Appendix J

Land Use Conflict Risk Assessment

Prepared for
Neoen Australia Pty Ltd
ABN: 57160905706

AECOM

Great Western Battery

Land Use Conflict Risk Assessment

08-Dec-2020

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Delivering a better world

Great Western Battery

Land Use Conflict Risk Assessment

Client: Neoen Australia Pty Ltd

ABN: - 57 160 905 706

Prepared by

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Contents

1.0 Introduction

1.1 Background

Neoen Australia Pty Ltd (Neoen) is seeking development consent to construct, operate and maintain a large-scale Battery Energy Storage System (BESS) of approximately 500 megawatts (MW) and approximately 1000 megawatt-hour (MWh) at 173 Brays Lane, Wallerawang, NSW (the Site), as well as a new transmission line that would connect the BESS to the existing Transgrid 330 kilovolt (kV) substation at Wallerawang (the Project). Together the area where the BESS and the transmission line would be constructed is referred to as the Project Area.

The Project is located in the Central Tablelands of NSW, in the suburb of Wallerawang, about 110 km west of Sydney. Wallerawang is located in the Lithgow City Local Government Area (LGA). The regional context of the Project Area is shown on **Figure 1-1**.

The Project is considered State Significant Development (SSD) under the *Environmental Planning and Assessment Act 1979* (EP&A Act) as it satisfies the requirements of Clause 8 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD SEPP).

AECOM Australia Pty Ltd (AECOM) was commissioned by Neoen to prepare a Land Use Conflict Risk Assessment (LUCRA) to support the Environmental Impact Statement (EIS), prepared as part of the State Significant Development Application (SSDA) for the Project.

1.2 Purpose and scope of assessment

This LUCRA has been prepared in accordance with the Secretary's Environmental Assessment Requirements (SEARs) for the Project (refer to **Section 1.3**).

This LUCRA has been prepared with reference to *Living and Working in Rural Areas – A handbook for managing land use conflict issues on the NSW North Coast* (Learmonth et al. 2007) ('the Handbook), as well the *Land Use Conflict Risk Assessment Guide* (NSW Department of Primary Industries, 2011) ('The Guide').

The purpose of a LUCRA is to identify land use compatibility and potential conflict between neighbouring land uses, and the identification of conflict avoidance or mitigation measures.

This LUCRA aims to:

- Identify and address potential land use conflict issues and risk of occurrence that may occur as a result of the Project to minimise the likelihood that a dispute arises
- Assess the effect of the Project on neighbouring land uses
- Understand potential land use conflict in detail to inform and complement the Project design, development controls and buffer requirements
- Highlight or recommend strategies to help minimise the potential for land use conflicts to occur and contribute to the negotiation, implementation and evaluation of strategies to avoid land use conflicts.

Figure 1-1
Regional context of the Project Location

Legend

- Site boundary
- TransGrid Wallerawang 330 kV Substation
- The Project Area
- State Forest
- NPWS Reserve
- Watercourse
- Primary road

N

0 1 2 km

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1.3 Secretary's Environmental Assessment Requirements (SEARs)

The Secretary of the NSW Department of Planning, Industry and Environment (DPIE) (now referred to as NSW Department of Planning and Environment (DPE)) issued the SEARs for the Project on 4 February 2021. **Table 1-1** sets out the SEARs relevant to this LUCRA and where these requirements have been addressed in this report.

