicles, Bobcat, Concrete pump, Concrete Saw
Installation of BESS Equipment and Ancillary Operational Equipment	Elevated work platforms, Mobile Crane, Hand Tools, Diesel Generator
Landscaping and establishment of noise walls	Water Truck, Backhoe, Compactor, Fanna crane, Bobcat, Dump Truck, Front end Loader
Decommissioning (inc. remediation)	Franna crane, Trucks, Excavator, Bulldozer

Potential vibration sources include excavator, roller, compactor, heavy vehicle trucks.

The draft Noise and Vibration Assessment finds the following potential impacts during construction:

- predicted noise levels from construction activities at nearby sensitive receptors may exceed the noise affected criteria of 45 dB(A) at a number of residential locations depending on the construction stage, and the Highly Noise Affected criteria of 75 dB(A) is not expected to be exceeded at any locations.
- potential vibration emissions from the construction identified adverse amenity impacts from vibration emissions to be unlikely and compliance with applicable criteria is expected to be achieved.

Operational Noise

The potential operational noise generated from the proposed BESS facility is from the following sources:

- internal cooling mechanisms (namely fans or liquid chillers) in battery units;
- transformers;
- inverters;
- road transport.

The draft Noise and Vibration Assessment finds that:

- noise impacts associated with the operation of the BESS comply with relevant noise criteria at the nearest two sensitive residential receivers with implementation of noise mitigation measures below;
- vibration impacts associated with the operational phase of the Subject Site are expected to be negligible.

Cumulative Impacts

Cumulative noise impacts of the proposed Gugaa BESS and other construction and land use activities on adjacent land will be considered in the final Noise and Vibration Assessment at a time prepared after the issue of SEARs for inclusion in the EIS lodged with the DA at a time when the type and timing of construction and land use activities on adjacent land are more definitively understood.

Impact Mitigation

Construction

The final Noise and Vibration Assessment submitted with the DA and EIS will address measures for mitigating noise impacts to comply with relevant noise standards including with consideration given to measures for:

- Limits on construction hours;
- Implement community consultation or notification measures;
- 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 project requirements for reference;
- Inform truck drivers 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;
- Using broad band reversing alarms on all mobile plant and equipment where possible;
- 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;
- Avoid unnecessary dropping of materials from a height and metal to metal contact on equipment; and
- During any work generating high noise levels that have impulsive, intermittent, low frequency or tonal characteristics, consultation with sensitive receptors is to occur regularly.

Construction work hours are intended to be restricted to standard hours as shown below other than for minor construction activities such as electrical commissioning and fit out which produce a negligible amount of noise:

- Weekdays: 7am to 6pm
- Saturdays: 8am to 1pm
- Sundays and public holidays: No work

Operation

The draft Noise and Vibration Assessment recommends the following measures for mitigating the potential noise impact of the proposed BESS operation on sensitive receivers:

- **Noise barrier** along the northern boundary and a portion of the northeast corner designed to mitigate operational noise levels at nearby sensitive receptors. A barrier height of 6.2 metres is recommended which may be achieved through a standalone barrier, or through a combination of an earthwork bund with a barrier on top.
- **Equipment selection** of battery units, inverters and transformers with specifications for noise output / power levels that are equal to or less than the sound power levels specified in the draft Noise and Vibration Assessment and verified by an acoustical consultant.

The draft Noise and Vibration Assessment at **Appendix H** finds that, based on the predictive noise modelling and with the recommended noise mitigation from noise barriers and maximum sound power level restrictions described above, the operation of the proposed BESS will comply with the relevant noise criteria being 40 dB(A) during the day and 35 dB(A) during the evening and night to be achieved at all identified sensitive receptors. The draft Assessment finds the operation of the proposed BESS is unlikely to cause adverse amenity impacts during operation, and the site can be considered a suitable location for the proposed development.

6.2.14 Hazards and Risks

A Draft Preliminary Hazard Analysis (PHA) and Emergency Management Plan (EMP) prepared by Riskcon is included in **Appendix I** and intended to be submitted as part of the EIS with the DA to identify and manage hazards associated with the proposed Gugaa BESS on the surrounding land uses. A summary of the approach / methodology and key findings in the Draft PHA and EMP are as follows.

