



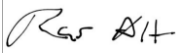

McCullys Gap Battery Energy Storage System

Scoping Report

BW ESS

March 2025



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Executive summary

Introduction

BW ESS proposes to construct a 400-megawatt (MW) battery energy storage system (BESS) and associated infrastructure (the project). The project would be located at 578 Sandy Creek Road, McCullys Gap (NSW), about six kilometres northeast of Muswellbrook (the project site). The project is located within the Muswellbrook Shire local government area (LGA) and is located in the Hunter-Central Coast Renewable Energy Zone (HCC REZ).

The project site is located immediately east and adjacent to the existing 330 kV Transgrid Muswellbrook substation, to facilitate connection to the NSW high voltage electricity transmission network.

As NSW seeks to utilise renewable energy sources, BW ESS's project would directly respond to the demand for increased renewable electricity supply across NSW, by storing excess renewable energy in times of surplus, and releasing this energy in times of high demand.

The project site

The project site has an area of about 13.38 hectares. The site is characterised by flat grasslands and two residential dwellings in the north, and hilly grasslands and open woodland in the south.

Project overview

The project would have a capacity of 400 MW, with a 1,600-megawatt hour (MWh) output capacity over a four-hour storage duration. A 330 kV transmission line would connect the battery to the existing 330 kV Transgrid Muswellbrook substation immediately west of the southwestern corner of the project site.

The construction works would involve:

- Clearing of remnant vegetation and earthworks
- Installation of concrete foundations and slabs to support battery modules
- Installation of power conversion systems and transformer structures
- Delivery, installation and electrical fit-out of the battery modules
- Installation of a 330 kV transmission line from the BESS substation to the existing 330 kV Transgrid Muswellbrook substation.

Once operational, the project would provide energy storage and energy exports as required, contributing to the stability of the NSW electricity transmission network. The project would create up to 150 jobs during the approximate 18-month construction period and provide about 10 to 15 jobs on site once operational.

Strategic context

Traditionally, the major source of electricity generation in NSW has been large coal-fired power stations. Since 2012, three coal fired power stations have been decommissioned. The four remaining power stations are planned to be progressively decommissioned over the next 15 years. The transition in energy supplies from coal-fired power stations to renewable energy sources requires the development of a reliable and sustainable energy supply including BESS to ensure grid stability.

The NSW Government has announced renewable energy zones (REZs) and additional transmission infrastructure to generate and transmit renewable electricity to meet the forecast energy shortfall. The project site is located within the HCC REZ and would firm variable renewable energy in the region. Locating this large energy storage near proposed wind and solar projects in the region would reduce requirements for additional transmission lines, reduce energy losses and improve grid stability in the HCC REZ.

Statutory context

Section 4.36(3) of the *Environmental Planning & Assessment Act 1979* provides that a state environmental planning policy may declare any development, or any class or description of development, to be State Significant Development (SSD). The project would be SSD in accordance with section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021, since the project is electricity generating works with a Capital Investment Value of more than \$30 million. The project is permissible under section 2.36(1)(b) of the State Environmental Planning Policy (Transport and Infrastructure) 2021, as the project would be electricity generating works undertaken in a prescribed non-residential zone (the site is zoned RU1 Primary Production under the Muswellbrook Local Environmental Plan 2009).

Assessment of impacts

The identification of issues to be addressed in the Environmental Impact Statement (EIS) has been undertaken through a risk-based approach in accordance with the *State significant development guidelines – preparing a scoping report* (DPE 2022b).

The following environmental matters identified during the risk assessment will form the key assessment matters in the EIS:

- Biodiversity
- Traffic and access
- Amenity (noise and vibration and visual impacts)
- Hazards and risks
- Aboriginal cultural heritage
- Social impacts
- Land use and soil.

Other matters that would require more limited assessment in the EIS include historic heritage, property, air quality and greenhouse gases, contamination, waste, and water impacts. For each environmental matter, the potential impacts associated with the construction, operation, and decommissioning and rehabilitation of the project would be identified in the EIS. Mitigation measures would be provided in the EIS to eliminate or reduce potential impacts associated with the project.

Engagement undertaken to date

Early engagement has commenced. This has comprised a letter sent to local residents on 5th December 2024 introducing the project and offering an in-person or online briefing, to provide the opportunity to discuss the project and provide any early feedback. The letter was sent to direct neighbours and near neighbours to the project site. Two responses to the letter have been received to date (mid-March 2025). In addition, pre-scoping meetings with the Department of Planning, Housing and Infrastructure, Transport for NSW and Muswellbrook Shire Council have been held.

Purpose of this Scoping Report

This Scoping Report has been prepared in accordance with the form and content requirements of the *State Significant Development Guidelines – preparing a scoping report* (DPE 2022b). This Scoping Report provides:

- A description of the project
- An analysis of feasible alternatives considered having regard to the objectives of the development, and identifies the alternatives that would be investigated further in the EIS
- An early indication of community views on the project and identifies what engagement would be carried out during the preparation of the EIS
- A summary of the key matters requiring further assessment in the EIS and the proposed approach to assessing each of these matters having regard to any relevant Government legislation, plans, policies or guidelines.

This Scoping Report seeks to obtain the Secretary's Environmental Assessment Requirements (SEARs) for the project.

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Abbreviations and glossary of terms

Term	Definition
AEMO	Australian Energy Market Operator
AHIMS	Aboriginal Heritage Information Management System
BAM	Biodiversity Assessment Method
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity development assessment report
BESS	Battery energy storage system
BW ESS	The proponent
CEEC	Critically endangered ecological community
DPE	Former NSW Department of Planning and Environment
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
EMF	Electric and magnetic fields
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	Environmental Planning and Assessment Regulation 2021
EPA	Environment Protection Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
GHD	GHD Pty Ltd
ha	Hectares
ISP	Integrated System Plan
km	Kilometres
kV	Kilovolt
LGA	Local government area
LVIA	Landscape and Visual Impact Assessment
Muswellbrook LEP	Muswellbrook Local Environmental Plan 2009
MW	Megawatt
MWh	Megawatt hours
N/A	Not applicable
NSW	New South Wales
PCT	Plant community type
REZ	Renewable Energy Zone
SAII	Serious and irreversible impact
SAL	Suburb and Locality
SEARs	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SIA	Social Impact Assessment
SSD	State Significant Development
SSI	State Significant Infrastructure
TEC	Threatened ecological community
The project	Construction and operation of McCullys Gap BESS

1. Introduction

1.1 Overview

BW ESS proposes to construct a 400 megawatt (MW) battery energy storage system (BESS) with a four-hour storage duration (equating to 1,600 megawatt hours (MWh) of storage and discharge capacity), a short transmission line (less than one kilometre length) and associated infrastructure (the project). The project would be located at 578 Sandy Creek Road, McCullys Gap (NSW), about six kilometres (km) northeast of Muswellbrook (the project site). The project is located within the Muswellbrook Shire local government area (LGA) and is located in the Hunter-Central Coast Renewable Energy Zone (HCC REZ).

The project site is located immediately east and adjacent to the existing 330 kilovolt (kV) Transgrid Muswellbrook substation to facilitate connection to the NSW high voltage electricity transmission network.

As NSW seeks to utilise renewable energy sources, BW ESS's project would directly respond to the demand for increased renewable electricity supply across NSW, by storing excess renewable energy in times of surplus, and releasing this energy in times of high demand.

1.2 Project background

Traditionally, the major source of electricity generation in NSW has been large coal-fired power stations. Since 2012, three coal fired power stations have been decommissioned including most recently Liddell power station in 2023. The four remaining power stations are planned to be progressively decommissioned over the next 15 years. The transition in energy supplies from coal-fired power stations to renewable energy sources requires the development of a reliable and sustainable energy supply including BESS to ensure grid stability.

The NSW Government has announced renewable energy zones (REZs) and additional transmission infrastructure to generate and transmit renewable electricity to meet the forecast energy shortfall. The project site is located within the HCC REZ and would firm variable renewable energy in the region. Locating this large energy storage near proposed wind and solar projects in the region would reduce requirements for additional transmission lines, reduce energy losses and improve grid stability in the HCC REZ. The project would provide energy storage in the region, helping to 'smooth out' energy peaks and troughs created by variable energy (e.g. solar and wind).

1.3 The proponent

The proponent is BW ESS. BW ESS aims to provide BESS projects globally, with projects currently existing or in development in the United Kingdom, Italy and Australia. BW ESS's battery storage project pipeline currently exceeds four MWh.

The legal entity details of the proponent are as follows:

- Name: Muswellbrook Pro Unit Holdings Pty Ltd
- ACN: 682 732 592
- Address: Suite 3, 1 Trelawney Street, Eastwood NSW 2122

1.4 Purpose and structure of this report

This report has been prepared to support an application to the NSW Department of Planning, Housing and Infrastructure (DPHI) to request the Secretary's Environmental Assessment Requirements (SEARs) and has been developed in accordance with the *State significant development guidelines – preparing a scoping report* (DPE 2022b). It includes an outline of the strategic context, description of the project, the statutory context, stakeholder engagement completed to date and proposed ongoing engagement, preliminary identification of relevant environmental matters, potential impacts and the proposed scope of the assessment to be undertaken in the Environmental Impact Statement (EIS).

The EIS would be prepared in accordance with the requirements of the SEARs, the *Environmental Planning and Assessment Act 1979* (EP&A Act), the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), and the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

2. Strategic context

2.1 National policies

2.1.1 Australia's Long-Term Emissions Reduction Plan

Australia's Long-Term Emissions Reduction Plan (DISER 2021) is focused on technology and sets out how Australia would achieve net zero emissions by 2050. One of the key principles of the plan is keeping energy prices down with affordable and reliable power. The plan identifies low emissions technology solutions including battery storage as a priority technology to achieving clean, cheap electricity.

The Technology Investment Roadmap is the cornerstone of the Long-Term Emissions Reduction Plan and sets a process to develop and deploy low emissions technologies. By focusing government investment, it aims to make these technologies cost about the same as existing high emission technologies.

The Technology Investment Roadmap includes a requirement to prepare Low Emissions Technology Statements which review, refine and evaluate the government's investments in low emission technologies. The current *Low Emissions Technology Statement 2022* (DCCEE 2022) includes energy storage as an existing priority technology for government investment.

The Low Emissions Technology Statement 2022 indicates that broad deployment of electrical energy storage would facilitate further integration of low-cost solar and wind electricity in the grid. Energy storage would provide system security services and be a source of reliable, dispatchable electricity, and reduce pressure on electricity prices by meeting peaks in consumer demand.

The project is consistent with the high priority technologies outlined in the Long-Term Emissions Reduction Plan which would enable ongoing renewables deployment.

2.1.2 Integrated System Plan

The *Integrated System Plan* (Australian Energy Market Operator (AEMO) 2024) is a whole-of-system plan that provides a coordinated generation and transmission investment plan to transition the National Electricity Market over the next 30 years. The AEMO published the most recent Integrated System Plan for the National Electricity Market in June 2024, and it will be updated every two years.

Under the 'Step Change' scenario, identified in the Integrated System Plan as the most likely scenario, the National Energy Market would need to cater for significant investment in generation capacity, storage, firming generation and transmission augmentation as coal generation withdraws through to 2050.

The Integrated System Plan predicts under the Step Change scenario that about 90 per cent of the current 21 MW of coal capacity would retire by 2034-35, with all coal capacity retiring by 2040.

The project would assist in the transition to renewable energy and provide assistance in smoothing out peaks and gaps from variable renewable energy. The project would also assist in the increased need for the network to shift electricity from where it is produced to where it is needed to maximise the value of geographic diversity and efficiently share resources across the National Energy Market.

2.2 NSW policies

2.2.1 The Climate Change (Net Zero Future) Act 2023

The *Climate Change (Net Zero Future) Act 2023* is the NSW Government's legislative framework to address climate change and achieve net zero emissions by 2050. The Act legislates:

- Guiding principles for action to address climate change that consider the impacts, opportunity and need for action in NSW
- Emissions reductions targets for NSW based on 2005 levels of a 50 per cent reduction by 2030, a 70 per cent reduction by 2035, and achieving net zero by 2050
- An objective for NSW to become more resilient to climate change
- Establishing an independent Net Zero Commission to monitor, review, report on and advise on progress toward these targets.

The project aligns with the Act's objectives by reducing emissions through electricity storage and enhances NSW's climate resilience. By storing energy in the BESS for release during peak demand periods, this helps to lessen reliance on fossil fuels.

2.2.2 NSW Electricity Strategy

The *NSW Electricity Strategy* (DPIE 2019) is the NSW Government's plan for a reliable, affordable and sustainable electricity future. Meeting these objectives involves a three-layered approach:

- Supporting the market to deliver reliable electricity at the lowest price, while protecting the environment
- Setting an Energy Security Target to ensure that NSW has sufficient generation capacity to cope with unexpected generator outages during periods of peak demand, such as during heat waves
- Ensuring NSW has sufficient power to deal with an electricity emergency, if one arises.

The strategy notes that four of the state's five remaining coal-fired power stations are set to reach the end of their technical lives and are planned to be progressively decommissioned over the next 15 years. Since 2012, three coal fired power stations have been decommissioned, including most recently the Liddell Power Station in 2023. The Eraring Power Station was scheduled to close in 2025, but its closure has been extended to ensure energy reliability during the transition to renewables. As these generators get older, they also become more fragile and more susceptible to outages, making the electricity system less reliable.

The strategy acknowledges that firmed renewables, including batteries, are now the most cost competitive form of new generation.

The strategy is underwritten by a Memorandum of Understanding with the Australian Government to jointly fund over \$2 billion in energy and emission reduction activities, aligned with the NSW Electricity Strategy, to ensure NSW has a reliable and affordable energy system.

The project is consistent with the objectives of the NSW Electricity Strategy to ensure a reliable electricity supply, able to meet periods of peak demand and with the ability to cope with unexpected generator outages.

2.2.3 NSW Electricity Infrastructure Roadmap

The *NSW Electricity Infrastructure Roadmap* (DPIE 2020) is the NSW Government's plan to transition the electricity sector and deliver the major infrastructure needed to modernise our electricity system and power the economy. Under the roadmap, consumers would benefit from low cost, clean electricity generation backed up by 24-hour power sources.

The NSW Electricity Infrastructure Roadmap is a coordinated framework to modernise the electricity system and deliver new generation, transmission, long duration storage and firming that would also deliver on the ambition of net zero emissions by 2050.

The modernisation of the electricity system would be built on five pillars:

1. Driving investment in regional NSW
2. Delivering energy storage infrastructure
3. Delivering Renewable Energy Zones
4. Keeping the grid secure and reliable
5. Harnessing opportunities for industry.

As the electricity market moves towards more generation that relies on variable conditions, like weather, generators need to be backed up by long duration storage to ensure power is available at all times when it is needed. Energy storage infrastructure such as batteries allows renewable energy to be stored and then released on demand when it is needed, creating stability and reliability in the electricity system.

The project is consistent with Pillar 2 of the NSW Electricity Infrastructure Roadmap to provide additional energy storage infrastructure that can quickly stabilise the electricity system and reliably meet peak demand.

2.3 Regional and local policies

2.3.1 Hunter Regional Plan 2041

The *Hunter Regional Plan 2041* (DPE 2022c) sets the strategic land use framework for continued economic growth and diversification in one of Australia's most diverse and liveable regions. This plan aims to unlock sustainable growth opportunities and investments, as well as housing choice and lifestyle opportunities, while also considering changes due to a Hunter – Central Coast Renewable energy zone that encompasses Muswellbrook LGA and the project site.

Objective 7 of the plan aims to reach net zero and increase resilience and sustainable infrastructure. This objective supports renewable energy development from generation, storage, firming and transmission infrastructure needed for clean, cheap and reliable power. As renewable energy project, the project will contribute to the sustainably and transition to net zero for the region.

2.3.2 Muswellbrook Shire 2020 - 2040 Local Strategic Planning Statement

The *Muswellbrook Shire 2020-2040 Local Strategic Planning Statement* (LSPS) (Muswellbrook Shire Council, 2020) outlines the planning priorities and principles that guide Muswellbrook Shire Council in the development of the region. It highlights the opportunities and challenges facing Muswellbrook Shire Council, and sets actions to undertake.

The LSPS notes under opportunities that Muswellbrook Shire plans to embrace technology and innovation (Planning Priority 1). The LSPS vision includes that the production and distribution of sustainable energy will continue in the Shire, with a shift to alternative renewable energies such as wind, biomass, gas, solar, geothermal and pumped hydro sources. As a renewable project, the project will help the Muswellbrook Shire Council realise this vision.

2.4 Site setting

The project site is currently used for rural residential purposes, with two dwellings located in the northern portion of the project site with associated agricultural structures.

The landscape of the project site is characterised by generally flat terrain in the northern and central areas of the site, steepening onto a ridge in the southern section of the site. The project site overall tends to slope uphill from the north to the south of the project site and is characterised by hilly grasslands and open woodland in the south, a farm dam in the centre (refer to Figure 2.1 and Figure 2.2) and grassland adjacent to the residential dwellings in the north.