Table 1-1 SEARs – Relevant to this LUCRA

Relevant SEARs	
Land, including:	**Where addressed**
An assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including: • a consideration of agricultural land, flood prone land, Crown lands, mining, quarries, mineral or petroleum rights; • a soil survey to determine the soil characteristics and consider the potential for erosion to occur; and • a cumulative impact assessment of nearby developments	• An assessment of the potential impacts to agricultural land is discussed in **Chapter 15 Land use** • A consideration of flooding is provided in the Flood Report for the Project which can be found as an annexure to **Appendix F Water Cycle Management Study** • No crown lands, mining, quarries, mineral or petroleum rights occur within the Project Area • A soil survey to determine the soil characteristics and consider the potential for erosion to occur is discussed in **Chapter 12 Geology, soils, contamination and groundwater** • Cumulative impacts are discussed in **Chapter 18 Cumulative impacts.**
An assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including: • consideration of the zoning provisions applying to the land, including subdivision; • completion of a Land Use Conflict Risk Assessment in accordance with the Department of Industry's Land Use Conflict Risk Assessment Guide; • assessment of impact on agricultural resources and agricultural production on the site and in the surrounding lands.	• An assessment of the potential impacts with existing land uses, zoning provisions and proposed subdivsion is covered in **Chapter 15 Land use** • A Land Use Conflict Risk Assessment in accordance with the Department of Industry's Land Use Conflict Risk Assessment Guide is provided in **Section 6.0** • An assessment of impacts on agricultural resources and agricultural production on the site and in the surrounding lands is discussed in **Chapter 15 Land use**.

1.4 Report structure

This report contains seven sections. This section: **Section 1.0**; provides background information on the Project and the scope and purpose of this LUCRA. The remainder of the report is structured as follows:

- **Section 2.0** provides an overview of the Project description and the Project Area
- **Section 3.0** provides an overview of the assessment methodology
- **Section 4.0** describes the existing environment of the Project Area and surrounds using a combination of field-based observations and data collected as part of a detailed desktop investigation
- **Section 5.0** describes the proposed landuse changes as a result of the Project and reviews the potential for changes to result in landuse conflicts within the Project Area and surrounds
- **Section 6.0** provides a detailed landuse conflict risk assessment for the Project

- **Section 7.0** details management measures for potential landuse conflicts and provides a conclusion to the findings of this LUCRA
- **Section 8.0** lists the references cited in-text.

2.0 Project description

2.1 Overview

As described above, the Project would comprise the construction and operation of a large-scale BESS, as well as a new underground transmission line that would connect the BESS to the existing Transgrid 330 kV substation at Wallerawang.

The new transmission line would be constructed using a combination of an underboring method known as horizontal directional drilling (HDD) and open trenching. HDD would be used where required to avoid areas of sensitivity, including Aboriginal heritage, biodiversity, Pipers Flat Creek, and rail crossings. The remainder would be constructed using an open trenching methodology. The vast majority of the new transmission line would be installed underground. The exception to this would comprise a small portion located within the Transgrid Wallerawang 330kV substation, which would be required to be installed above ground in order to connect to the substation.

Key components of the Project are shown on **Figure 2-1** and would include:

- Site establishment, including installation of fencing, environmental controls, grading, modification of dams, and other civil works
- Establishment of a new driveway and access road (up to 10 m wide), located at the south-western boundary of the Site, providing access to the Site from Brays Lane
- Establishment of an internal access road and construction of a permanent car parking area with spaces for up to eight light vehicles
- Construction of two small (about 4 m x 12 m) single-story permanent operations and management (O&M) buildings, including staff amenities
- Construction of new switch rooms and control room
- Construction of new 330/33 kV substation on the Site (including outdoor switchgear (up to 330 kV) and transformers)
- A 10 m buffer (or Asset Protection Zone (APZ)) would be established around all battery storage infrastructure. This buffer area would comprise non-combustible ground cover with no vegetation present
- Construction of stormwater controls (including swales and bio retention basins)
- Installation of two 45 kL metal water tanks
- Provision of fire alert equipment
- A 400 kilovolt ampere (kVA) diesel generator with a 24 hour tank capacity would be stored at the Site (at one of the O&M buildings) for use during operation or use in case of an emergency
- Construction of lighting and installation of security devices around the perimeter of the BESS compound, including cyclone mesh security fencing about 2.7 m high
- Construction of 10 m high noise walls around all battery and transformer elements
- Establishment of landscaping and screening vegetation
- Upgrades to the Wallerawang 330 kV substation switchyard
- Connection to the existing potable water supply and the 11kV transmission line in Brays Lane.