The Draft PHA is prepared in accordance with the SEPP and DPHI Hazardous Industry Planning Advisory Papers No. 4 and No. 6. The Multi-Level Risk Assessment approach published by DPHI in 2011 is used in the Draft PHA as the basis for determining the level of risk assessment required and taking into consideration the development in context of its location, the quantity and type (i.e. hazardous nature) of dangerous goods stored and used, and the technical and safety management controls. A Level 1 Assessment is selected for this project which provides a qualitative assessment of those dangerous goods of lesser quantities and hazard, and a quantitative approach for the more hazardous materials to be used on-site, which is commensurate with the methodologies for a multi level risk assessment in the DPHI guidelines "Applying SEPP 33" Multi Level Risk Assessment approach.

Existing Environment

The Subject Site is zoned RU1: Primary Production and is situated in a rural area and setting where existing land uses are predominantly for agricultural purposes with the adjoining property to the south currently being developed for the Gugaa substation.

There are existing dwellings located in the broad vicinity of the proposed BESS as identified in Figure 9 of this Scoping Report. There are two sensitive residential receptors located within 1 km of the site as shown in Figure 10 of this Scoping Report, one of which is a house at the property on which the Gugaa BESS is proposed.

Potential Hazards and Impacts

The Draft PHA identifies the potential hazards in the proposed BESS site facilities and operations. Where a potential incident is identified to have a potential off-site impact, it is included in the recorded hazard identification diagram. The hazard identification diagram lists incident type, causes, consequences and safeguards. This was performed using the word diagram format recommended in HIPAP No. 6. Potential hazards identified include:

- fire
- explosion
- various toxicities
- electromagnetic fields
- property damage
- societal risk.

Potential hazardous incidents in the operation of the proposed BESS include:

- Transportation and storage of toxics
- Li-ion battery fault, thermal runaway and fire
- Victorian Big Battery fire review
- 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
- Refrigerant gas release and asphyxiation hazard
- Release of diesel, ignition and pool fire
- Electromagnetic field impacts.

Each potential hazardous incident is assessed qualitatively in light of proposed safeguards (technical and management controls). Where a potential offsite impact is identified, the incident is carried into the main report for further analysis. Where the qualitative review in the main report determines safeguards are

adequate to control the hazard, or that the consequence would obviously have no offsite impact, no further analysis is performed.

Consequence Analysis – For those incidents qualitatively identified in the hazard analysis to have a potential offsite impact, a detailed consequence analysis is conducted. The analysis models the various postulated hazardous incidents and determine impact distances from the incident source. Results are compared to the consequence criteria listed in HIPAP No. 4.

Where an incident is identified to result in an offsite impact, it is carried forward for frequency analysis. Where an incident is identified to not have an offsite impact, and a simple solution is evident (eg. move the proposed equipment further away from the boundary), a solution is recommended with no further analysis.

Frequency Analysis – In the event a simple solution for managing consequence impacts is not evident, each incident identified to have potential offsite impact is subject to a frequency analysis. The analysis considers the initiating event and probability of failure of the safeguards (both hardware and software). The results of the frequency analysis are then carried forward to the risk assessment and reduction stage for combination with the consequence analysis results.

Risk Assessment and Reduction – Where incidents are identified to impact offsite and where a consequence and frequency analysis was conducted, the consequence and frequency analysis for each incident is combined to determine the risk and then compared to the risk criteria published in HIPAP No. 4. Where the criteria is exceeded, a review of the major risk contributors is to be performed, and the risks reassessed incorporating the recommended risk reduction measures. Recommendations are then made regarding risk reduction measures.

Mitigation Measures

The following types of hazard mitigation and management measures are recommended in the Draft PHA and have informed the design plans and operational management of the proposed BESS:

- spacing dimensions between BESS containerised units;
- fire protection system specified by the BESS manufacturer in containerised units;
- specifications for vent location and materials in battery packs;
- UL test data for selected battery units prior to operation;
- battery testing by manufacturer prior to sale / installation;
- protection of electrical circuits against overcharging and power surges with emergency shutdown;
- battery monitoring systems;
- battery configuration of subcomponents (i.e. modules, cells) reducing risk of component failure;
- electrical systems designed per AS/NZS 3000:2018;
- HVAC system;
- blast panels and pressure relief vents;
- gaseous fire suppression;
- UL9540A testing;
- switch room separation from other sources of fire;
- self-bunded transformer skids;
- separation from combustible materials and sensitive receptors;
- lightning protection to prevent lightning strikes impacting transformers;
- control of ignition sources;
- separation distances for attenuation of EMFs;
- cumulative impacts from equipment below acceptable thresholds.
- EMP that identifies risks, response procedures, communications and notifications, and training.