Figure 2.1 *Project landscape showing grasslands, facing south*



Figure 2.2 *Project landscape showing grasslands and trees, looking toward Colonel Mountain to the northeast of the project site*

The project location and regional context are shown in Figure 2.3 and the project site is shown in Figure 2.4.

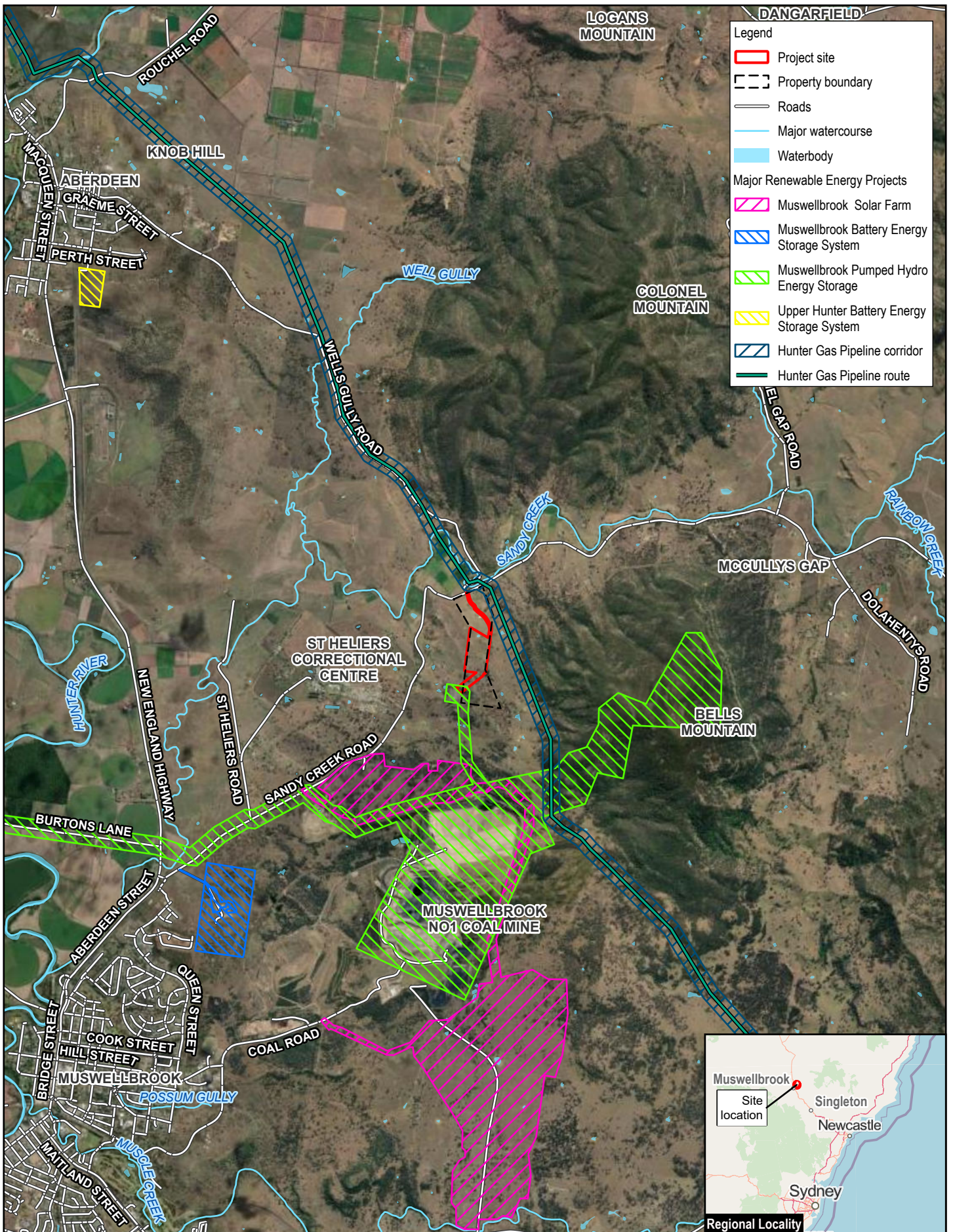
2.4.1 Property

The project would be located on two lots, as described in Table 2.1. BW ESS has an agreement in place with the private landowner. The project site has an area of about 13.38 hectares and is currently zoned as RU1 Primary Production under the Muswellbrook Local Environmental Plan 2009 (Muswellbrook LEP).

The project site is located on the lands of the Wonnarua/Wanaruah people. A search of the Native Title Claims register undertaken in October 2024 did not identify any Native Title Claims or Indigenous Land Use Agreements (ILUA).

Table 2.1 Key project site information

	Lot 5 DP802081	Lot 1621 DP852356
Address	578 Sandy Creek Road, McCullys Gap, NSW 2333 Australia	380 Sandy Creek Road, McCullys Gap, NSW 2333 Australia
Ownership and lease areas	Privately owned (BW ESS has agreement with landowner)	Transgrid
Land use zoning	RU1 Primary Production	RU1 Primary Production

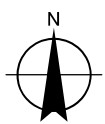
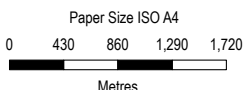


Legend

- Project site
- Property boundary
- Roads
- Major watercourse
- Waterbody

Major Renewable Energy Projects

- Muswellbrook Solar Farm
- Muswellbrook Battery Energy Storage System
- Muswellbrook Pumped Hydro Energy Storage
- Upper Hunter Battery Energy Storage System
- Hunter Gas Pipeline corridor
- Hunter Gas Pipeline route



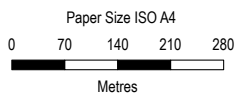
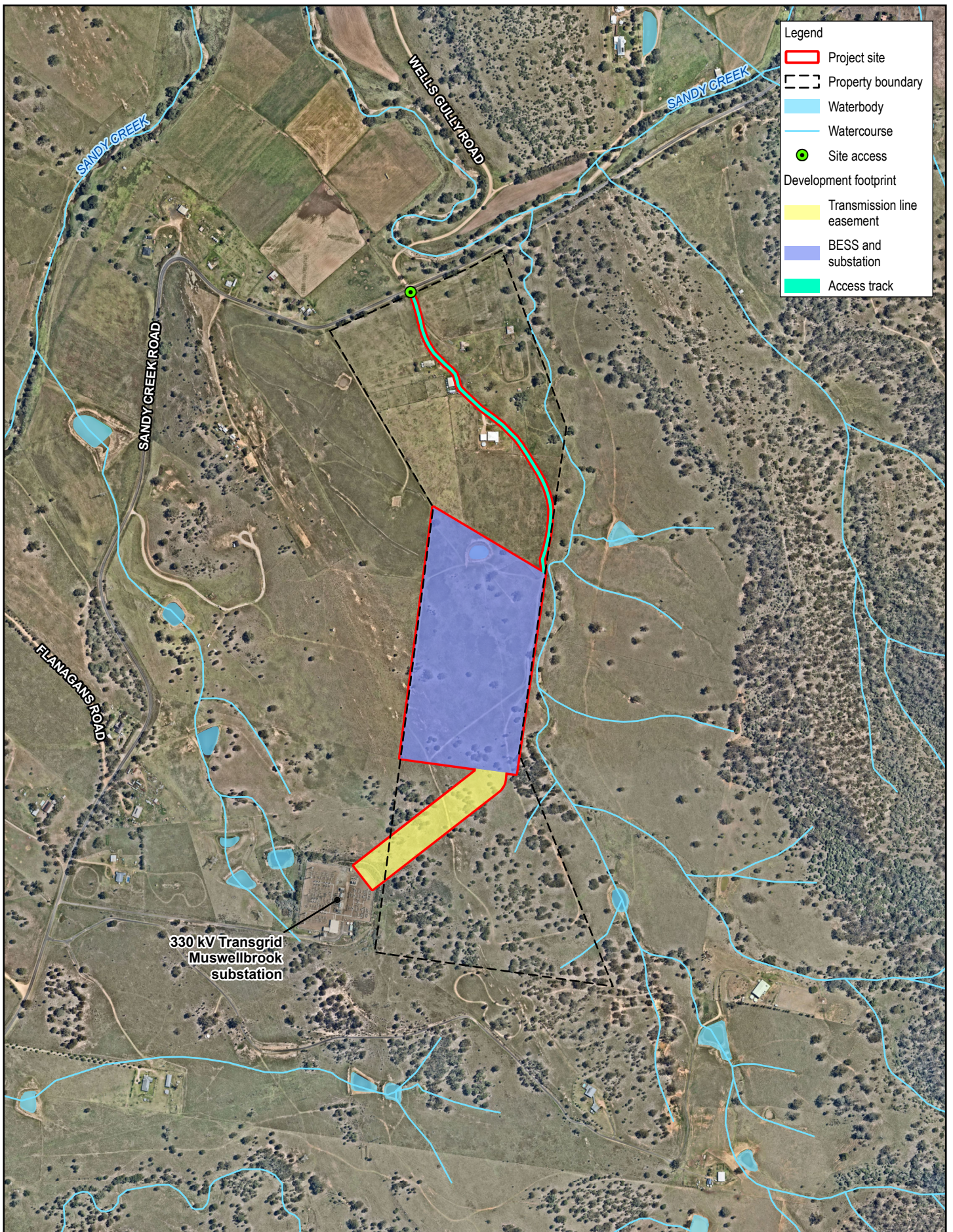
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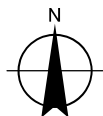
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Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

Regional context

FIGURE 2.3



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



**BW ESS
McCullys Gap
Scoping Report**

Project No. 12627183
Revision No. 0
Date 25/02/2025

Project site

FIGURE 2.4

2.4.2 Surrounding land uses and sensitive receivers

Sensitive receivers are typically regarded as residential properties, schools, childcare centres, aged-care facilities, hospitals and neighbouring businesses. Sixteen sensitive receivers in the form of residences have been identified within one kilometre of the project site. Potential residential sensitive receivers are presented in Table 2.2 along with the potential impacts they experience due to the project, and shown in Figure 2.5.

In addition to the sensitive receivers identified in Table 2.2, it is also noted that two dwellings are located directly adjacent to the project site within Lot 5 DP802081. These dwellings are shown in Figure 2.6 with a 100 metre radius buffer applied, and are associated with the private landowner that BW ESS have an agreement with.

Table 2.2 Identified sensitive receivers and potential impacts

ID	Address	Legal description	Approximate location	Potential sensitive receiver impacts
1	Sandy Creek Road, Muswellbrook	Lot 42 DP 1112699	300 metres southeast of the site	Impacts from construction and operational noise due to proximity to the site. Potential for visual and dust impacts. Impacts from increased traffic during construction.
2	660 Sandy Creek Road, McCullys Gap	Lot 3 DP 802081	390 metres northeast of the site	Potential for visual impacts. Impacts from increased traffic during construction.
3	Sandy Creek Road, McCullys Gap	Lot 301 DP 1026063	72 metres northwest of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road. Impacts from construction and operational noise due to proximity to the site. Potential for visual and dust impacts.
4	Sandy Creek Road, McCullys Gap	Lot 5 DP 707890	238 metres northwest of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road. Potential for visual impacts.
5	527 Sandy Creek Road, McCullys Gap	Lot 1 DP 1089092	313 metres northwest of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road. Potential for visual impacts.
6	540 Sandy Creek Road, McCullys Gap	Lot 165 DP 633737	About 283 metres west of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road. Potential for visual impacts.
7	Structure situated across 2 lots: Sandy Creek Road, McCullys Gap Primary: 409 Sandy Creek Road, McCullys Gap	Lot 1 DP 207338 Lot 2 DP 593335	575 metres west of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road.
8	408 Sandy Creek Road McCullys Gap	Lot 163 DP 597065	One structure 491 metres west of the site; second structure 524 metres west of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road.
9	389 Sandy Creek Road McCullys Gap	Lot 151 DP 571192	One structure 700 metres west of the site; second structure 720 metres west of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road.
10	388 Sandy Creek Road, McCullys Gap	Lot 1622 DP 852356	One structure 523 metres west of the site; second structure	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road.

ID	Address	Legal description	Approximate location	Potential sensitive receiver impacts
			555 metres west of the site	
11	376 Sandy Creek Road, Muswellbrook	Lot 43 DP 1112699	217 metres south of the site	Potential for visual impacts.
12	374 Sandy Creek Road, Muswellbrook	Lot 44 DP 1112699	434 metres southeast of the site	Potential for visual impacts.
13	360 Sandy Creek Road, Muswellbrook	Lot 41 DP 1112699	522 metres southwest of the site	Impacts from increased traffic during construction as this receiver is located adjacent to Sandy Creek Road.
14	409 Sandy Creek Road, McCullys Gap	Lot 2 DP 593335	940 metres west of the site	Potential for visual impacts.
15	Sandy Creek Road, McCullys Gap	Lot 302 DP 1026063	439 metres northeast of the site	Potential for visual impacts.
16	Sandy Creek Road, McCullys Gap	Lot 442 DP 582226	626 metres northeast of the site	Potential for visual impacts.

2.4.3 Topography and water resources

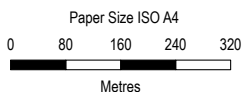
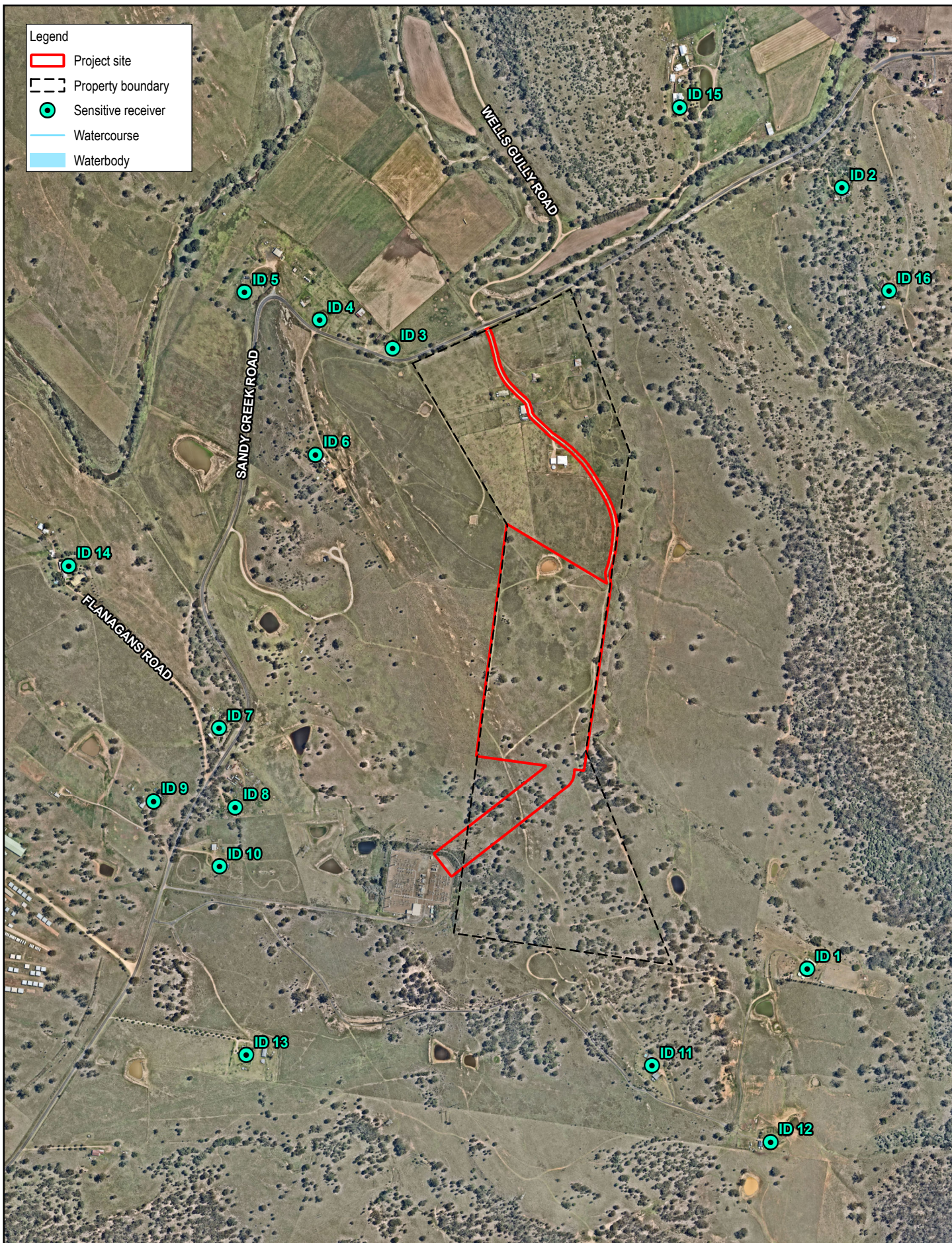
The topography of the project site slopes uphill from north to south, with generally level topography in the northern and central areas, and steeper, hilly terrain in the southern section. A farm dam is located in about the centre of the project site, and unnamed tributaries of Sandy Creek run along the east side of the project site. Sandy Creek is located about 60 metres north of the project site, and there are farm dams in adjoining properties to the east and west of the project site.