Following completion of the construction activities, Neoen are proposing to subdivide Lot 4 DP 751651 to separate the existing rural residential use of the Lot from the proposed BESS. Following subdivision of the Lot, the area occupied by the BESS would be about 7 hectares (ha) in size and would form a new ‘Lot 5 for the deposited plan. The remaining 9.5 ha would be returned to the existing property owner for rural residential use and would remain as Lot 4. The proposed subdivision is shown on **Figure 2-2**.

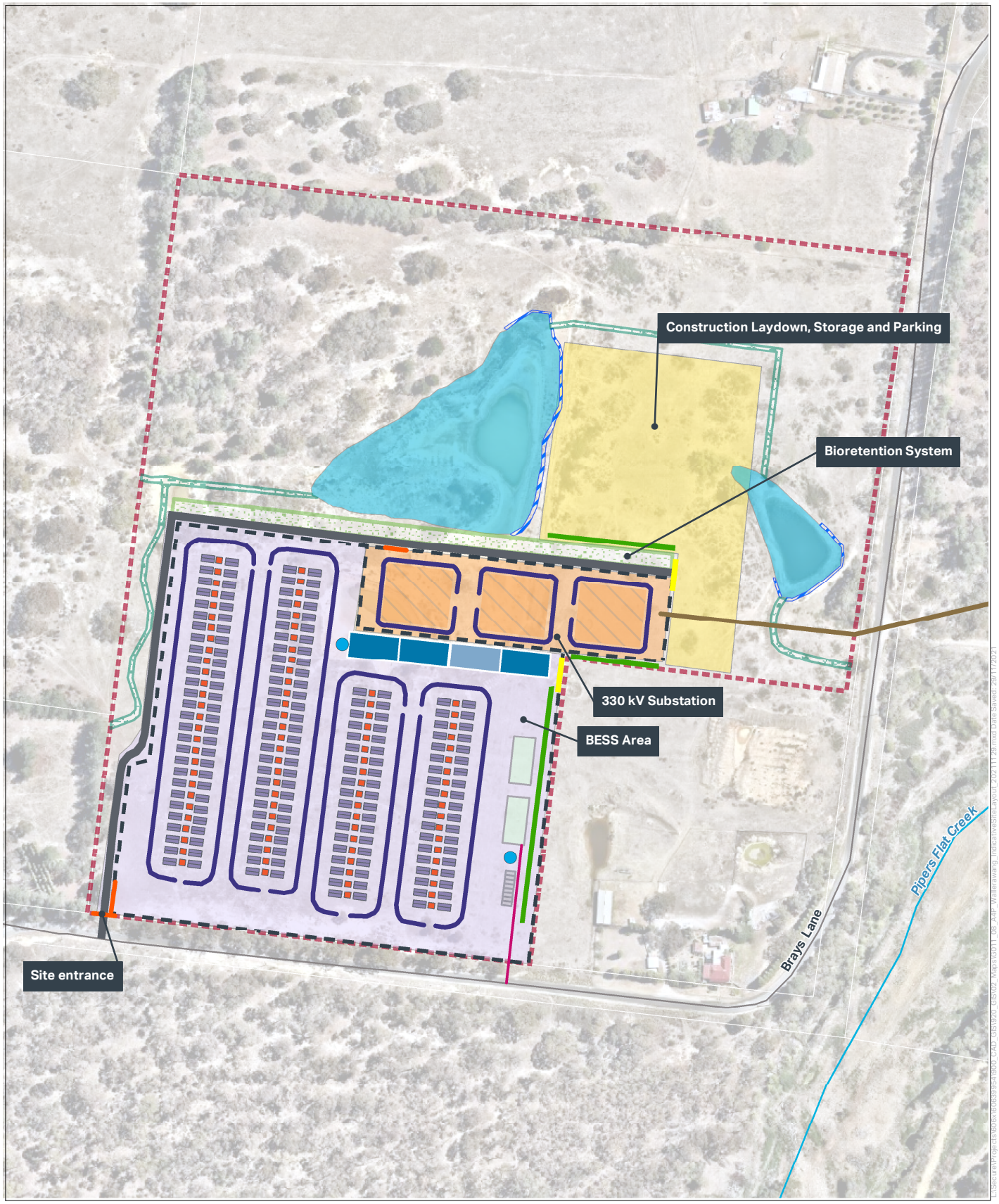

Figure 2-1

Indicative layout of the Site

- The Site
- Substation
- Internal access road
- Noise wall
- Access Gate
- Security Fencing
- Water Connection Point
- Transmission Line Alignment
- Emergency Exit
- Watercourse
- Local road
- Water Tank
- Large Transformers
- Battery and Inverter
- Transformers
- Bioretention System
- Dam Walls
- Swales
- 330 kV Substation
- Control Room
- Switch Rooms
- Landscape Planting
- O&M Building
- Carpark
- Approx Extent Of Dam Modification
- Construction Laydown, Storage And Parking
- BESS Area

N

0 30 60 m

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Source: Imagery © Nearmap, 2020.

Figure 2-2
Subdivision of the Existing Lot

Legend
- Lot 4
- Lot 5
- Lot Boundary

N
0 30 60 m

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Source: Imagery © Nearmap, 2020.

2.2 Construction

Construction of the Project will take approximately 12 months to complete. Construction works for the Project would involve:

- Enabling works and prefabrication
- Civil, structural, mechanical and electrical works
- Installation of transmission line
- Commissioning
- Finishes and demobilisation.

A construction laydown, stockpiling and parking area would also be provided on the Site.

Up to 250 construction workers would be required at the busiest peak of construction for a period of about two months. Outside of this peak time, an average of about 50 workers a day would be required. These workers would be preferentially sourced locally where appropriate skill sets are economically available.