The Draft PHA concludes that, with the recommended hazard mitigation measures, the qualitative review of the potential incidents concluded that no incidents are expected to have offsite impacts and that the risks at the site boundary are not considered to exceed the acceptable risk criteria. Thus, the facility would only be classified as potentially hazardous and would be permitted within the current land zoning for the site.

6.2.15 Cumulative Impact Considerations

Potential cumulative impacts of the proposed Gugaa BESS together with other significant developments in the locality will be examined in the EIS for the DA. This includes consideration of both an issue-specific cumulative impact assessment (CIA) and combined CIA. Relevant assessment matters have been identified according to the anticipated impact. Particular consideration will be given to the cumulative impacts of the proposed BESS in conjunction with the HumeLink and the proposed Livingstone Solar Farm given their proximity to the subject development.

Gugaa substation and HumeLink

The Gugaa substation is part of Transgrid's broader HumeLink transmission line project. The development comprises a new 500kV substation, transmission lines and ancillary service buildings as well as upgrades to the Wagga and Bannaby substations to accommodate new connections. Once completed, the Gugaa substation will occupy approximately 22 hectares of land. It is located approximately 300m south of the subject development on the adjacent property. The application was approved in November 2024, and development is under construction as of December 2025.

Livingstone Solar Farm

The Livingstone Solar Farm is a proposed solar farm to be connected to the Gugaa substation. The project comprises a 400MW/1,600MWh BESS, ancillary operations and maintenance facilities, access tracks, on-site parking and landscaping. The project is anticipated to occupy approximately 1,345 hectares of the property at 731 Livingstone Gully Road, Big Springs with the exact location and layout to be refined.

The Livingstone Solar Farm site adjoins the site of the proposed Gugaa BESS to the east and south. The property extends approximately 11 kilometres to the south. The project was issued SEARs in March 2022 but has not been submitted for further assessment.

A cumulative impact assessment scoping summary prepared in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* is provided in **Appendix L**. Relevant assessment matters have been identified according to the anticipated combined impact.

6.2.16 Management Plans

The preparation of the EIS and accompanying technical assessment documents will recommend measures for mitigating and managing impacts of development during construction and operational stages as outlined above in this Scoping Report and give due consideration to any need for the following management plans to be prepared and submitted with DA and EIS:

- Construction Management Plan; and
- Operational Management Plan.

6.3 Matters Not Requiring Further Assessment in the EIS

Assessment Matter	Comment
Greenhouse gas emissions	As a project supporting renewable energy, the proposed development is anticipated to contribute to reducing emissions from energy generation. This is considered sufficient to offset emissions associated with construction, operation and decommissioning of the project.
Port, airport or rail facilities	The project will not significantly impact any port, airport or rail facilities. The transportation of construction components to the site will be assessed in the Traffic Assessment Report supporting the EIS.
Odour	The project does not propose development that emits any significant odour, and is not sensitive to any odour generating rural activity which may occur in the locality.
Air quality in operation	The operational phase of the project does not generally generate any gas or particulate that would significantly impact air quality.
Coastal hazards	The project is not located near or within a coastal area.
Biosecurity	The project does not raise any substantial biosecurity issue. Imported BESS components will need to comply with standard border control, customs and biosecurity procedures.
Land movement	The land is not identified as being subject to land stability issues that pose a risk to human and environmental safety.

7 Conclusion

This Scoping Report and SEARs Request has been prepared for the development of a proposed Battery Energy Storage System (BESS) covering approximately 24ha. of a 40.2ha. allotment of RU1 Zone land at 477 Gregadoo East Road, Gregadoo in the local government area of Wagga Wagga. The objectives of the development are:

- Deliver a large-scale Battery Energy Storage System (BESS) facility that enhances the capacity, stability, and reliability of the electricity transmission network within the National Electricity Market (NEM);
- Support the integration and increased penetration of renewable energy generation in southern New South Wales by providing essential grid-forming, firming, and energy shifting services;
- Silo Energy have secured a strategically located site immediately adjacent to Transgrid's new Gugaa 500/330 kV Substation (under construction as part of the HumeLink project), enabling high-capacity connection to the high-voltage transmission network;
- Utilise a site with strong environmental suitability for BESS development, characterised by favourable topography, low biodiversity values, and minimal material environmental or land-use constraints;
- Design and configure the development to respond sensitively to the site's topography, visual amenity, landscape character, and surrounding environmental values, incorporating appropriate screening, setbacks, and landscaping measures; and
- Proactively identify, avoid where possible, and otherwise mitigate and manage potential environmental, safety, and community impacts and hazards throughout the development, construction, operational, and decommissioning phases of the project.