Based on a search of the Bureau of Meteorology Australian Groundwater Explorer (BOM 2024) and the WaterNSW All Groundwater Map (WaterNSW 2024), there are two groundwater bores located in the project site, which are both used for agriculture. There are more groundwater bores located in proximity to the project site, to the north, west and southwest.

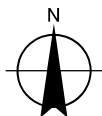
2.5 Project justification

Australia aims to achieve net zero emissions by 2050. To assist the transition to net zero, the NSW Government has planned to transition the state's energy sector to renewables. The NSW Electricity Strategy (refer to section 2.2.1) outlines the planned closure and end-of-life of coal-fired power stations in NSW. As these facilities wind-down, reliable, affordable and sustainable energy sources to transition to renewables are required. Battery facilities have been identified as one of the most cost competitive forms of new generation, and cost less than the current wholesale electricity price.

The McCullys Gap BESS project would perform a critical role in supporting and storing energy generated by the existing and proposed renewable infrastructure in the region, such as solar and wind. The project would provide additional energy storage that would be delivered on demand to quickly stabilise the electricity system, and reliably meet peak energy demand. The BESS would also help manage the variability of renewable energy sources, to ensure a consistent and stable power supply.



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

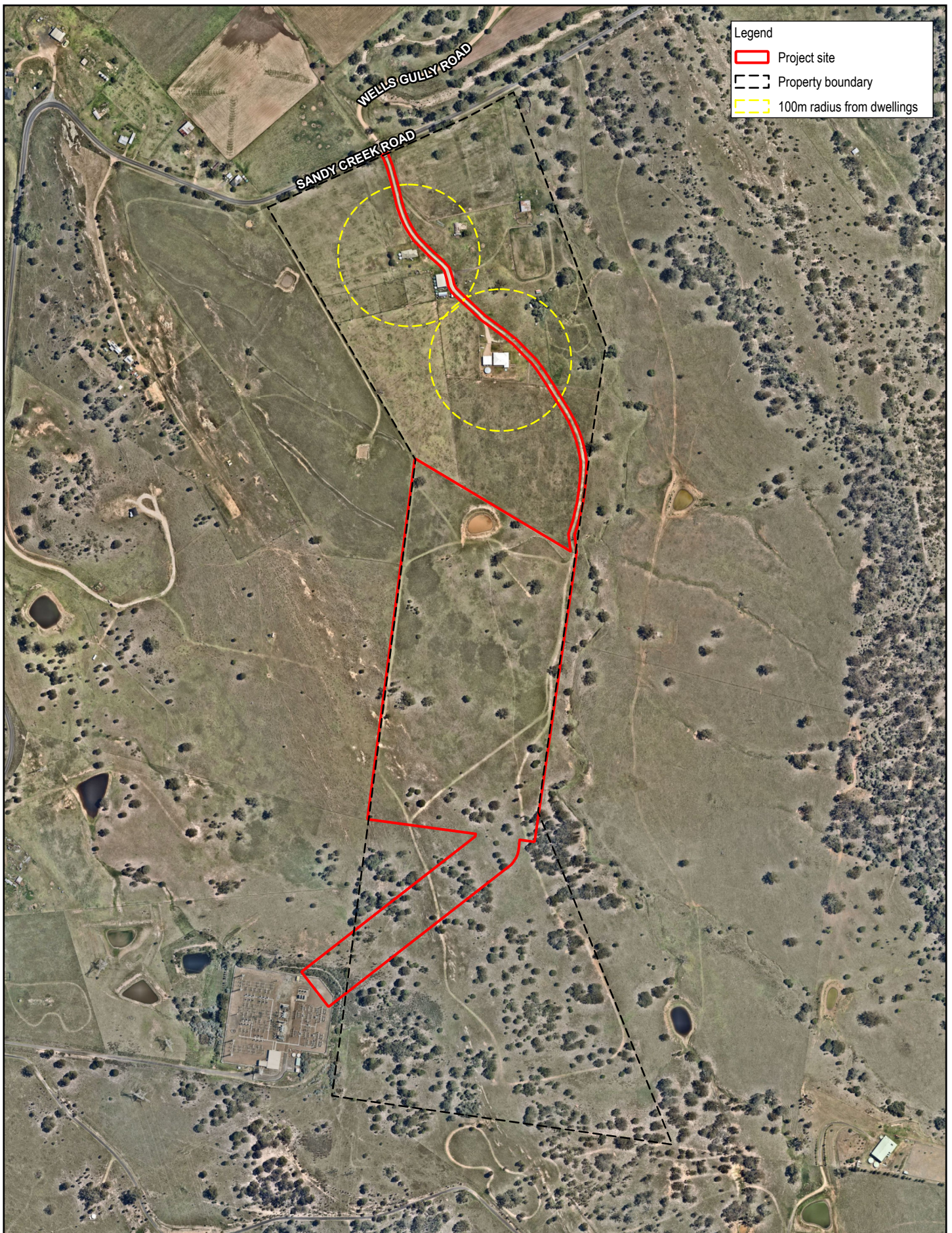


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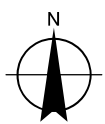
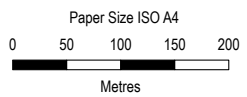
Sensitive receivers

FIGURE 2.5



Legend

- Project site
- Property boundary
- 100m radius from dwellings



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Map Projection: Transverse Mercator
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Proximity of dwellings

FIGURE 2.6

3. Project description

3.1 Overview

The key project characteristics are summarised in Table 3.1.

Table 3.1 Key project characteristics

Project element	Description
Project summary	Development of a BESS at McCullys Gap, involving: <ul style="list-style-type: none">– Approximate 400 MW BESS– 330 kV transmission line and related infrastructure to connect the BESS to the existing 330 kV Transgrid Muswellbrook substation– Ancillary infrastructure and services required for the project– Works to the existing 330 kV Transgrid Muswellbrook Substation would be required to connect the project's transmission line to the existing substation.
Project site	578 Sandy Creek Road, McCullys Gap, NSW on Lot 5 DP802081
BESS capacity	Approximate 400 MW capacity with a four-hour storage duration, resulting in a total of 1,600 MWh of storage and discharge capacity
Battery chemistry	Lithium-ion
Operation	24 hours a day / 7 days a week / 365 days per year
Ancillary facilities	Switchyard, transmission line connections, site services
Estimated employment	Up to 150 during construction (peak), 10-15 during operation
Capital Investment Value	\$800 million

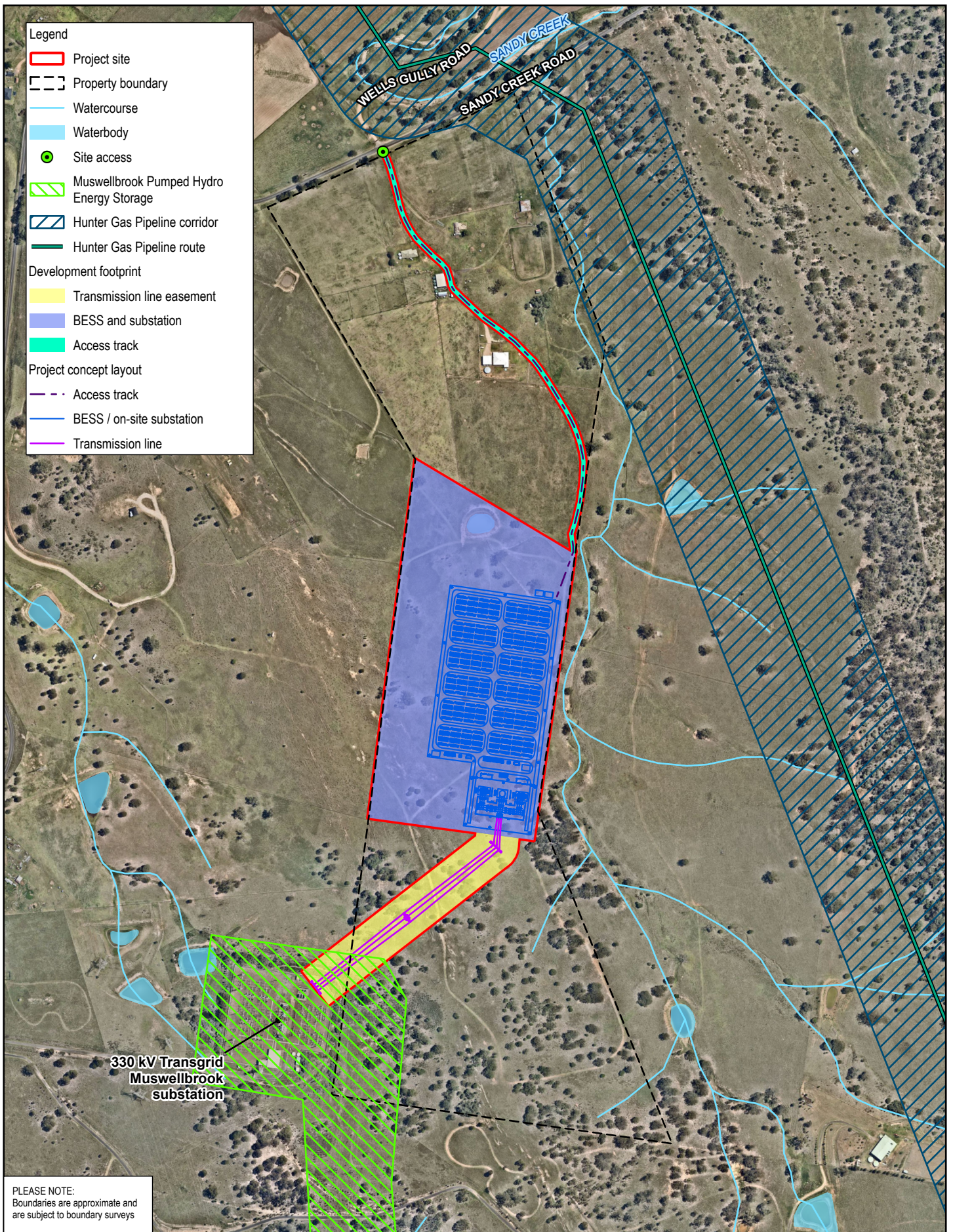
3.2 Operational infrastructure

The indicative operational footprint of the project is about 13.38 hectares. A concept layout of the project is provided in Figure 3.1.

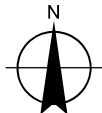
The project would include a 330 kV transmission line connection from the onsite substation to the existing 330 kV Transgrid Muswellbrook substation. The proposed transmission line would be about 400 metres in length, running south from the on-site substation to the existing 330 kV Transgrid Muswellbrook substation. The alignment of the proposed transmission line will be located within the shaded zone identified in Figure 3.1.

3.2.1 Subdivision

The lots that form the project site may require subdivision for the operation of the project. This potential subdivision relates to the ongoing ownership and operation of electrical infrastructure related to the project. The need for subdivision, particularly in relation to the onsite 330 kV Transgrid Muswellbrook substation, would be confirmed and detailed in the EIS following further engagement between Transgrid, BW BESS and the landowner.



Paper Size ISO A4
0 50 100 150 200
Metres
Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



3.3 Construction

3.3.1 Construction staging

Construction would commence in 2026 subject to regulatory approvals being obtained, and would be completed in 2028. The construction duration is expected to take about 18 months.

The indicative peak construction period for civil works would be early to mid-2026 (four to six months) with noise and dust the most significant impacts. Equipment delivery (and therefore vehicle movements) is expected to peak mid to late 2026 for a period of four to six months. Construction is expected to comprise of the following typical phases: planning, early works, main works, pre commissioning, commissioning and decommissioning.

The project would create up to 150 jobs during the approximate 18-month construction period.

3.3.2 Construction methodology

Construction would involve the following:

- Clearing of vegetation
- Earthworks and site regrading
- Establishment of hardstand construction laydown areas, site office and amenities, and establishment of site access
- Construction of required ancillary infrastructure and buildings
- Construction of concrete foundations and slabs to support battery modules, power conversion systems and transformer structures
- Delivery, installation and electrical fit-out of the battery modules, power conversion systems and transformer structures
- Installation of a 330 kV transmission line from the BESS to the existing 330 kV Transgrid Muswellbrook substation
- Testing and commissioning activities
- Rehabilitation of construction areas
- Establishment of asset protection zones or other design solutions for bushfire protection.

The majority of construction activities would be carried out during the following hours, consistent with the recommended standard hours of the *Interim Construction Noise Guideline* (DECC 2009):

- 7am to 6pm Monday to Friday
- 8am to 1pm Saturdays
- No work on Sundays or Public Holidays.

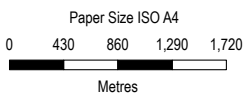
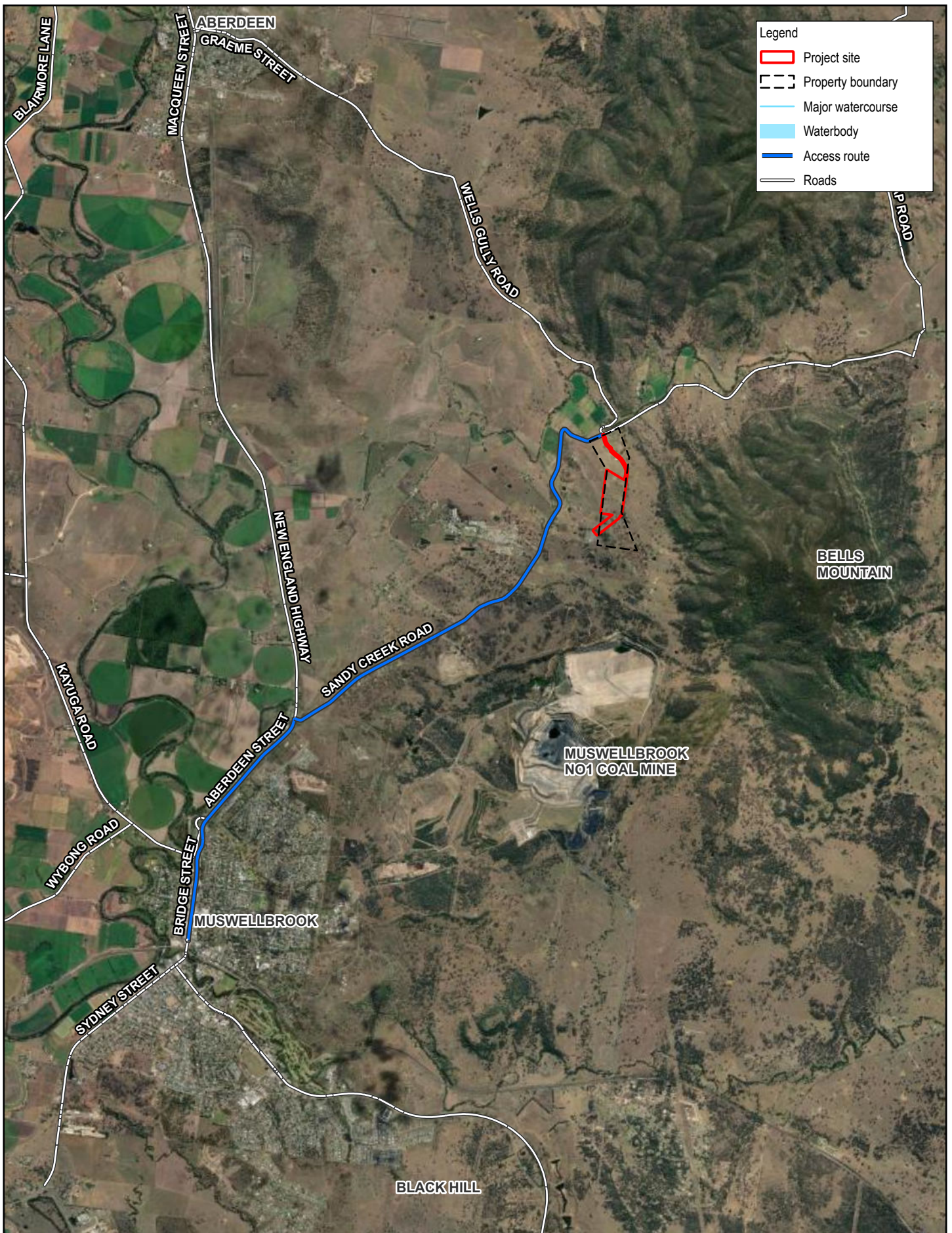
3.3.3 Site clearance, vegetation removal and earthworks

Construction of the project would involve the removal of native vegetation that is present on the project site for the substation and transmission line. The State Vegetation Type Map (SVTM) outlines the footprint of three Plant Community Types (PCTs) within the project site; PCT 3314, PCT 3525 and PCT 3431 (NSW DCCEEW 2024). A preliminary site assessment determined that only two PCTs occur within the project site; PCT 3431 and PCT 3314. Proposed vegetation clearance and the need for biodiversity offsets would be further defined at the EIS stage.

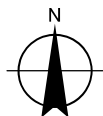
3.3.4 Access

The proposed construction access to the project site is via Sandy Creek Road off the New England Highway. The access route from Muswellbrook to the site is a distance of about nine kilometres. The site access point and unsealed access track within the site would be upgraded to provide access for construction vehicles.