The construction activities would be primarily carried out during standard construction hours, as defined by the NSW Environment Protection Authority's (EPA) Draft Construction Noise Guideline (2020), being:

- 7am to 6pm, Monday to Friday
- 8am to 1pm, Saturdays
- No work on Sundays or public holidays.

While it is anticipated that work would primarily take place during standard construction hours, some works may be required to be undertaken outside of standard hours. Where this would be required, this would occur Monday to Saturday, 6am to 6pm. Where work outside of standard hours may be required, the noisiest works would be scheduled to occur during standard hours listed above

On average, construction of the Project would require up to 50 light vehicles, and 20 heavy vehicles per day. During the two months that would comprise the peak construction period, up to 140 vehicle movements a day would be required.

Oversized and over mass vehicles are expected to be required to deliver large pre-fabricated elements for the construction of the Project. This is likely to include eight (8) oversized vehicles to transport the transformers to the Site.

2.3 Operation

The BESS is expected to operate on a 24 hour per day, seven days per week basis and would undergo approximately one charge and discharge cycle per day, averaging 365 full cycles per year.

The Project has an initial design life of 20 years with components anticipated to be replaced or upgraded, as required with the potential to extend the life beyond 20 years.

During operation, the Project would be an unmanned facility that is managed remotely. Between five to six employees would be required to attend the Site periodically for maintenance activities.

Areas within the Site not required for the operation of the BESS would be rehabilitated to as close to its pre development condition as practical. This remaining land would be fenced with stock fencing or similar. The BESS itself would be surrounded by security fencing and all access to the BESS would be controlled through a secure access point off Brays Lane.