The proposed BESS is permissible within the RU1 Zone under *Wagga Wagga Local Environmental Plan 2010* (LEP) and also under the *State Environmental Planning Policy (Transport and Infrastructure) 2021*, and is a State significant development (SSD) under the *State Environmental Planning Policy (Planning Systems) 2021.*

It is understood the proposed Gugaa BESS is not eligible for the Industry-Specific SEARs due to meeting the threshold criteria applying to designated development, and therefore requires the submission of this Scoping Report to obtain Project-Specific SEARs for an Environmental Impact Statement (EIS) pursuant to the *Environmental Planning and Assessment Act 1979*, associated *Environmental Planning and Assessment Regulation 2021*, and *State significant development guidelines*. This Scoping Report has been prepared in accordance with the *State significant development guidelines – preparing a scoping report.*

This Scoping Report identifies and provides a preliminary assessment on the following environmental assessment considerations associated with the proposed Gugaa BESS to assist with the preparation and issue of SEARs for the preparation of an EIS for a DA:

- Strategic Context
- Statutory Context
- Electricity System Security and Reliability
- Land Use Compatibility / Suitability
- Landscape and Visual Impact
- Traffic, Transport and Accessibility
- Biodiversity
- Water
- Heritage
- Noise and Vibration
- Hazards and Risks
- Contamination and Remediation
- Bush Fire Risk
- Waste Management
- Social Impact
- Economic Impact
- Cumulative Impact Considerations
- Management Plans

8 References

Australian Energy Market Operator (2024). *Integrated Systems Plan*.

Biodiversity Conservation Act 2016

Commonwealth of Australia (2025). *Australia's Net Zero Plan.*

Energy Co NSW (2023). *Network Infrastructure Strategy for NSW.*

City of Wagga Wagga (2025). *Wagga Wagga 2050 Community Strategic Plan (2025)*

City of Wagga Wagga. *Local Strategic Planning Statement - Planning for the Future: Wagga Wagga 2040*

Environmental Protection and Biodiversity Conservation Act 1999

Environmental Planning and Assessment Act 1979.

Environmental Planning and Assessment Regulation 2021.

NSW Department of Planning and Environment (2018). *NSW Transmission Infrastructure Strategy.*

NSW Department of Planning and Environment (2023). *Riverina Murray Regional Plan 2041.*

NSW Department of Planning, Industry and Environment (2019). *NSW Electricity Strategy.*

NSW Department of Planning, Industry and Environment (2020). *NSW Electricity Infrastructure Roadmap*.

NSW Department of Planning, Industry and Environment. (2020). *Net Zero Plan Stage 1: 2020-2030*.

NSW Department of Planning, Industry and Environment (2022) *State significant development guidelines – preparing a scoping report.*

NSW Department of Planning, Industry and Environment (2022). *Cumulative Impact Assessment Guidelines for State Significant Projects.*

NSW Department of Planning, Housing and Infrastructure (2023). *Social Impact Assessment Guideline.*

NSW Department of Planning, Housing and Infrastructure (2023). *Technical Supplement - Social Impact Assessment Guideline for State Significant Projects.*

NSW Department of Planning, Housing and Infrastructure (2024). *Technical supplement - Landscape and Visual Impact Assessment.*

NSW Department of Planning, Housing and Infrastructure (2024). *Large-Scale Solar Energy Guidelines.*

NSW Department of Planning, Housing and Infrastructure (2024). *Private Agreement Guideline*

NSW Department of Planning, Housing and Infrastructure (2024). *Undertaking Engagement Guideline for State Significant Projects.*

State Environmental Planning Policy (Planning Systems) 2021.

State Environmental Planning Policy (Transport and Infrastructure) 2021.

State Environmental Planning Policy (Resilience and Hazards) 2021.

Wagga Wagga Local Environment Plan 2010.