The proposed construction access route is shown in Figure 3.2.



Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 56



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Proposed project site
construction and access route

FIGURE 3.2

3.3.5 Utilities

Power

A residential power supply connection exists at the project site. The need for connection of additional power services would be investigated and considered during the EIS. Power supply to the construction site may be from the existing distribution network, or from on-site generators.

Water

The project site forms part of a mixed rural-residential and agricultural area, therefore it is unlikely that an existing water supply or sewer line is available. The EIS would consider water supply connection for the project.

3.4 Operation

The project would operate 24 hours a day, seven days a week with electricity storage and export activities occurring as required on an automated basis. Operations and maintenance by operational staff would be undertaken during standard working hours. Emergency response, inspections and maintenance may be required to be undertaken out of hours.

The project would provide about 10-15 jobs on site once operational.

3.5 Decommissioning

At the end of the design life or agreed timetable, the batteries would either be disposed of and recycled at approved disposal facilities, or subject to confirmation, could be returned to the original equipment manufacturer for refurbishment and recycling. Opportunities to extend the initial design life of 30 years would be reviewed subject to the replacement of components and market conditions.

Following decommissioning, the land would be rehabilitated to a standard agreed with the landowner, which may include pre-development conditions or other arrangements.

3.6 Alternatives considered

Alternatives to the project are considered at a site level and overall project level and would continue to be developed through the design stages to ensure the design meets best practice requirements and can avoid or minimise identified environmental, social and economic impacts. The following alternatives have been assessed:

- The “do nothing” approach
- Project site location alternatives
- Battery energy storage technology and provider alternatives.

3.6.1 The “do nothing” approach

The “do nothing” approach would involve not constructing and operating the project at the McCullys Gap site. This approach would not support the NSW and Australian Government plans, policies and strategies identified in section 2 to ensure investment in new demand response technologies in NSW, and improve grid stability in the region, helping to ‘smooth out’ energy peaks and troughs created by variable energy such as solar and wind.

The ‘do nothing’ option would avoid potential environmental impacts associated with the construction of the project. However, it is considered that the benefits of the project, ensuring appropriate mitigation and management measures are implemented during construction and decommissioning, would significantly outweigh any potential environmental impacts.

3.6.2 Alternative sites

The project site has been selected following an extensive review of suitable project sites for a BESS in NSW. In summary, this process has involved the following considerations:

1. Grid capacity and viable grid connection opportunities
2. The need for energy storage within this section of the network
3. Existing and proposed energy developments
4. Strategic policy context and suitably zoned land
5. Availability of land and interest from landowners
6. Proximity to potential sensitive receivers
7. Potential environmental and cultural heritage sensitivities
8. Impact on productive land
9. Accessibility and constructability
10. Socio-economic considerations
11. Energy storage technology options.

The objectives of the selection process were to identify a parcel of land which presented the lowest impact, least cost and greatest benefit. Where the potential impacts were deemed to be unacceptable the identified project site was not progressed. This process considered a range of alternative project sites in the vicinity of the 330 kV Transgrid Muswellbrook substation and identified the current project site to be most favourable.

3.6.3 Alternative layouts on selected site

The location of the BESS and on-site 330 kV Transgrid Muswellbrook substation within the site has considered biodiversity constraints, topography and retention of existing residential dwellings on the site. The central and northern portions of the site have lower biodiversity constraints, while the southern portion of the site has higher biodiversity constraints. The southern portion of the site exhibits steeper terrain that would require significant earthworks to construct a BESS. Therefore, while other layouts on the site have been considered, locating the BESS centrally within the site is considered the best option to avoid biodiversity and topography constraints, while minimising the length of the require transmission line connection, and retaining existing dwellings on the site.

3.7 Strategies to avoid or minimise impacts

Potential impacts have been avoided or minimised through selection of a relatively remote site with few sensitive receivers and largely clear of vegetation and other environmental constraints. The proposed project site at McCullys Gap in NSW is located in a rural rea, and immediately adjacent to the existing 330 kV Transgrid Muswellbrook substation for convenient connection to the NSW electricity transmission network.

For the transmission line connection, while an overhead transmission line incorporating a 60 metre wide easement is currently proposed, trenching or directional drilling of the transmission line is also being considered to minimise biodiversity impacts, subject to engineering feasibility.

The project benefits from an existing road access, therefore avoiding the need for additional significant roadworks.

4. Statutory Context

The key requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and other relevant State and Commonwealth legislation in relation to the approval and assessment of the project are summarised in Table 4.1. The project would be SSD in accordance with section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021, since the project is electricity generating works with a Capital Investment Value of more than \$30 million. The project is permissible under section 2.36(1)(b) of the State Environmental Planning Policy (Transport and Infrastructure) 2021, as the project would be electricity generating works undertaken in a prescribed non-residential zone.

Table 4.1 Summary of statutory requirements for the project

Matter	Comment
Power to grant consent	<p>Section 4.36(2) of the EP&A Act provides that a State environmental planning policy may declare any development, or any class or description of development, to be SSD. The project is deemed SSD in accordance with section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP), since Section 20 of Schedule 1 of the Planning Systems SEPP lists electricity generating works with a Capital Investment Value (CIV) of more than \$30 million as SSD.</p> <p>In accordance with section 4.5(a) of the EP&A Act, the consent authority for SSD is the Minister for Planning and Public Spaces or the Independent Planning Commission (pursuant to section 2.7 of the Planning Systems SEPP).</p>
Permissibility	<p>The project site is located within the Muswellbrook Shire Council and the relevant local environmental plan is the Muswellbrook LEP 2009. The project site is zoned RU1 Primary Production.</p> <p>Section 2.36(1)(b) of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) applies to development for the purpose of electricity generating works and provides that development for this purpose is permissible with consent, if carried out on any land in a prescribed non-residential zone.</p> <p>Clause 2.35 provides the following relevant definition of electricity generating works:</p> <p>electricity generating works means a building or place used for the following purposes, but does not include a solar energy system—</p> <p>(a) making or generating electricity,</p> <p>(b) electricity storage.</p> <p>Pursuant to Section 2.35 definitions, RU1 is a prescribed non-residential zone. Therefore, the electricity generating works are permissible in the RU1 Primary Production zone.</p> <p>Pursuant to the provisions of Section 4.38(3) of the EP&A Act, consent may be granted for State significant development.</p>
Other approvals	<p>Consistent approvals</p> <p>Any authorisations under certain legislation, identified in Section 4.42 of the EP&A Act, cannot be refused if it is necessary for carrying out an approved SSD project and is to be substantially consistent with the SSD approval. In relation to the project, these authorisations could include:</p> <ul style="list-style-type: none"> – An aquaculture permit under section 144 of the <i>Fisheries Management Act 1994</i> – An environment protection licence under Chapter 3 of the <i>Protection of the Environment Operations Act 1997</i> – A consent under section 138 of the <i>Roads Act 1993</i> – A licence under the <i>Pipelines Act 1967</i>. <p>Approvals not required</p> <p>An authorisation under certain other legislation, identified in Section 4.41 of the EP&A Act, is not required for approved SSD. In relation to the project, these authorisations could include:</p> <ul style="list-style-type: none"> – A permit under Section 201, 205 or 219 of the <i>Fisheries Management Act 1994</i> – An approval under Part 4, or an excavation permit under section 139, of the <i>Heritage Act 1977</i> – An Aboriginal heritage impact permit under Section 90 of the <i>National Parks and Wildlife Act 1974</i> – A bush fire safety authority under Section 100B of the <i>Rural Fires Act 1997</i> – a water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the <i>Water Management Act 2000</i>.

Matter	Comment
	<p>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</p> <p>The EPBC Act is Australia’s main environmental law. It outlines nine protected matters known as ‘matters of national environmental significance’. These matters include World Heritage areas, listed threatened species, ecological communities and migratory birds, among others.</p> <p>Biodiversity surveys undertaken to date have not identified the potential for a significant impact on biodiversity values of any threatened species and communities listed under the EPBC Act. Therefore, a referral for a controlled action under the EPBC Act is not proposed to be lodged for this project at this stage. If further biodiversity surveys do indicate that a significant impact is likely, a referral will be lodged.</p> <p>Native Title Act 1993</p> <p>The Commonwealth <i>Native Title Act 1993</i> gives Indigenous Australians who hold native title rights and interests – or who have made a native title claim – the right to be consulted and, in some cases, to participate in decisions about activities proposed to be undertaken on the land.</p> <p>The project is not located within an ILUA, however the project will ensure that the appropriate Registered Aboriginal Parties are identified and consulted in line with the Aboriginal Cultural Heritage Assessment Report for the project.</p> <p>Other approvals</p> <ul style="list-style-type: none"> – <i>Biodiversity Conservation Act 2016</i> (BC Act).
Pre-conditions to exercising the power to grant approval	<p>Biodiversity Conservation Act 2016</p> <p>Part 7 of the BC Act applies to approvals under the EP&A Act. Section 7.9 requires a development application for State significant development to be accompanied by a Biodiversity Development Assessment Report (BDAR). Section 7.14 requires the consent authority to take into consideration the likely impact of the proposed development on biodiversity values as assessed in the Biodiversity Development Assessment Report.</p>
Mandatory matters for consideration	<p>State Environmental Planning Policy (Resilience and Hazards) 2021</p> <p>Section 4.6 stipulates that a consent authority must not consent to the carrying out of development unless:</p> <ul style="list-style-type: none"> – It has considered whether the land is contaminated, and – If the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or would be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and – If the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land would be remediated before the land is used for that purpose. <p>Environmental Planning and Assessment Act 1979</p> <p>The following sections of the EP&A Act need to be considered by the consent authority prior to granting approval:</p> <ul style="list-style-type: none"> – Section 1.3 – Objects of the Act – Section 4.15 – Evaluation – Section 4.38 – Consent for State Significant Development. <p>Muswellbrook Local Environmental Plan 2009</p> <p>Under the Muswellbrook LEP 2009, electricity generating works are permitted with consent in the RU1 Primary Production zone.</p> <p>The EIS would need to demonstrate consideration of the objectives of the RU1 zone.</p>

5. Engagement

5.1 Interest groups identified

BW ESS has undertaken an initial stakeholder scoping exercise and has identified a number of key interest groups and stakeholders as outlined in Table 5.1.

Table 5.1 Stakeholders identified

Stakeholder type	Stakeholder
Australian Government	<ul style="list-style-type: none"> – Mr Dan Repacholi MP (Federal Member for Hunter) – Department of Climate Change, Energy, the Environment and Water (DCCEEW) – Australian Energy Market Operator (AEMO)
NSW Government	<ul style="list-style-type: none"> – Department of Planning, Housing and Infrastructure – Department of Primary Industries (DPI) – Mr Dave Layzell, MP (State Member for Upper Hunter) – Corrective Services NSW – St Heliers Correctional Centre (Muswellbrook) – Regional Development Australia – Hunter
Local Government	<ul style="list-style-type: none"> – Muswellbrook Shire Council
Emergency services	<ul style="list-style-type: none"> – Muswellbrook State Emergency Service – Muswellbrook Hospital – Fire and Rescue NSW - Muswellbrook – Edinglassie Rural Fire Brigade - Muswellbrook
Traditional Owners	<ul style="list-style-type: none"> – Wanaruah Local Aboriginal Land Council – Wonnarua Nation Aboriginal Corporation (WNAC)
Utility owners	<ul style="list-style-type: none"> – Transgrid
Landowners	<ul style="list-style-type: none"> – Landowners (578 Sandy Creek Road, McCullys Gap)
Community – local residents and broader community	<ul style="list-style-type: none"> – Neighbouring residents on Sandy Creek Road – St Heliers Correction Facility – Muswellbrook Coal Co – Kingdom Hall of Jehovah’s Witnesses
Community – special interest groups	<ul style="list-style-type: none"> – Muswellbrook Chamber of Commerce – Business Hunter – Committee for the Hunter – HunterNet
Community – local action group	<ul style="list-style-type: none"> – Sustainable Futures Muswellbrook

5.2 Early engagement carried out

Early neighbour and community engagement has commenced. This has comprised a letter sent to local residents on 5th December 2024 introducing the project and offering an in-person or online briefing. The letter was sent to thirteen direct neighbours and near neighbours to the project site. Two responses to the letter have been received to date (mid-March 2025):

- A response was received from the St Heliers Correctional Centre, however no comments were raised about the project specifically.
- One member of the community responded to the letter in early March 2025, indicating interest for further engagement during the preparation of the EIS.

Responses to date indicate a generally low level of community interest in the project, however greater interest to further engagement during the EIS preparation phase is expected. It is expected that interest for the project will be concentrated in the local McCullys Gap community along Sandy Creek Road, and south to Muswellbrook.

Pre-scoping meetings were held with DPHI, Transport for NSW and Muswellbrook Shire Council. Key issues raised in these meetings included:

- Constraints that apply to the intersection of the New England Highway and Sandy Creek Road, requiring careful management
- Availability of workforce accommodation
- Oversize overmass vehicle movements.

These issues are covered in section 6.1 and section 6.6.

Early engagement has also been carried out with the proponent for the Muswellbrook Pumped Hydro Energy Storage Project. Figure 3.1 shows that the project site for the Muswellbrook Pumped Hydro Energy Storage Project (specifically the transmission line) overlaps with the McCullys Gap BESS project, in the southwestern corner of Lot 5 DP802081 and within the Transgrid Muswellbrook Substation site. This information is based on the Muswellbrook Pumped Hydro Energy Storage Project's Scoping Report, submitted in December 2023 (Muswellbrook Pumped Hydro Pty Ltd 2023). However, engagement with the proponent of the Muswellbrook Pumped Hydro Energy Storage Project has identified that the transmission line is now proposed to enter the Transgrid Muswellbrook Substation site from the west rather than the east, and therefore will not impact Lot 5 DP802081 and will not cause any overlap in project footprints.

5.3 Engagement to be carried out

5.3.1 Community and Stakeholder Engagement Plan

A Community and Stakeholder Engagement Plan will be developed for the project which outlines the activities that BW ESS will undertake to inform and consult the community and other identified key stakeholders. BW ESS will keep the community up to date as the EIS progresses and continue community engagement prior to the public exhibition of the EIS. BW ESS would also provide project related information on its website.

The effectiveness of engagement will be monitored throughout engagement activities, based on the level of attendance and feedback received from the community and neighbouring residents during engagement activities. Future engagement activities will be adapted as required.

5.3.2 Potential issues from community and stakeholders

Due to the location and nature of the project, the following concerns are anticipated:

- Potential for community impacts or benefits, e.g. employment and economic development, community identity associated with coal fired power and transition to renewable energy sources
- Curiosity about how batteries function, concern around safety, emissions and operations
- Possible community benefits, lower energy bills
- Potential for increased traffic movements during construction and how that could impact the local road network, particularly for local residents
- Potential visual, noise, and dust impacts to local residents from the construction, operation and eventual decommissioning of the project
- Possible concern from relevant stakeholders in regard to the loss of agricultural land.

It is expected that the following elements of the project would be influenced and shaped by the community during the EIS phase:

- Detailed location of project infrastructure (e.g. battery modules) to minimise visual and noise impacts
- Landscape and visual impact mitigation measures
- Construction methods to minimise impacts on the community

- Community benefit-sharing arrangements.
- Access and haulage routes.

5.3.3 Agency consultation

Consultation would be undertaken with the government agencies identified in section 5.1 including matters raised in the SEARs and other relevant agency requirements. Details of the engagement carried out, and the outcomes of the consultation would be included in the EIS.

6. Proposed assessment of impacts

The identification of issues to be addressed in the EIS has been undertaken through a risk-based approach in accordance with Appendix A of the *State Significant Development Guidelines – Preparing a Scoping Report* (DPE 2022b). This process involved reviewing previous reports, undertaking limited investigations (such as site inspections), and desktop searches of proprietary environmental databases to identify key issues and sensitive areas in November 2024.

A summary of the key environmental matters identified during the risk assessment is provided in section 6.3 through to section 6.7. Other matters for consideration are identified in section 6.8. A Scoping Summary Table (as required by Appendix A of the *State Significant Development Guidelines – Preparing a Scoping Report* (DPE 2022b)) is provided in Appendix A of this Scoping Report. The intent of the discussion is to demonstrate an understanding of the matters and the need for further environmental assessment and mitigation measures to inform the preparation of the SEARs.

6.1 Traffic

6.1.1 Existing Environment

The local road network within the vicinity of the project site consists mainly of local roads and private rural roads. The main road in proximity to the project site is the New England Highway (A15) which provides the main access between Muswellbrook and Aberdeen. Potential access to the project would be via Sandy Creek Road, which turns east off the New England Highway. Sandy Creek Road is a sealed local road and serves as the access road to properties north of Muswellbrook with a posted speed limit of 100 kilometres per hour. A rail-level crossing located directly off the New England Highway on Sandy Creek Road would need to be crossed. The project site is also accessible via Wells Gully Road from the north, which is partially unsealed.