3.0 Methodology

The methodology used to prepare this LUCRA is in accordance with the *Land Use Conflict Risk Assessment Guide* (NSW Department of Primary Industries, 2011) ('the Guide'). As such, the following steps have been employed:

Step one: Information gathering – information was gathered about the existing environment, including surrounding land uses and the environmental characteristics of the Project Area. Following this, the proposed land use changes and activities associated with the Project were identified. Information used to inform this step included:

- Observations noted during field investigations undertaken on 4 March 2021 and 28 October 2021
- Review of available historic and present-day aerial photography
- Publicly available spatial data including but not limited to; landuse zone mapping, vegetation mapping, soil mapping, hydrology maps and topographic maps
- Review of relevant publicly available reports

As part of this step, a screening of environmental aspects was undertaken to identify those environmental considerations that, if affected by the Project, may lead to landuse conflicts. This screening considered the results of the scoping assessment that has been carried out for the Project and is provided in **Chapter 7 Environmental scoping and assessment** of the EIS. As a result, the following environmental considerations have been considered with regards to the Project's likely compatibility with surrounding land uses:

- Aboriginal heritage
- Biodiversity
- Landscape and visual amenity
- Surface water and flooding
- Geology, soils, groundwater and contamination.

Step two: Risk level evaluation – each proposed activity associated with the Project was reviewed and potential land use conflict level was assessed. The process used to undertake this exercise is described in detail in **Section 6.0**.

Step three: Identification of risk mitigation strategies – mitigation strategies are identified which assist in lowering the risk of potential conflict.

Step four: record results – key issues, risk level and recommended management measures have been recorded and summarised within this LUCRA.

4.0 Information gathering

4.1 Regional context of the Project location

The Project is located in the Central Tablelands of NSW, in the suburb of Wallerawang, about 110 kilometres west of Sydney. Wallerawang is located in the Lithgow City Local Government Area (LGA). The Project is located in an area which is characterised by its dominant land uses of agriculture, industry, infrastructure and mining.

The township of Wallerawang comprises of low to medium density housing, with associated infrastructure including schools, sporting fields, places of worship, community centres and clubs, shops, etc. At the time of the 2016 census, Wallerawang had a population of about 1,980 people (ABS, 2016). The Site is located about 1.4 kilometres north of the centre of the township of Wallerawang (measured from the Wallerawang Post Office).

In contrast to these rural, residential and agricultural land uses, a number of industrial and extractive industry land uses are present in the area surrounding the Site including Wallerawang power station, Springvale colliery, Lidsdale coal loading facility and Wallerawang ash repository.

Wallerawang power station is located immediately adjacent to the proposed new transmission line and the Transgrid Wallerawang 330 kV substation. Wallerawang power station was a large coal-powered electrical power station. The power station has been decommissioned although it still comprises of two 500 mega-watt steam turbine generators. The large exhaust stacks at the power station have not been demolished and can be viewed from the Site. Given the presence of this decommissioned power station, electricity infrastructure such as large overhead wire gantry's and towers, and numerous substations can also be found within the vicinity of the Project, adding to the industrial and infrastructure character of the area.

Lidsdale coal loading facility (Lidsdale siding) is located to the south of the Site (about 400 m) and processes coal from Springvale colliery, which is located about 3.5 kilometres east of the Site and immediately adjacent south west of the proposed transmission line.

A series of large, aerial conveyer belts and large above-ground water conveying pipes cross the landscape, providing connections between (listed from west to east) the Mount Piper Power Station, Pinedale Mine, Lidsdale siding, and Springvale colliery, as shown on **Figure 4-1**.

Figure 4-1 Large conveyer belt crossing Brays Lane (left) and large pipes crossing Skelly Road (right). (Source: Google Street View, 2021).

Wallerawang ash repository is located about two kilometres east of the Site and continues to accept ash and demolition waste from the retired Wallerawang power station as it undergoes dismantling.

Ben Bullen State Forest is located to the east of the Site and Lidsdale State Forest is located to the south. Both are managed by the Forestry Corporation of NSW and are accessible to the public for hiking and four-wheel driving; however, their primary function is as a forestry resource.