Level 14, 10 Spring Street
Sydney NSW 2000

Appendix A – Scoping Summary Table

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies and guidelines	Report reference
Standard	Electricity System Security and Reliability	No	General	▶ Integrated Systems Plan - Australian Energy Market Operator (2024). ▶ Network Infrastructure Strategy for NSW - Energy Co NSW (2023). ▶ NSW government Transmission Infrastructure Strategy. ▶ NSW Electricity Strategy.	Section 6.1
Standard	Land Use Compatibility	Yes	General	▶ State significant development guidelines ▶ Large-Scale Solar Energy Guideline 2022	Section 6.2
Detailed	Landscape and Visual Impact	Yes	Specific	▶ Guideline for landscape character and visual impact assessment, Environmental impact assessment practice note EIA–N04, Centre for Urban Design, TfNSW Version 2.3, June 2023 ▶ Guidelines for Landscape and Visual Impact Assessment, Landscape Institute and Institute of Environmental Management & Assessment 2013.	Section 6.3
Detailed	Traffic, Transport and Accessibility	Yes	General	▶ Guide to Transport Impact Assessment ▶ Austroads Guide to Traffic Management Part 6: Intersections, Interchanges, and Crossings ▶ Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections ▶ Australian Road Research Board Best Practice Guide for Unsealed Roads 2 ▶ Heavy Vehicle National Law and Regulations	Section 6.4 & Appendix E
Standard	Biodiversity	No	General	▶ Biodiversity Conservation Act 2016 and Regulation 2017 ▶ Environment Protection and Biodiversity Conservation Act 1999 ▶ Biodiversity Development Assessment Report Waiver (NSW Environment and Heritage website)	Section 6.5 & Appendix F

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies and guidelines	Report reference
Standard	Water	No	General	▶ Australian Rainfall and Runoff (ARR 2019) ▶ City of Wagga Wagga Stormwater Policy (2022) ▶ City of Wagga Wagga Engineering Guidelines for Subdivisions and Development Standards (2017) ▶ Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) ▶ Managing Urban Stormwater: Soils and Construction Volume 2 (Department of Environment and Climate Change, 2008) ▶ AS3500.3 (2025) – Plumbing and drainage Stormwater drainage.	Section 6.6 & Appendix B, C
Standard	Aboriginal Cultural Heritage	No	Specific	▶ Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010) ▶ Guide to Investigating, assessing and Reporting on Aboriginal Cultural Heritage in NSW (Office of Environment and Heritage 2011) ▶ Aboriginal Cultural Heritage Consultation Requirements for Proponents (2010). ▶ Connecting with Country Framework 2023 ▶ Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW 2011 ▶ Assessing Significance for Historical Archaeological Sites and Relics (2009). ▶ The Burra Charter: the Australia ICOMOS Charter for Places of Cultural Significance (2013) ▶ NSW Aboriginal Heritage Information Management System (AHIMS)	Section 6.7 & Appendix G
Standard	Historic Heritage	No	General	▶ Wagga Wagga Local Environmental Plan 2010 and Development Control Plan 2010 ▶ State Heritage Inventory	Section 6.7 & Appendix G

Level 14, 10 Spring Street
Sydney NSW 2000

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies and guidelines	Report reference
Standard	Noise & Vibration	Yes	Specific	▶ NSW Interim Construction Noise Guideline (DECC 2009) ▶ NSW Noise Policy for Industry (EPA 2017) ▶ NSW Road Noise Policy (DECCW 2011) ▶ Assessing Vibration: A Technical Guideline (DECC 2006)	Section 6.8 & Appendix H
Standard	Hazards and Risks	Yes	General	▶ State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 3 Hazardous and offensive development ▶ DPHI Hazardous Industry Planning Advisory Papers No. 4 and No. 6. (2011) ▶ Department of Planning & Infrastructure Multi-level Risk Assessment (2011) ▶ Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (DoP 2011) ▶ Standards Australia, AS 1940-2017 - Storage and Handling of Flammable and Combustible Liquids, Sydney: Standards Australia, 2017. ▶ Australian Code for the Transport of Dangerous Goods by Road and Rail (7th edition) (National Transport Commission, 2007)	Section 6.9& Appendix I
Standard	Contamination and Remediation	No	General	▶ State Environmental Planning Policy (Resilience and Hazards) 2021 – Chapter 4 Remediation of Land ▶ Managing Land Contamination: Planning Guidelines SEPP 55 – Remediation of Land ▶ NSW EPA Record of Contaminated Land Notices	Section 6.10
Standard	Bush Fire Risk	No	General	▶ Planning for Bush Fire Protection 2019	Section 6.11
Standard	Waste Management	No	General	▶ Waste Classification Guidelines (DECCW, 2009)	Section 6.12