The New England Highway is an approved B double transport route. The use of 19-m B-doubles is approved along a 2-kilometre length of Sandy Creek Road, directly east of New England Highway, provided movements occur outside of the hours of 7.30am to 8.30am and 3.45pm to 4.45pm on school days as school buses use the road during this time.

Based on the assessment report and recommended conditions of consent of the Muswellbrook Solar Farm, it is understood that the Sandy Creek Road – New England Highway intersection is constrained under existing conditions, and queuing at the rail-level crossing is a safety concern that needs to be carefully considered.

Travel route, site access and any road upgrade requirement would be further investigated in detail design and outlined in the EIS.

6.1.2 Potential Impact

Construction of the project would require the transport of construction materials, plant and heavy equipment to the project site by road. The existing 330 kV Transgrid Muswellbrook substation to the southwest of the project site demonstrates that similar construction activities have already taken place in the area via the project site's access roads and are likely to be suitable for navigation by heavy vehicles.

Since Sandy Creek Road is a local rural road, peak construction times may impact surrounding residents and local users of the road. These impacts are expected to be short-term and moderate.

Crossing of the rail-level crossing off the New England Highway by any potential oversize over mass vehicles would need to be carefully managed.

A search of DPHI's Major Projects portal identified other major projects in the vicinity of the project site that also utilise Sandy Creek Road for access. Cumulative impacts are discussed in Section 7 and will be further assessed in the EIS.

6.1.3 Assessment Approach

A Traffic and Transport Impact Assessment would be conducted as part of the EIS and would include:

- Investigate alternative access routes to the project site to reduce pressure on the Sandy Creek Road – New England Highway intersection
- Confirm the expected operational/construction traffic volumes and transport routes with BW ESS, obtain any other relevant background data/surveys and identify any nearby proposed developments for inclusion in the analysis
- Review available information/reports, including any traffic counts provided for the purposes of the assessment
- Summarise the traffic and transport infrastructure in proximity to the project site.
- Determine the operational and construction vehicle activity
- Undertake a qualitative assessment of the vehicle impacts on the adjoining road network
- Assess operational and construction impacts on public transport, pedestrians and cyclists
- an assessment of the oversize overmass route from the relevant port to the site
- Provide high-level advice on traffic management/mitigation measures.

Discussions would be held with Transport for NSW and Muswellbrook Shire Council to confirm any potential road upgrade requirements.

6.2 Amenity

6.2.1 Noise and vibration

Existing environment

The project site was previously used for grazing purposes, and the land is largely undeveloped aside from the two dwellings and their associated farm structures onsite. Nearby structures include the 330 kV Transgrid Muswellbrook substation to the southwest of the project site, numerous transmission lines in the area, as close as 110 metres south, as well as rural residential lots and associated agricultural structures on neighbouring properties. St Heliers Correctional Centre is located about 1.4 kilometres west of the project site, and Muswellbrook Coal Mine lies about 1.8 kilometres south. Surrounding land uses and the broader locality of the site are agriculture, rural-residential land uses and environmental management areas.

No existing significant noise or vibration sources have been identified in the vicinity of the project site. Two sensitive receivers are located directly adjacent to the northern portion of the project site, within Lot 5 DP802081 (refer to Figure 2.6). Sixteen sensitive receivers have been identified within one kilometre of the project site (refer to Figure 2.5). These are detailed in Table 2.2.

Potential impacts

Construction

During construction, noise and vibration has the potential to be generated as a result of the following activities:

- Project site establishment and earthworks
- Movement of heavy and light vehicles to and from the project site (construction traffic)
- Loading and unloading of infrastructure, materials, waste
- Construction of BESS elements and ancillary infrastructure
- Concrete pouring activities.

Noise generating activities during construction works are likely to exceed the noise management limits at the two sensitive receivers directly adjacent to the project site within Lot 5 DP802081, given their close proximity. Noise and vibration impacts would be short-term and temporary during construction and limited to the proposed working hours (refer to section 3.3.2). Mitigation measures to avoid or reduce noise impacts would be outlined in the EIS. An environmental management plan would also be developed prior to construction, containing measures to minimise noise during the construction phase of the project.

Construction of the transmission line has the potential to generate noise and impact nearby sensitive receivers. Assessment of these impacts would be considered at the EIS stage of the project once the study area has been confirmed. Sources of vibration during construction would be from heavy vehicle movements, and potentially piling of transmission structure foundations.

It is expected that the two sensitive receivers located directly adjacent to the project site within Lot 5 DP802081 have the potential to experience vibration impacts. The sensitive receivers in proximity to the site as detailed in Table 2.2, are located at a sufficient separation distance to be unaffected by vibration. This would be assessed in further detail during the preparation of the EIS. The proposed construction schedule minimises the construction period (and associated construction noise and vibration) as far as practicable.

Operation

Key noise generating sources during operation would include:

- Battery enclosures with associated cooling fans and inverters.
- Transformers.

A singular battery unit is relatively quiet however when a significant number of units are required, then cumulatively the noise generated can become significant. As the requirement for battery cooling increases so too does the noise emissions from the cooling fans.

There are also existing noise emissions from the existing 330 kV Transgrid Muswellbrook substation that would need to be considered cumulatively as per the requirements of the *Noise Policy for Industry* (EPA, 2017).

Decommissioning

Noise generated during decommissioning would be similar to noise generated during construction (e.g. movement of heavy and light vehicles, loading and unloading of materials and waste, removal of onsite infrastructure, etc.) and would be short-term and temporary, and limited to within the proposed working hours. Mitigation measures to avoid or reduce noise impacts would be outlined in the EIS. In addition, an environmental management plan would be developed prior to decommissioning that would contain measures to minimise noise during decommissioning of the project.

Assessment approach

A detailed Noise and Vibration Impact assessment of the potential impacts of construction, operation, and eventual decommissioning of the project on sensitive receivers would be undertaken to support the EIS. The significance of these impacts would be assessed in accordance with relevant guidelines. This would include:

- Adopting minimum Rating Background Levels from the Noise Policy for Industry, due to the rural (and therefore quiet) location of the site
- Modelling of construction and operational activities and noisy equipment
- Identification of noise minimisation measures and modelling the effectiveness of these measures.

Consultation would be undertaken with sensitive receivers potentially impacted by the project, including those near access routes.

6.2.2 Visual

Existing environment

The BESS and transmission line would be sited toward the centre and south of the project site, about 520 metres south of Sandy Creek Road, which is the closest road located to the north. The project site gently rises in elevation from 180 metres in the north to 250 metres in the south, meaning the project would overlook Sandy Creek Road.

The two sensitive receivers located directly adjacent to the project site within Lot 5 DP802081 as identified in Figure 2.6 are likely to have primary views of the BESS and transmission line components of the project. Sensitive receivers at Lot 42 DP 1112699 (sensitive receiver ID 1), Lot 301 DP 1026063 (sensitive receiver ID 3), Lot 5 DP 707890, (sensitive receiver ID 4), Lot 165 DP 633737 (sensitive receiver ID 6) and Lot 43 DP 1112699 (sensitive receiver ID 11) (refer to Figure 2.5) are also likely to have views of the BESS and transmission line components of the project. These receivers are located to the south, west and north of the project site and are likely to have the most views due to topography. To the east of the project site, about 400 metres away are vegetated mountains with an elevation of about 670 metres.

The local area is already characterised by existing power infrastructure including the 330 kV Transgrid Muswellbrook substation to the southwest, and a number of transmission lines that traverse the southwestern corner of the site, and other transmission lines that extend north and south from the 330 kV Transgrid Muswellbrook substation. Additional infrastructure includes St Heliers Correctional Centre which is located about 1.4 kilometres west of the project site, and Muswellbrook Coal Mine which lies about 1.8 kilometres south.

Potential impacts

Construction of the BESS and transmission line has the potential to have a visual impact in the landscape, with the landscape currently largely undeveloped and situated in a rural area. Construction of the project would alter the visual character of the locality from one of a predominantly natural landscape to one that has a mixture of industrial and rural land uses. While this may result in some visual impacts in the area, the existing 330 kV Transgrid Muswellbrook substation, to the southwest, numerous existing transmission lines in the area, and Muswellbrook Coal Mine to the south of the project reduces the potential impact, given there is an existing industrial character to the landscape. The project would have some potential visual impacts to nearby residents.

Assessment approach

A Landscape and Visual Impact Assessment (LVIA) would be undertaken for the EIS, to assess visual impacts of all components of the project, including the transmission line, substation and other ancillary infrastructure. The LVIA would consider the locality of the project, including surrounding residences in view of the project site, as well as local roads that may have a view of the project site. The assessment would also include consideration of cumulative impacts with major projects in the vicinity of the project site. The LVIA would provide details of measures to mitigate and/or manage potential impacts.

6.3 Biodiversity

6.3.1 Existing environment

Overview

GHD's biodiversity team has undertaken preliminary flora and fauna surveys across the project site, and are currently in the early stages of targeted surveys for threatened species which have the potential to be impacted by the project.

Threatened species database searches

A search of the BioNet Atlas and EPBC protected matters search tool was undertaken in November 2024 for the project site using a 10-kilometre radius surrounding the project site. The search of the BioNet Atlas identified 28 threatened ecological communities (TECs) and 34 threatened species known to occur within 10 kilometres of the project site.

The search using the protected matters search tool identified eight TECs, 49 threatened species and 10 migratory species likely or known to occur within 10 kilometres of the project site.

Vegetation and Threatened Ecological Communities

The PCTs identified through site biodiversity surveys undertaken are outlined in Table 6.1 and shown in Figure 6.1. The association of PCTs with TECs is also identified in Table 6.1.

Table 6.1 PCTs and associated threatened ecological communities mapped within the project site, based on biodiversity surveys to date

Current PCT ID	PCT name	Threatened Ecological Communities (BC Act)	Threatened Ecological Communities (EPBC Act)
PCT 3431	Central Hunter Ironbark Grassy Woodland	Vegetation on the project site aligns with the Endangered Ecological Community (EEC) Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions.	Vegetation on the project site has the potential to align with the Critically Endangered Ecological Community (CEEC) Central Hunter Valley Eucalypt Forest and Woodland.
PCT 3314	Central Hunter Slopes Grey Box Forest	Vegetation on the project site aligns with the EEC Central Hunter Grey Box—Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions.	Vegetation on the project site has the potential to align with the: <ul style="list-style-type: none"> – CEEC White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions – CEEC Hunter Valley Eucalypt Forest and Woodland – CEEC White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

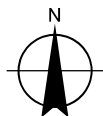
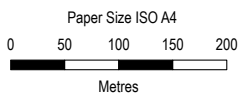
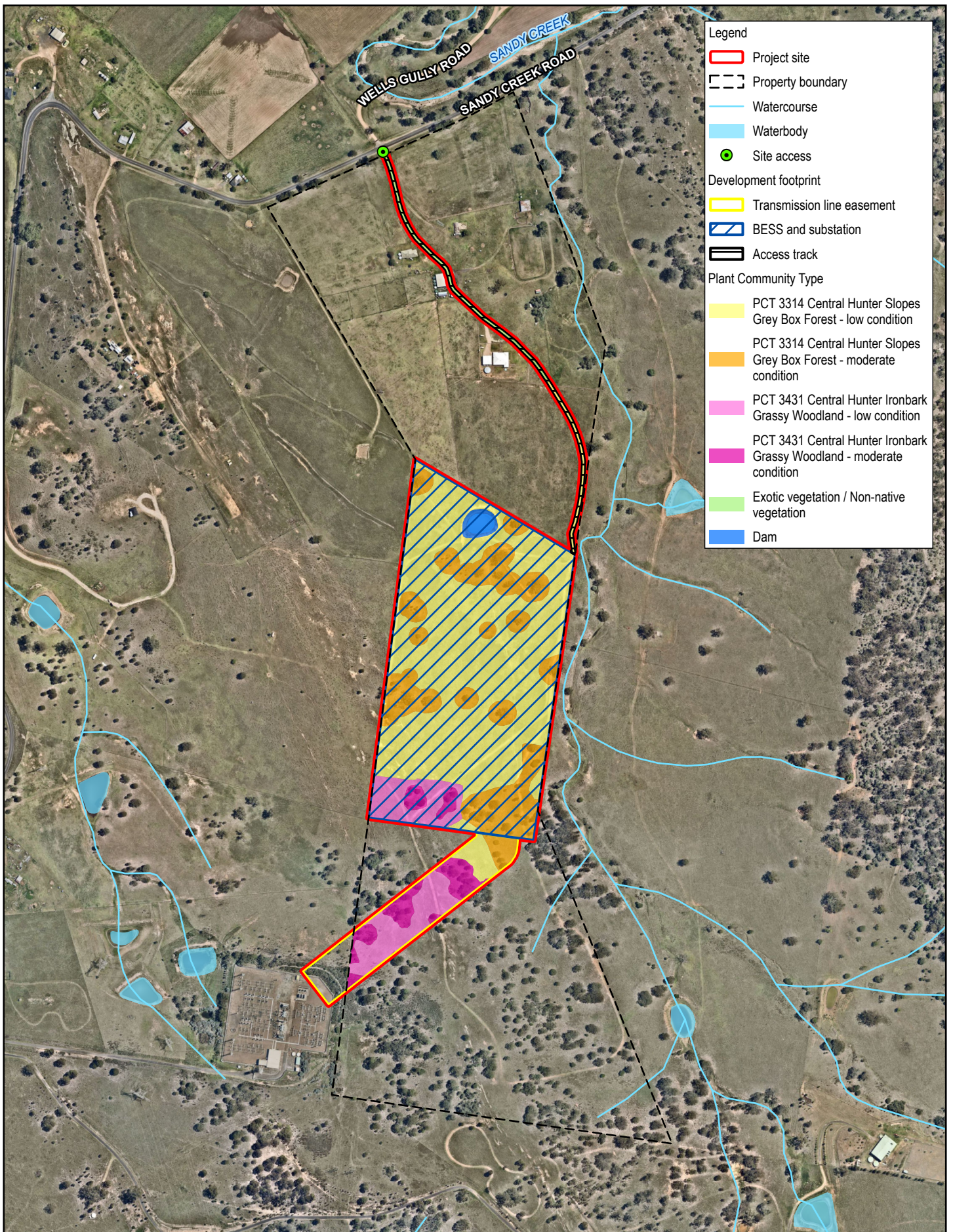
Threatened species

Two threatened fauna species have been identified within or directly adjacent to the project site to date; the Little Lorikeet (*Glossopsitta pusilla*) and the Dusky Woodswallow (*Artamus cyanopterus*). A variety of other threatened fauna may also use native vegetation present within the project site, such as the Brown Treecreeper (*Climacteris picumnus victoriae*) and the Speckled Warbler (*Chthonicola sagittata*). A number of threatened bat species have been previously recorded around Muswellbrook Mine, about one kilometre south of the project site, and are considered likely to forage within the site. These include the Eastern Cave Bat (*Vespadelus troughtoni*) and the Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*).

One flora species listed as Vulnerable (BC Act) has been identified within the project site; the Pine Donkey Orchid (*Diuris tricolor*). This species is also listed as an Endangered Population (BC Act) within the Muswellbrook LGA. A number of other threatened flora species are associated with PCTs present within the project site, including the orchid species *Prasophyllum* sp. *Wybong*, and eucalyptus species such as the Slaty Red Gum (*Eucalyptus glaucina*). These threatened species have the potential to occur within the project site despite native vegetation often having been degraded through farming activities.

SAIL entities

Entities at risk of serious and irreversible impacts (SAIL entities) are those species and ecological communities that are most at risk of extinction from development. One entity at risk of a SAIL is present within the study area. Box Gum Woodland (commensurate with PCT 3314) occurs in the central and southern portions of the project site and is listed as a CEEC under the BC Act and may align with the listing under the EPBC Act. Note that if grassland in the project site is found to be derived from Box Gum Woodland, these areas would also be considered an SAIL entity.



**BW ESS
McCullys Gap
Scoping Report**

Project No. 12627183
Revision No. 0
Date 25/02/2025

Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

Vegetation mapping

FIGURE 6.1

6.3.2 Potential impacts

Based on the existing biodiversity values within the study area, the project site is likely to contain moderate to high biodiversity constraints to a future development project, with the largest constraint likely to be the presence of patches of native woodland vegetation associated with PCT 3431 (Central Hunter Ironbark Grassy Woodland) and 3314 (Central Hunter Slopes Grey Box Forest) which are related to TECs with a high biodiversity value.

The following biodiversity constraints are likely to be present in the project site:

- Areas of remnant or regenerating native vegetation that comprise threatened species habitat. A development that includes removal of native vegetation for an SSD or SSI project would require appropriate biodiversity offsets under the BC Act and associated NSW Biodiversity Offsets Scheme and Biodiversity Assessment Method (BAM).
- Remnant vegetation on the project site of TECs aligned with CEECs and EECs under the EPBC and BC Act.
- Habitat resources for a number of threatened fauna species such as the Dusky Woodswallow and Little Lorikeet.
- Potential habitat for a number of threatened plant species and confirmed habitat for the Pine Donkey Orchid.