Level 14, 10 Spring Street
Sydney NSW 2000

Level of Assessment	Matter	CIA	Engagement	Relevant government plans, policies and guidelines	Report reference
Detailed	Social Impact	Yes	Specific	► Social Impact Assessment Guideline for State Significant Projects (2025) ► Technical Supplement – Social Impact Assessment Guideline for State Significant Projects (NSW DPHI, 2025)	Section 6.13 & Appendix J
Detailed	Economic Impact	Yes	General	► Benefit-Sharing Guideline Guidance for large-scale renewable energy projects (NSW DPHI, 2024) ► Private Agreement Guideline 2024 (NSW DPHI, 2024) ► Cumulative Impact Assessment Guideline (NSW DPHI, 2022).	Section 6.14

The APP Group

Level 14, 10 Spring Street
Sydney NSW 2000

Appendix L – Cumulative Impact Assessment Scoping Summary Table

The table below lists the potential cumulative impacts of future relevant projects within the proximity of the proposed BESS in accordance with Appendix B of the *Cumulative Impact Assessment Guidelines for State Significant Projects*. Relevant assessment matters have been identified according to the anticipated combined impact.

Proposed Assessment Approach Key

- Detailed Assessment
- Standard Assessment
- No Assessment

Future Project	Approximate Distance to Gugaa BESS	Project Status Indicative Timing	Study Area and Potential Impacts						
			Landscape & Visual Impact	Traffic, Transport & Accessibility	Noise & Vibration	Hazards & Risks	Social Impact	Economic Impact	Land Use Compatibility
HumeLink transmission line project	Approximately 300m south on adjoining property	Approved in November 2024, under construction as of December 2025	Minor impact to views from Livingstone Gully Road	Livingstone Gully Road, Gregadoo East Road. Potential overlap of construction periods and heavy vehicle movement on local roads.	Sensitive receivers – nearby residential dwellings. Potential overlap of construction periods and noise from machinery.	Concentration of development activity on adjacent sites. No significant impact.	Wagga Wagga LGA and surrounding suburbs. Potential disruptions to way of life e.g. access for road users. Cumulative demand for local employment, goods and services.	Wagga Wagga LGA and surrounding suburbs. Expected benefits from cumulative demand for local employment, goods and services.	Co-location of similar uses. Manageable environmental and planning constraints. Contributes to strategic goals.

The APP Group

Level 14, 10 Spring Street
Sydney NSW 2000

Future Project	Approximate Distance to Gugaa BESS	Project Status Indicative Timing	Study Area and Potential Impacts						
			Landscape & Visual Impact	Traffic, Transport & Accessibility	Noise & Vibration	Hazards & Risks	Social Impact	Economic Impact	Land Use Compatibility
Livingstone Solar Farm	On adjoining property to the east and south, exact location not determined	SEARs issued in March 2022, no EIS for assessment	Dependent on the location and layout of the Solar Farm. Status of the project will be revisited to ensure an appropriate approach in case of uncertainties.	Livingstone Gully Road, Gregadoo East Road. Potential overlap of construction periods and heavy vehicle movement on local roads.	Sensitive receivers – nearby residential dwellings. Potential overlap of construction periods and noise from machinery.	Concentration of development activity on adjacent sites. No significant impact.	Wagga Wagga LGA and surrounding suburbs. Potential disruptions to way of life e.g. access for road users. Cumulative demand for local employment, goods and services.	Wagga Wagga LGA and surrounding suburbs. Expected benefits from Cumulative demand for local employment, goods and services.	Co-location of similar uses. Manageable environmental and planning constraints. Contributes to strategic goals.
Similar future major energy projects in vicinity*		Various stages from proposed in Development Application to Operational	No impact based on distance between projects.	Potential overlap of heavy vehicle movement on local roads.	No impact based on distance between projects.	No impact based on distance between projects.	Wagga Wagga LGA and surrounding suburbs. Potential combined impacts due to workforce and accommodation supply.	Wagga Wagga LGA and surrounding suburbs. Positive impact of cumulative demand for local employment, goods and services.	No significant impact based on distance between projects. Contributes to strategic energy goals.

* This includes Gregadoo Solar Farm, Livingston Solar Farm and BESS, Mangoplah BESS, Belhaven BESS, Maxwell Downs Solar Farm and BESS, The Rock Solar Farm, Arundal BESS (Wagga Energy Park) and Sandy Creek Solar Farm.

The APP Group
A Bureau Veritas Company

app.com.au