6.3.3 Assessment approach

A BDAR would need to be prepared for the EIS in accordance with the BAM and the SEARs. Detailed seasonal flora and fauna surveys would need to be conducted throughout the project site. The BDAR would assess the potential impacts to threatened species, populations and communities and their habitats as a result of the project in accordance with the BC Act and EPBC Act and calculate the biodiversity credits required to offset the impacts of the project.

6.4 Hazards and Risks

6.4.1 Existing environment

The project site is located within an agricultural area and is located northeast of an existing substation. The project site is located in a bushfire prone area (Vegetation Category 3) as mapped in the Muswellbrook LEP (see Figure 6.2), which is considered to consist of medium bush fire risk vegetation, and tends to include grasslands, semi-arid woodlands, and arid shrublands.

6.4.2 Potential impacts

Bushfire

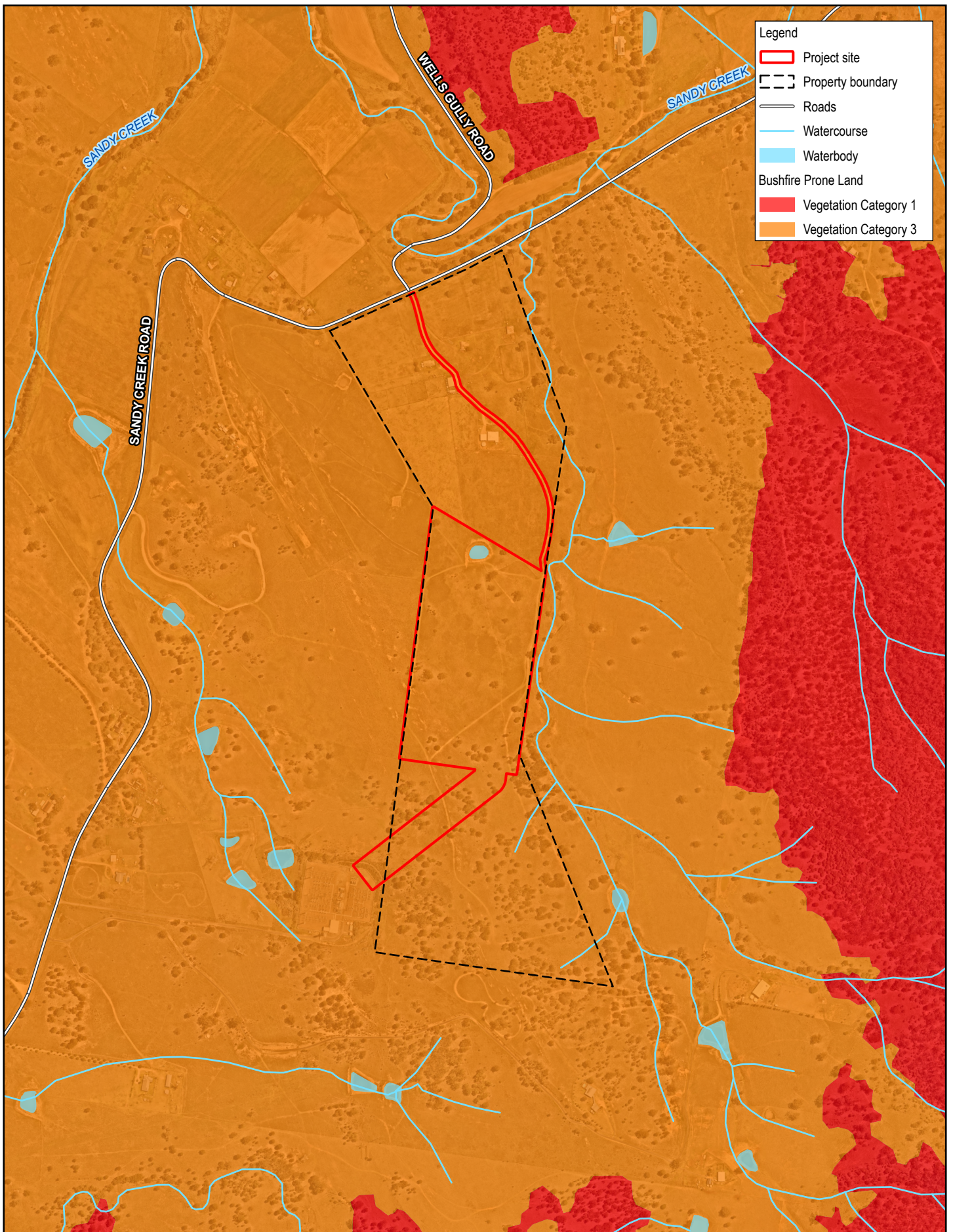
The project site is mapped as bushfire-prone land, mapped as Vegetation Category 3. Therefore, consideration must be given to the provision of adequate asset protection zones on the project site layout to minimise the risk of fire through spatial separation of vegetation and battery infrastructure.

The construction phase of the project also poses risk of bushfire, particularly if flammable materials or chemicals are used onsite. Machinery or welding activities can also ignite these materials or cause sparks which is particularly dangerous in dry, bush-fire prone areas.

Consultation would be undertaken during the EIS stage with the NSW Rural Fire Service and Fire and Rescue NSW, as well as any other relevant authorities identified.

Flooding

The project is not in an area identified by the Muswellbrook LEP as being a flood prone area. As noted in section 2.4.3 Sandy Creek is located about 60 metres north of the project site, therefore the potential for flooding would be considered as part of the EIS.

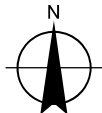
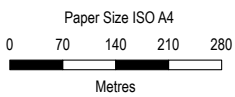


Legend

- Project site
- Property boundary
- Roads
- Watercourse
- Waterbody

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 3



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Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

Bushfire prone land

FIGURE 6.2

BESS risks

Installation, commissioning and operation of battery energy storage can present increased hazards associated with overheating, fire, hazardous chemicals and gas emissions.

The design and installation of the battery system would be undertaken in accordance with relevant Australian Standards and guidelines and would be operated in accordance with the manufacturers requirements. Appropriate fire suppression apparatus and installations would be incorporated into the design.

A site operational management plan would be prepared by the service provider detailing information regarding procedures to be implemented in the event of a fire. Consultation would be undertaken with relevant authorities during the EIS stage.

Electromagnetic radiation

Electricity powerlines, substations, transformers and other electrical sources such as common electrical appliances and wiring, all emit electric and magnetic fields (EMF). The Australian Radiation Protection and Nuclear Safety Agency considers that for substations and transformers, the magnetic fields at distances of five to ten metres away are generally indistinguishable from typical background levels in the home.

The transmission line connection from the project to the switchyard would generate EMF. However, as the project site is a controlled site and entry would be limited to authorised personnel trained in these hazards and hazard avoidance, human health risks from EMF are unlikely.

Decommissioning

Hazards and risks during decommissioning would be similar to those during construction and may include an increased potential for bushfire and the generation of waste. Mitigation measures to avoid or reduce hazards and risks would be outlined in the EIS. In addition, an environmental management plan would be developed prior to decommissioning that would contain measures to avoid or minimise hazards and risks during decommissioning of the project.

6.4.3 Assessment approach

The following assessments would be undertaken as part of the EIS to assess potential hazards and risks:

- A preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards) and Applying SEPP 33 (DoP 2011c)
- A Preliminary Hazard Analysis prepared in accordance with *Hazardous Industry Planning Advisory Paper No. 6 – Guidance for Hazard Analysis* (DoP 2011b) and *Multi-Level Risk Assessment* (DoP 2011a)
- An assessment of potential bushfire hazards and risks against the RFS *Planning for Bushfire Protection 2019*.

An assessment of potential electromagnetic fields or proposed grid connection infrastructure against the *International Commission on Non-Ionizing Radiation Protection Guidelines for limiting exposure on Time-varying Electric, Magnetic and Electromagnetic fields* (ICNRP 2010).

6.5 Aboriginal Cultural Heritage

GHD undertook a desktop assessment in November 2024 which included a search of the Aboriginal Heritage Information Management System (AHIMS). The search findings are summarised below.

6.5.1 Existing environment

A search of the National Native Title Tribunal's mapping of ILUA did not identify the project site being located in an ILUA area.

An updated AHIMS search undertaken on 19 November 2024 found no sites located within the project site or within a 50 metre buffer. While there were no sites within a 50 metre buffer, nearby sensitive land features including Sandy Creek are located near the project site.

6.5.2 Potential impacts

Currently, the project site has both disturbed and undisturbed ground surfaces which would be disturbed during construction. This could potentially cause direct impacts on Aboriginal sites and artefacts. Additionally, there is the potential for indirect impacts to Aboriginal sites or artefacts due to construction activities.

6.5.3 Assessment approach

An Aboriginal Cultural Heritage Assessment Report (ACHAR) would be prepared for the project as part of the EIS. As part of further investigations to be undertaken as part of the ACHAR a site inspection would be completed by archaeologists and members of the Aboriginal community in accordance with the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010b). The results of the survey would indicate whether test excavation at any specific landforms is warranted. Further investigations would include full consultation with the Aboriginal community following the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW 2010a).

6.6 Social

The initial scoping of social impacts has been prepared in accordance with the Department of Planning, Housing and Infrastructure's *Social Impact Assessment Guideline for State Significant Projects* (DPE, 2023). In accordance with these guidelines, Social Impact Assessment (SIA) scoping is undertaken early in project development and involves:

- Establishing the social locality to understand the communities likely to be affected by the project
- An initial evaluation of the social baseline of the social locality
- An initial evaluation of social impacts and benefits
- Consideration and articulation of any project refinements.

This process is assisted by applying the SIA worksheet provided by DPHI (see Appendix B). The following section provides an overview of the social locality and the outcomes of the initial evaluation of potential social impacts and benefits.

6.6.1 Existing environment

A preliminary social locality was identified based on the location of the project and the communities most likely to experience impacts or benefits as a result of the project. The preliminary social locality is outlined in Table 6.2.

Table 6.2 Preliminary social locality study area

Study area	Area (ABS Statistical area)	Interaction with project
Project footprint	N/A	The project footprint includes the McCullys Gap BESS project site which includes the development of a BESS, a transmission line and related infrastructure to connect the BESS to the existing 330 kV Transgrid Muswellbrook substation. The site is located on a largely vacant lot. BW ESS has an agreement in place with the landowner of the site. There are two residential properties located within the site boundary.
Local	McCullys Gap Suburb and Locality (SAL)	The project site is situated in the locality of McCullys Gap. In the 2021 Census, there were a total of 262 people in McCullys Gap. Residents in the local study area may experience social impacts and benefits resulting from construction and operation of the project.
Regional	Muswellbrook Shire Local Government Area (LGA)	McCullys Gap SAL is located in the Muswellbrook Shire LGA. Local residents, businesses, users of social infrastructure and communities may experience social impacts and benefits during construction and operation of the project.

The project site is located at 578 Sandy Creek Road in the suburb of McCullys Gap, in the northeast of the Muswellbrook Shire LGA. The project site would be located on two lots; one privately owned and one owned by Transgrid. BW ESS has an agreement in place with the private landowner of the site. There are two residential properties located within the site boundary and 16 dwellings within two kilometres of the site. The Wonnarua / Wanaruah people are the Traditional Custodians of the area.

The suburb of McCully's Gap is predominantly rural, characterised by low density primary production lots and environmental management zones. Land use is primarily agricultural, including the production of dairy, lamb, beef and poultry. McCullys Gap is bounded by other rural residential suburbs including Rouchel in the north, Rouchel Brook in the northeast, Bowmans Creek in the southeast and Muscle Creek in the south, as well as the larger regional towns of Muswellbrook in the southwest and Aberdeen in the west. As there is no town centre in McCullys Gap, residents would travel to the township of Muswellbrook, located about eight kilometres southwest, to access essential shops and services.

The project site would be located off Sandy Creek Road and accessed via the New England Highway in the southwest. The New England Highway provides links to the regional township of Muswellbrook, further north towards Tamworth and southeast towards Newcastle and Sydney.

In 2021, McCullys Gap had a population of 262 people living across 101 dwellings (ABS 2022a). At the regional level, the population of Muswellbrook Shire LGA was 16,357 persons. Compared to the LGA, McCullys Gap is characterised by the following:

- An older population, with a median age of 41 years and a high proportion of the population aged between 50 to 64 years (22.1 per cent) in McCullys Gap compared to 37 years and 18.8 per cent in Muswellbrook Shire LGA.
- A lower unemployment rate of 3.2% in McCullys Gap compared to the average in Muswellbrook (5.1 per cent).
- A higher proportion of people who require assistance in McCullys Gap (3.4 per cent) compared to 2.9 per cent in Muswellbrook Shire LGA.
- The top industry of employment was mining (21.1 per cent of the total labour force) which was consistent with Muswellbrook Shire LGA (21.5 per cent).

The Index of Relative Socio-Economic Advantage/Disadvantage divides a population into ten equal groups, called a decile. A decile number of 1 indicates the highest level of disadvantage, and a decile of 10 indicates the highest level of advantage. According to the Index of Relative Socio-Economic Advantage/Disadvantage (ABS 2022b), McCullys Gap scored a decile 7 within the state, indicating a moderate to high level of advantage, while Muswellbrook scored a decile 2 within the state, indicating a high level of disadvantage.

For the past 50 years, Muswellbrook Shire LGA's economy has been closely linked to the energy industry, in particular the international thermal coal industry and domestic power industry (Muswellbrook Shire Council, 2022). The *Hunter Regional Economic Development Strategy 2023 update* (Department of Regional NSW, 2023) identifies that although coal mining is anticipated to remain a key contributor to the Hunter regional economy, the industry's future will be impacted by the broader shift towards renewable energy generation in the medium to longer term). Additionally, the project's location within the HCC REZ supports the ongoing development of renewable energy projects in the region and supports industry diversity and growth of the energy sector.

6.6.2 Initial evaluation of social impacts and benefits

The potential social impacts and benefits that may result from construction and operation of the project have been identified through a review of the information presented in this Scoping Report, a desktop review and understanding of the social locality, and based on previous professional experience undertaking social impact assessment for state significant projects in NSW. The outcomes of the social impact scoping process are summarised below.

The development of the BESS and associated transmission infrastructure would result in a permanent change of land use from vacant and cleared land to energy infrastructure. Given the rural nature of the local study area, residents are likely to be sensitive to changes in land use. These impacts would begin in the construction phase, and continue to operation.

During construction of the project, there may be social impacts associated with changes in amenity, increased noise, dust and construction traffic. Residents in rural properties located in proximity to the project site may be sensitive to these impacts.

Light and heavy construction vehicle movements would utilise the existing road network in McCullys Gap, namely Sandy Creek Road. Due to the low baseline of existing traffic on Sandy Creek Road and agricultural identity of the project site, residents living on Sandy Creek Road in McCullys Gap may notice increased traffic, and there is potential for local community members to experience minor disruptions on Sandy Creek Road and New England Highway.

Construction of the project may require a number of non-resident workers to be accommodated in existing short-term accommodation located in the regional study area. As there are no accommodation providers in the local study area, workers would stay in Aberdeen or Muswellbrook, about eight kilometres from the project site. This would increase demand for accommodation, which would benefit accommodation providers, but could reduce availability for tourists.

There may be a small number of local employment opportunities associated with the construction of the project. Increased demand for skilled and unskilled workforce during construction of the project may lead to increased temporary employment opportunities for local and regional residents. There is potential for a small number of local and regional businesses to benefit from procurement opportunities during construction. Some local businesses may also benefit from construction workers spending wages, such as food or beverage outlets in nearby townships. This is most likely to occur in areas where the non-resident workforce would be accommodated, such as Muswellbrook or Aberdeen.

During operation, there may be social impacts resulting from changes to local amenity, such as permanent land use changes and visual impacts on the rural landscape of McCullys Gap and for properties located in close proximity to the BESS or transmission line. Some residents may be sensitive to this change given the rural landscape and farming identity of the area. Further, there is potential for some local community members to experience stress resulting from concerns around the uncertainty of battery storage technology and perceived bushfire risk associated with potential battery overheating.

6.6.3 Assessment approach

The outcomes of the SIA scoping exercise indicate that the potential social impacts and benefits that may occur during construction and operation would require a standard level of assessment in the EIS. This would be likely to include:

- A desktop review of relevant secondary data sources including population and economic data and research
- Review of worker accommodation options in the Upper Hunter region
- Consultation with relevant local stakeholders such as the Muswellbrook Shire Council
- EIS communication and engagement activities, and Aboriginal cultural heritage consultations, would also be key inputs to the SIA.

The initial scoping of social impacts did not identify opportunities for project refinement in response to the preliminary impact evaluation.

6.7 Land Use and Soil

6.7.1 Existing environment

The topography of the project site is generally flat in the north, increasing gently in elevation from the north at 180 metres in elevation, up to 250 metres elevation to the south, and steepens onto a ridge in the southern section of the site. There is a farm dam located near the centre of the project site and a number of small tributaries run along the eastern section of the project site that drain into Sandy Creek about 60 metres to the north and two farm dams to the east.

Soils

The project site is located within the Kandosols soil group (DPIE 2021) a soil group that has a similar topsoil and subsoil, that occurs throughout Australia (Australian Soil Classification, n.d.).

The project site is not mapped as containing acid sulphate soils under the NSW Government SEED mapping.

Agricultural productivity

The project site is not classified under the Strategic Regional Land Use Policy as having Strategic Biophysical Agricultural land (DPHI 2024) or as DPI State Significant Agricultural land (DPI 2022). The closest Strategic Biophysical Agricultural Land and DPI State Significant Agricultural land is located about 75 metres north of the project site, extending along either side of Sandy Creek.

The project site is classified by the NSW Government SEED mapping as having soils with severe to very severe limitations, rated as Land and Soil Capability Classes 5 and 6 (DPIE 2021).

The project site has historically been used to graze livestock.

Mining and exploration titles

A search for mining titles and exploration licences was undertaken on 8 January 2025 using the Department of Primary Industries and Regional Development MinView mapping application. The results identified the site is not located within any mining titles or exploration licences. The closest is about 1 kilometre south of the site.

6.7.2 Potential impacts

Construction

The site establishment and construction of the project would result in a minor alteration of the landform at the project site and involve some vegetation clearance and earthworks which would alter the local landscape. Construction of the transmission line and BESS have the potential to generate soil erosion. Movement of construction plants over exposed surfaces may lead to erosion and compaction of soils. Topsoil and subsoil materials stockpiled during construction have the potential to become mobilised by wind or rain.

Operation

The project would result in the loss of about 11.4 hectares of agricultural land on the site. Agricultural activities could continue under the transmission line easement during operation.

Decommissioning

Impacts to land during decommissioning would be similar to those during construction, such as alteration of the local landscape, and generation of soil erosion. Mitigation measures to avoid or reduce impacts to land would be outlined in the EIS.

An environmental management plan would also be developed prior to decommissioning that would contain measures to avoid or minimise impacts to land during decommissioning of the project.

6.7.3 Assessment approach

As part of the EIS, an Agricultural Impact Assessment would be undertaken that would include investigation of land use, land, and a soil survey. This assessment will consider the site's current agricultural production value and the implications of locating the project on rural zoned land. A Land Use Conflict Risk Assessment would also be undertaken to identify potential sources of land use conflict in accordance with the Department of Industry's *Land Use Conflict Risk Assessment Guide*.

6.8 Other matters

This section provides an overview of other environmental matters for those environmental aspects that, based on existing information and the description of the project, would require limited or no further assessment in the EIS.

Table 6.3 Summary of relevant information for issues other than key issues for the project

Environmental matter	Existing environment	Potential impact	Level of assessment/assessment approach
Historic heritage	A search of relevant NSW and Commonwealth heritage databases and the Muswellbrook LEP in November 2024 did not identify any heritage listed items or sites within the project site or along adjacent boundaries. The nearest item is local heritage item 'Lime Kiln - E.I.E.I.O' located at 540 Sandy Creek Road about 400 metres west of the site (NSW Government State Heritage Inventory).	There would be no direct or indirect impact to the closest heritage listed item ('Lime Kiln - E.I.E.I.O').	No further assessment is required given there are no heritage items or sites identified on the project site, and the project would not impact the closest heritage listed item.
Property	Two rural dwellings with associated agricultural structures are located in the northern portion of the project site. Existing built forms in the locality and in proximity to the project site are low-density residential dwellings and agricultural structures, as well as St Heliers Correctional Centre to the west, and Muswellbrook Coal Mine to the south. The 330 kV Transgrid Muswellbrook substation is located to the southwest of the project site.	There would be no direct impact to the existing residential dwellings on the site.	Amenity impacts on the two dwellings in the northern part of the project boundary, as well as on local properties in the vicinity of the project site would be considered in other assessments. As the project would take place within the project site, and the properties within the project boundary and locally are not within the project site, there would be no direct impact on these dwellings and therefore no further assessment would be required.
Air quality and greenhouse gas	The air quality of Aberdeen is good as indicated by the air quality monitoring station at Aberdeen, 6.7 kilometres northwest of the project site (NSW Government 2024). A search of the National Pollutant Inventory identified the closest facility, Manuka Processing Plant located 36 kilometres northwest of the project site (DECCW 2024). Existing air quality would generally be impacted by dust from agricultural activities or the Muswellbrook Coal Mine, or by strong winds in drought conditions.	Excavation has the potential to generate dust resulting in short term, localised impacts to air quality during construction. The operation of construction machinery has the potential to generate emissions to air from vehicle, plant and equipment exhausts. These emissions are considered to be negligible. Greenhouse gas would be limited to emissions associated with construction.	Air quality would be assessed qualitatively within the EIS. This would include determining the existing air quality conditions of the project site, sources of potential air pollutants and dust, predictions of air quality emissions during the construction phase, and assessment of potential impacts on air quality.

Environmental matter	Existing environment	Potential impact	Level of assessment/assessment approach
Contamination	<p>A search of the NSW Environment Protection Authority (EPA) contaminated sites and notified sites database undertaken in November 2024 did not return any results for the project site or immediate vicinity. There are three sites located 19 kilometres northwest of the project site with POEO notices, one with six former notices, one with one current and one former, and one with one current and eight former notices.</p> <p>The local and regional area is predominantly dominated by agricultural land use supporting grazing, as well as areas of native vegetation. Agricultural land uses within the project site could involve the application of fertilisers, herbicides and pesticides which have the potential to be present within the soils.</p>	<p>Construction of the project would include the storage and handling of fuels, chemicals, infrastructure powered by fuels and other potential contaminants.</p>	<p>Assessment of contamination impacts would be considered qualitatively in the land impact assessment for the EIS.</p>
Waste	<p>The project site is situated on largely undeveloped rural land which was previously used for agricultural purposes such as grazing. There are two dwellings located in the north of the project site with associated agricultural structures. The existing land use does not generate a large volume of waste.</p>	<p>The waste streams produced from project construction are likely to be standard with well-known management options.</p> <p>The likely waste generation associated with the project would mainly occur during the construction stage and may include green waste from cleared vegetation, construction materials, general waste from site personnel and earthworks spoil.</p> <p>Opportunities for reuse and recovery of key waste streams would be identified and documented in the Construction and Operational Environmental Management Plans for the project.</p> <p>All waste produced during construction and operation would be managed and disposed of at appropriately licensed facilities.</p>	<p>The assessment of waste impacts as part of the EIS would identify potential waste streams associated with the construction and operation of the project and identify mitigation measures to manage potential waste impacts.</p> <p>Waste categorisation for potential waste streams would be based on <i>NSW Waste Classification Guidelines</i> (NSW EPA, 2014). The EIS would include standard management practices compliant with the <i>Waste Avoidance and Resource Recovery Act 2001</i> and other relevant policies and guidelines.</p>

Environmental matter	Existing environment	Potential impact	Level of assessment/assessment approach
Water	<p>The project site is located within the Hunter Regulated River Water Source within the Hunter Water Management Area (NSW Government 2016).</p> <p>Nearby waterbodies include Sandy Creek located to the north of the project site, as well as numerous unnamed tributaries within and outside of the project site. There is also a farm dam in the centre of the project site, and to the east of the project site.</p> <p>There are two groundwater bores located in the north of the project site, which are used for livestock purposes.</p>	<p>The project is not in an area identified by the Muswellbrook LEP as being a flood prone area. Due to the project construction works of the BESS and transmission line, impervious surfaces would increase in the area, increasing the potential for stormwater flows and increase of runoff. Should deep excavations form part of the project construction, there may be groundwater impacts from dewatering. The transmission line would be located in the southwest of the project site, located away from waterbodies at the project site and therefore has low to no impact.</p> <p>Soil erosion could mobilise sediment that could be transported downstream into Sandy Creek to the north of the project site, and other unnamed tributaries in the project site during major rainfall events.</p>	<p>The assessment for water as part of the EIS would include impacts on surrounding watercourses and groundwater resources and identify any changes and mitigation measures for flood risk.</p> <p>Impacts to waterfront land would be assessed in accordance with the DPI <i>Guidelines for Controlled Activities on Waterfront Land</i> (2018), and erosion and sediment control measures would be outlined in accordance with <i>Managing Urban Stormwater: Soils & Construction</i> (Landcom 2004).</p>

7. Cumulative Impacts

Cumulative impacts of the project would be assessed in the EIS. The assessment would focus on the project's key issues that have the potential to generate cumulative impacts with other projects in the vicinity which are likely to have concurrent construction and/or operational timeframes.

A search of the DPHI Major projects database was undertaken in November 2024 to identify SSD and SSI projects within the vicinity of the project that may be relevant for the EIS cumulative impact assessment. The search identified numerous projects within a 25-kilometre radius of the project site, and include a number of renewable energy projects, including solar farms, pumped hydro and BESS projects.

A number of renewable energy projects are currently in various stages of development within the Muswellbrook Shire LGA and Upper Hunter Shire Council LGA, and may be constructed concurrently with the project. This could place pressure on the regional centres of Muswellbrook, and Aberdeen which may house the workforce or provide resources for these projects. These projects are identified in Table 7.1. Refer also to the cumulative impact assessment scoping summary in Appendix C.

Table 7.1 Known relevant future projects

Project	Approximate distance from the project	Status	Potential overlap
Upper Hunter Battery Energy Storage System (SSD-61707209)	6.4 kilometres northwest	Preparing EIS SEARS received in September 2023	24-month construction period, therefore construction periods may overlap.
Muswellbrook Pumped Hydro Energy Storage (SSI-76014961)	Immediately south The 330 kV Transgrid Muswellbrook substation is considered part of this project's footprint.	Preparing EIS Declared CSSI in June 2024 SEARS received in November 2024	Construction of the project is anticipated to commence in early 2026 and be completed by the end of 2029, therefore construction periods may overlap.
Muswellbrook Solar Farm (SSD-46543209)	3.6 kilometres south	Currently in recommendation stage and has been referred to the Independent Planning Commission	The construction for the project is anticipated to take 31 months, which is expected to commence in 2025, therefore the construction periods may overlap.
Muswellbrook Battery Energy Storage System (SSD-29704663)	3.9 kilometres southwest	Approved in June 2023	The development phase of the project is expected to complete in early 2025. Construction is expected to take up to 18 months. The construction periods may overlap.
Queensland – Hunter Gas Pipeline (MP06_0286)	Directly northeast The approved pipeline route is outside of the project site, however the 200 m wide pipeline corridor does encroach within Lot 5 DP802081, but does not overlap with the project site.	Approved in 2009, currently undertaking field surveys to refine and confirm pipeline route.	The timing of gas pipeline construction is contingent on the outcome of field surveys and route refinement and is therefore unclear. The construction periods may overlap.

The project may generate cumulative biodiversity, social, visual, Aboriginal heritage, noise and traffic impacts with these projects. The biodiversity, social, visual impact, Aboriginal heritage, noise and traffic assessments would include consideration of cumulative impacts, and these would be summarised in the EIS in accordance with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE 2022a).

The project also has the potential to generate significant positive cumulative impacts in conjunction with other renewable energy projects in the surrounding area to decarbonise energy generation in NSW. It is also expected

that the combined renewable energy projects in the region would have positive cumulative impacts on the regional economy and economies of local towns including Muswellbrook and Aberdeen, resulting from expenditure on local goods, services and employment.

8. Conclusion

BW ESS is seeking approval for the construction, operation and eventual decommissioning of a BESS with a capacity of 400 MW, transmission line and associated ancillary infrastructure. The transmission line would connect to the existing 330 kV Transgrid Muswellbrook substation.

The aim of the project is to support the renewable energy power supply in NSW by improving grid stability in the region, assisting to 'smooth out' energy peaks and troughs created by variable renewable energy sources. This will further assist the energy capacity and resilience of NSW and further efforts for Australia to reach net-zero emissions by 2050.

This Scoping Report seeks to obtain the SEARs for the project. It provides an overview of the project, the site context and the anticipated scope of assessment requirements.

The project would be SSD in accordance with section 2.6(1) of State Environmental Planning Policy (Planning Systems) 2021, since the project is electricity generating works with a Capital Investment Value of more than \$30 million. The project is permissible under section 2.36(1)(b) of the State Environmental Planning Policy (Transport and Infrastructure) 2021, as the project would be electricity generating works undertaken in a prescribed non-residential zone.

The key environmental matters identified by this scoping report for the project are:

- Biodiversity
- Amenity (noise and vibration and visual impacts)
- Traffic and access
- Hazards and risks
- Aboriginal cultural heritage
- Social
- Land use and soil.

The project EIS is proposed to address the following:

- A detailed description of the project including construction activities, ancillary infrastructure and project components
- A comprehensive assessment of the potential impacts on the key issues, including a description of the existing environment and assessment of potential impacts of construction, operation and decommissioning of the project
- Measures to be implemented to avoid, minimise, manage, mitigate, offset and/or monitor the identified potential impacts
- Identify and address issues raised by stakeholders and community members.

This scoping report demonstrates the importance of this project to support the transition to renewable energy sources, and to ensure the availability of power.

9. References

ABS 2022a, Australian Bureau of Statistics, 2021 Census. <https://www.abs.gov.au/census/find-census-data/search-by-area>.

ABS 2022b, Socio-Economic Indexes for Areas (SEIFA), Australia. abs.gov.au/statistics/people/people-and-communities/socio-economic-indexes-areas-seifa-australia/latest-release#index-of-relative-socio-economic-advantage-and-disadvantage-irsad-.

AEMO 2024, Integrated System Plan, For the National Electricity Market, A roadmap for the energy transition, aemo.com.au/-/media/files/major-publications/isp/2024/2024-integrated-system-plan-isp.pdf?la=en.

BOM 2024, Australian Groundwater Explorer, bom.gov.au/water/groundwater/explorer/map.shtml, Bureau of Meteorology.

DECC 2009, Interim Construction Noise Guideline. Sydney: NSW Department of Environment and Climate Change.

DECCW 2010a, Aboriginal Cultural Heritage Consultation Requirements for Proponents. Sydney: Department of Environment, Climate Change and Water.

DECCW 2010b, Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW. Sydney: Department of Environment Climate Change and Water NSW.

DECCW 2022, Low Emissions Technology Statement 2022, <https://consult.dcceew.gov.au/low-emissions-technology-statement-2022>.

DECCW 2024, National Pollutant Inventory, npi.gov.au/npidata/action/load/map-search Australian Government.

Department of Regional NSW, 2023, Regional Economic Development Strategies – 2023 Update, nsw.gov.au/sites/default/files/2023-02/2023-REDS-Update-Framework-and-Readers-Guide.pdf.

DoP 2011a, Assessment Guideline: Multi-Level Risk Assessment, New South Wales Government, Sydney.

DoP 2011b, Hazardous Industry Planning Advisory Paper No. 6 – Guidance for Hazard Analysis, New South Wales Government, Sydney.

DoP 2011c, State Environmental Planning Policy (Resilience and Hazards) and Applying SEPP 33, New South Wales Government, Sydney.

DPE 2022a, Cumulative Impact Assessment Guidelines for State Significant Projects (October 2022), Sydney: Department of Planning and Environment.

DPE 2022b, State significant development guidelines – preparing a scoping report (October 2022), Sydney: Department of Planning and Environment.

DPE 2022c, Hunter Regional Plan 2041, <https://www.planning.nsw.gov.au/sites/default/files/2023-03/hunter-regional-plan-2041.pdf>.

DPE 2023, Social Impact Assessment Guideline: State Significant Projects.

DPHI 2024, Strategic Regional Land Use Policy (SRLUP) – Strategic Agricultural Land – Biophysical, <https://datasets.seed.nsw.gov.au/dataset/srlup-salbiophysical>.

DPI 2022, State Significant Agricultural Land (SSAL), nswdpi.mysocialpinpoint.com/ssal/map#/sidebar/tab/how_to_use_the_map.

DPIE 2019, NSW Electricity Strategy, energy.nsw.gov.au/sites/default/files/2022-08/2019_11_NSW_ElectricityStrategyDetailed.pdf.

DPIE 2020, NSW Electricity Infrastructure Roadmap, Building an Energy Superpower Overview, energy.nsw.gov.au/sites/default/files/2022-08/NSW%20Electricity%20Infrastructure%20Roadmap%20%20Overview_1.pdf.

DPIE 2021, Land and Soil Capability Mapping for NSW, datasets.seed.nsw.gov.au/dataset/land-and-soil-capability-mapping-for-nsw4bc12.

EPA 2017, Noise Policy for Industry, Sydney: NSW Environment Protection Authority.

ICNIRP 2010, Guidelines for Limiting Exposure to Time-varying Electric, Magnetic and Electromagnetic Fields, International Commission on Non-Ionizing Radiation Protection.

Landcom 2004, Managing Urban Stormwater: Soils & Construction, environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Water/Water-quality/managing-urban-stormwater-soils-construction-volume-1-fourth-edition.pdf.

Muswellbrook Pumped Hydro Pty Ltd 2023, Muswellbrook Pumped Hydro Energy Storage Project Scoping Report, <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=PDA-65341222%2120231201T055725.220%20GMT>.

Muswellbrook Shire Council, 2020, Muswellbrook Shire Council Local Strategic Planning Statement 2020 - 2040, <https://www.muswellbrook.nsw.gov.au/wp-content/uploads/2022/07/Local-Strategic-Planning-Statement-2020-2040.pdf>.

Muswellbrook Shire Council, 2022, Muswellbrook Shire Council Community Strategic Plan 2017-2027, ipart.nsw.gov.au/sites/default/files/cm9_documents/Muswellbrook-Shire-Council-Attachment---4--Community-Strategic-Plan.PDF.

NHVR 2025, National Network Map, National Heavy Vehicle Regulator, maps.nhvr.gov.au/?networkLayerContext=NATIONAL_MAP&view=Category&exemptionSetId=2&networkIds=%5B5126%5D.

NSW DPE 2023, NSW Planning Portal Spatial Viewer, <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>, Department of Planning and Environment, Sydney.

NSW EPA 2014, Waste Classification Guidelines, epa.nsw.gov.au/-/media/epa/corporate-site/resources/wasteregulation/140796-classify-waste.pdf.

NSW DCCEEW 2024, NSW State Vegetation Type Map, datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map.

NSW Government 2016, Water Sharing Plan for the Hunter Regulated River Water Source 2016, legislation.nsw.gov.au/file/2016-376.pdf.

NSW Government 2024, airquality.nsw.gov.au/upper-hunter/aberdeen.

NSW Legislation 2024, Muswellbrook Local Environmental Plan 2009, [egislation.nsw.gov.au/view/html/inforce/current/epi-2009-0129](https://legislation.nsw.gov.au/view/html/inforce/current/epi-2009-0129).

The Australian Soil Classification, n.d., The Australian Soil Classification, Kandasols [KA], soilscienceaustralia.org.au/asc/ka/kandsols.htm.

WaterNSW 2024, All Groundwater Map, realtimedata.waternsw.com.au/water.stm, WaterNSW.

Appendix A

Scoping summary table

Level of assessment	Matter	Cumulative impact assessment?	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Key issues					
Standard	Biodiversity	Yes	Specific	<i>Biodiversity Assessment Method</i> (Department of Planning, Industry and Environment 2020)	Section 6.3
Standard	Traffic and access	Yes	Specific	Guide to traffic management Part 12: Integrated Transport Assessments for Developments (Austroads 2020) Traffic Modelling Guideline (TfNSW 2013)	Section 6.1
Detailed	Amenity – noise and vibration	Yes	Specific	Noise Policy for Industry (Environment Protection Authority 2017) Interim Construction Noise Guideline (Department of Environment, Climate Change and Water 2019) NSW Road Noise Policy (Guideline (Department of Environment, Climate Change and Water 2011) Assessing vibration: A technical guideline (Department of Environment, Climate Change and Water 2006)	Section 6.2
Detailed	Amenity – visual	Yes	Specific	Guidelines for Landscape and Visual Impact Assessment Third Edition (2013) (GLVIA), prepared by the Landscape Institute and Institute of Environmental Management and Assessment	Section 6.2
Standard	Hazards and risks	No	General	Assessment Guideline: Multi-Level Risk Assessment (Department of Planning and Infrastructure, 2011) Guidelines for the Assessment and Management of Groundwater Contamination (NSW Environment Protection Authority 2007) Planning For Bushfire Protection (NSW Rural Fire Service 2019)	Section 6.4
Standard	Aboriginal cultural heritage	Yes	General	Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in New South Wales (Office of Environment and Heritage 2011) Aboriginal Cultural Heritage Consultation Requirements for Proponents (Department of Environment, Climate Change and Water 2010)	Section 6.4.3
Standard	Social	Yes	General	Social Impact Assessment Guideline (Department of Planning and Environment February 2023)	Section 6.6
Standard	Land use and soil	No	General	N/A	Section 6.7
Other issues					
Standard	Historic heritage	No	General	Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch of the Department of Planning 2009)	Section 6.8
Standard	Property	No	General	Land Use Conflict Risk Assessment Guide (Department of Primary Industries 2011)	Section 6.8

Level of assessment	Matter	Cumulative impact assessment?	Engagement	Relevant government plans, policies and guidelines	Scoping report reference
Standard	Air quality and greenhouse gas	No	General	Approved Methods for Modelling and Assessment of Air Pollutants in NSW (2022) Guidance on the Assessment of Dust from Demolition and Construction, Institute of Air Quality Management (IAQM) (2016)	Section 6.8
Standard	Contamination	No	General	National Environment Protection (Assessment of Site contamination) Measure (National Environment Protection Council 2011) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (Environment Protection Authority 2015)	Section 6.8
Standard	Waste	No	General	Waste Classification Guidelines (Environment Protection Authority 2016) NSW Waste and Sustainable Materials Strategy 2041 (Environment Protection Authority 2022)	Section 6.8
Standard	Water	No	General	Australian and New Zealand guidelines for fresh and marine water quality (ANZECC & ARMCANZ 2000) Guidelines for Groundwater Protection in Australia Guidelines for Groundwater Documentation for SSD/SSI Projects - Technical guideline	Section 6.8

Appendix B

SIA Scoping Worksheet

Social Impact Assessment (SIA) Worksheet

Project name: McCullys Gap BESS

Date: 14/03/25

CATEGORIES OF SOCIAL IMPACTS	POTENTIAL IMPACTS ON PEOPLE	PREVIOUS INVESTIGATION OF IMPACT	CUMULATIVE IMPACTS	ELEMENTS OF IMPACTS - Based on preliminary investigation					ASSESSMENT LEVEL FOR EACH IMPACT	PROJECT REFINEMENT	MITIGATION / ENHANCEMENT MEASURES				
				Will the project activity (without mitigation or enhancement) cause a material social impact in terms of its characteristics? <small>You can also consider the various magnitudes of these characteristics</small>								Level of assessment for each social impact	What methods and data sources will be used to investigate this impact?		
				extent i.e. number of people potentially affected?	duration of expected impacts? (i.e. construction vs operational phase)	intensity of expected impacts i.e. scale or degree of change?	sensitivity or vulnerability of people potentially affected?	level of concern/interest of people potentially affected?					Secondary data	Primary Data - Consultation	Primary Data - Research
<p>what social impact categories could be affected by the project activities</p> <p>NB. Where there are multiple stakeholder groups affected differently by an impact, or more than one impact from the activity, please add an additional row.</p>	<p>What impacts are likely, and what concerns/aspirations have people expressed about the impact? Summarise how each relevant stakeholder group might experience the impact.</p> <p>Is the impact expected to be positive or negative</p>	<p>Has this impact previously been investigated (on this or other projects)?</p> <p>If "yes - this project," briefly describe the previous investigation. If "yes - other project," identify the other project and investigation</p>	<p>Will this impact combine with others from this project (think about when and where), and/or with impacts from other projects (cumulative)?</p> <p>If yes, identify which other impacts and/or projects</p>	<p>extent i.e. number of people potentially affected?</p>	<p>duration of expected impacts? (i.e. construction vs operational phase)</p>	<p>intensity of expected impacts i.e. scale or degree of change?</p>	<p>sensitivity or vulnerability of people potentially affected?</p>	<p>level of concern/interest of people potentially affected?</p>	<p>Level of assessment for each social impact</p>	<p>What methods and data sources will be used to investigate this impact?</p>	<p>Has the project been refined in response to preliminary impact evaluation or stakeholder feedback?</p>	<p>What mitigation / enhancement measures are being considered?</p>			
<p>way of life</p> <p>Project dust, noise and vibration would be generated from construction works, staff movements, haulage of materials and delivery of machinery and equipment, which may have localised impacts to amenity, including visual amenity. This would also include additional heavy and light vehicle movements in the regional road networks surrounding the proposal site.</p> <p>Residents in rural properties located in proximity to the project site may be sensitive to these changes to local amenity and it may disturb the daily activities of some residents. However, because the proposal site is in a sparsely populated area, and landowners will be consulted with throughout proposal planning and delivery, it is expected that these receivers would be adaptable to most changes to amenity.</p>	Negative	Yes - other project	Yes	No	No	Yes	Unknown	No	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research	No	Changes to local amenity during operation such as visual, noise and vibration are expected to be relatively localised and would be assessed in the EIS by studies such as noise and vibration, air quality, and landscape and visual assessments. These studies are expected to recommend appropriate mitigation measures which would assist to manage impacts to local communities way of life. A stakeholder engagement strategy would assist to communicate to local communities how potential impacts would be managed.	
<p>access</p> <p>Increased traffic to the proposal site for the transportation of construction materials and workforce may lead to minor delays for people traveling along local roads, particularly residents utilising the existing road network including Sandy Creek Road which currently has a low level of traffic.</p>	Negative	Yes - other project	Yes	No	No	Yes	Unknown	No	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research	No	Changes to access and connectivity are expected to be relatively localised and would be assessed in the traffic and transport assessment prepared for the project. This study would recommend appropriate mitigation measures which are expected to manage impacts to access for local communities. Notifying residents of construction timeframes and project updates will also allow them to plan around the traffic and access changes.	
<p>livelihoods</p> <p>The construction of the proposal may require a number of non-resident workers to be accommodated in existing short-term accommodation located in the local and regional study area. This increased demand for short-term accommodation may lead to reduced accommodation options and availability for tourists and visitors to the area.</p>	Negative	Yes - other project	Yes	No	No	No	Unknown	No	Minor assessment of the impact	Required	Limited - if required (e.g. local council)	Not required	No	Changes to the demand and availability of accommodation would be assessed in the social impact assessment at a high level. Workforce accommodation strategies will be addressed as part of the EIS.	
<p>livelihoods</p> <p>There may be a small number of local employment opportunities associated with the construction of the project. Increased demand for skilled and unskilled workforce during construction of the project may lead to increased temporary employment opportunities for local and regional residents. There is potential for a small number of local and regional businesses and accommodation providers to benefit from procurement opportunities during construction. Some local businesses may also benefit from construction workers spending wages, such as food or beverage outlets in nearby townships as well as accommodation providers for the construction workforce (depending on workforce accommodation arrangements). This is most likely to occur in areas where the non-resident workforce would be accommodated, such as Muswellbrook or Aberdeen.</p> <p>Some business owners are expected to have a high to moderate level of interest in procurement / increased patronage.</p>	Positive	Yes - other project	Yes	No	No	Yes	Unknown	Unknown	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Impact will not be assessed in other studies, and will be assessed at a high level in an SIA if required. Local communities may be interested in local employment opportunities.	
<p>community</p> <p>The project would involve permanent and temporary land use requirements which may result in social impacts that would start to occur in the pre-construction phase and continue through to operation. Permanent land uses would include the operation and maintenance of the BESS. Residents of nearby rural-residential properties located in close proximity to the BESS may be concerned about the change in rural character.</p>	Negative	Yes - other project	Yes	No	Yes	Unknown	Unknown	Yes	Detailed assessment of the impact	Required	Broad consultation	Targeted research	No	Targeted community consultation would lead to better understanding of community concerns and values. This could help formulate potential mitigation measures. A stakeholder engagement strategy would also assist to communicate to local communities how potential impacts would be managed.	
<p>way of life</p> <p>There would be permanent visual changes from some viewpoints of the BESS and transmission infrastructure, which would alter views from some properties close to the proposal site and from Sandy Creek Road.</p> <p>Views of the BESS and changes to the character of the area may reduce some resident's enjoyment of their properties and surroundings. However most people are expected to adapt to these changes over time.</p>	Negative	Yes - other project	Yes	No	Yes	No	Unknown	No	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research	No	Changes to local amenity during operation such as visual, noise and vibration and air quality changes are expected to be relatively localised and would be assessed in the EIS by studies such as noise and vibration, air quality, and landscape and visual assessments. These studies are expected to recommend appropriate mitigation measures which would assist to manage impacts to local communities way of life. A stakeholder engagement strategy would assist to communicate to local communities how potential impacts would be managed.	
<p>way of life</p> <p>During operation of the BESS, there will be noise and vibration generating activities from battery infrastructure. These activities include the cooling and fan systems which support battery operation, which may result in changes to amenity for residents of nearby properties.</p> <p>There are a number of residential properties located within close proximity to the project site which may experience changes to amenity due to operational noise. Reduced amenity may result in people choosing to spend less time outdoors in backyards or on balconies or closing windows while indoors due to increased noise levels.</p>	Negative	Yes - other project	Yes	No	Yes	No	Unknown	No	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research	No	Changes to local amenity during operation such as visual, noise and vibration and air quality changes are expected to be relatively localised and would be assessed in the EIS by studies such as noise and vibration, air quality, and landscape and visual assessments. These studies are expected to recommend appropriate mitigation measures which would assist to manage impacts to local communities way of life. A stakeholder engagement strategy would assist to communicate to local communities how potential impacts would be managed.	
<p>health and wellbeing</p> <p>There may be perceived community concerns around the safety of battery storage technology, particularly in relation to bushfire risk. This could result in additional stress and discomfort of nearby residents as well as community resistance to the development.</p>	Negative	Yes - other project	No	No	Yes	No	Unknown	No	Standard assessment of the impact	Required	Targeted consultation	Potentially targeted research	No	Targeted community consultation would lead to better understanding of community concerns. This could help formulate potential mitigation measures. A stakeholder engagement strategy would also assist to communicate to local communities how potential impacts would be managed.	

Appendix C

**Cumulative impact assessment scoping
summary**

Table C.1 Cumulative impact assessment scoping summary

Future project	Approximate distance to project	Project status / indicative timing/overlap	Potential overlap between impact of project on assessment matter and impact of other project on the same assessment matter							
			Relevant assessment matters							
			Traffic	Biodiversity	Social	Amenity	Hazard and Risk	Aboriginal Cultural Heritage	Land Use and Soil	
Upper Hunter Battery Energy Storage System (SSD-61707209)	6.4 kilometres northwest	Preparing EIS 24-month construction period, therefore construction periods may overlap.	Access is via Campbell St Aberdeen	Biodiversity impacts nearby project site. Potential for cumulative impacts on biodiversity values.	Cumulative social impacts given cluster of projects	Potential for cumulative noise and air quality emissions	Cumulative hazard and risk impacts given cluster of projects	Potential for cumulative impacts if multiple sites identified in assessment. Potential for cumulative impacts on cultural values.	Potential cumulative impact on the current agricultural production value	
Muswellbrook Pumped Hydro Energy Storage (SSI-76014961)	Immediately south	Preparing EIS Declared CSSI in June 2024 Construction of the project is anticipated to commence in early 2026 and be completed by the end of 2029, therefore construction periods may overlap.	Access via Sandy Creek Road	Biodiversity impacts directly adjoining site Potential for cumulative impacts on biodiversity values.	Cumulative social impacts given cluster of projects.	Potential for cumulative noise and air quality emissions given the cluster of projects	Cumulative hazard and risk impacts given cluster of projects	Potential for cumulative impacts if multiple sites identified in assessment. Potential for cumulative impacts on cultural values.	Potential cumulative impact on the current agricultural production value	
Muswellbrook Solar Farm (SSD-46543209)	3.6 kilometres south	Currently in recommendation stage and has been referred to the Independent Planning Commission 31-month construction period and expected to commence in the third quarter of 2024, therefore the construction periods may overlap.	Northern Access Via Sandy Creek Road	Biodiversity impacts nearby project site Potential for cumulative impacts on biodiversity values.	Cumulative social impacts given cluster of projects	Potential for cumulative noise and air quality emissions given the cluster of projects	Cumulative hazard and risk impacts given cluster of projects	Potential for cumulative impacts if multiple sites identified in assessment Potential for cumulative impacts on cultural values.	Potential cumulative impact on the current agricultural production value	

Future project	Approximate distance to project	Project status / indicative timing/overlap	Potential overlap between impact of project on assessment matter and impact of other project on the same assessment matter							
			Relevant assessment matters							
			Traffic	Biodiversity	Social	Amenity	Hazard and Risk	Aboriginal Cultural Heritage	Land Use and Soil	
Muswellbrook Battery Energy Storage System (SSD-29704663)	3.9 kilometres southwest	Approved in June 2023 The development phase of the project is expected to complete in early 2025. Construction is expected to take up to 18 months. The construction periods may overlap.	Access via Sandy Creek Road	Biodiversity impacts nearby project site Potential for cumulative impacts on biodiversity values.	Cumulative social impacts given cluster of projects	Potential for cumulative noise and air quality emissions given the cluster of projects	Cumulative hazard and risk impacts given cluster of projects	Potential for cumulative impacts if multiple sites identified in assessment Potential for cumulative impacts on cultural values.	Potential cumulative impact on the current agricultural production value	
Queensland – Hunter Gas Pipeline (MP06_0286)	Directly northeast	Approved in 2009, currently undertaking field surveys to refine and confirm pipeline route. Timing is unclear, the construction periods may overlap.	Access via Sandy Creek Road and Wells Gully Road	Biodiversity impacts nearby project site Potential for cumulative impacts on biodiversity values.	Cumulative social impacts given cluster of projects	Potential for cumulative noise and air quality emissions given the cluster of projects	Cumulative hazard and risk impacts given cluster of projects and nature of gas pipeline	Potential for cumulative impacts if multiple sites identified in assessment Potential for cumulative impacts on cultural values.	Potential cumulative impact on the current agricultural production value	

Key: Detailed Assessment Standard Assessment



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