Marrangaroo National Park is located about 3.5 kilometres to the south of the Site and is managed by the NSW National Parks and Wildlife Service.

Pipers Flat Creek is the closest watercourse to the Site, located about 50 m to the east. Pipers Flat Creek is a tributary of Cox River. The Cox River is located about two kilometres north of the Site. Other mapped and named waterways in the vicinity of the Project include:

- Lake Wallace (part of Cox River and formerly used to supply water to Wallerawang Power Station)
- Adams Creek. Wallerawang is located on the Main Western railway line at the junction of the Gwabegar line. Wallerawang train station is located about 1.2 kilometres south of the Site.

4.2 The Project Area

The area that would be required to construct the Project (including the BESS, the proposed transmission line, and part of the Transgrid Wallerawang 330 kV substation) is collectively referred to as the Project Area and is shown on **Figure 4-2**.

The Site is located at 173 Brays Lane, Wallerawang NSW, 2854 (Lot 4 Deposited Plan (DP) 751651). The existing residential land use and land immediately around it in the south eastern part of the Lot is not considered as part of the Site. The area that would be required to construct the BESS would only occupy a portion of the total area of the Site, as shown on **Figure 2-1**.

Lot 4 is privately owned and is currently occupied by a residential property and agricultural buildings at the south eastern corner with marginal agricultural land making up the remainder of the land. Beyond the residential property, the majority of the Lot is used for occasional horse grazing. The majority of vegetation consists of pasture grasses. A small area of mature vegetation is located in the north western corner of the Lot. The Lot is currently accessed through an entrance close to the south of the residential property.

The Site is relatively flat, and slopes gently from west to east, from a level of approximately 908 m Australian Height Datum (AHD) to approximately 898 m AHD with a constant slope gradient between these points. A series of small man-made dams are located on the Site. The dams are fed by two ephemeral drainage lines that enter the Site on the western boundary which flow east during periods of high rainfall before entering the largest dam onsite and becoming one drainage line. This drainage line passes through one more dam before leaving the Site along the southern part of the eastern boundary before draining to Pipers Flat Creek offsite.

The existing land use at the Lot can be described as rural residential. The rural characteristics of the Lot, as described above, include open cleared pastures, agricultural buildings, small dams and associated drainage lines. The residence at 173 Brays Lane (and its immediately adjacent neighbours) consists of very low-density single dwellings or homesteads, which are often several hundred metres from the nearest neighbour. Excluding that of 173 Brays Lane, properties in the immediate vicinity of the Site are often setback some distance from the road. Some nearby properties are used for grazing activities.

The Site can be accessed via the Castlereagh Highway, which feeds traffic directly onto Brays Lane. The Site is located about 1.5 kilometres from the intersection of the Castlereagh Highway and Brays Lane. From this intersection to the bridge crossing of Cox's River, Brays Lane is a well maintained, wide, paved, dual lane road. The bridge crossing is one-lane wide. Between the bridge and the Site, Brays Lane is a sealed, narrow but bi-directional road. Brays Lane borders the Site to the south and east.

Alternative access to the Site is provided via the Great Western Highway, which is located about 3.5 km south of the Site. From the Great Western Highway, vehicles travelling to the Site would turn onto

Barton Road, heading north towards the township of Wallerawang before bearing left onto Pipers Flat Road, then turning right onto Brays Lane. The Site is about 1.3 km directly north of the Pipers Flat Road / Brays Lane intersection. This stretch of Brays Lane includes two small culvert crossings of Pipers Flat Creek and of an unnamed creek. Between the Pipers Flat Road and the Site, Brays Lane is a sealed, narrow but bi-directional road.

The Transgrid Wallerawang 330 kV substation is about 1.25 km south east of the Site. The substation is located at Lot 91 of DP 1043967. The substation is located on freehold land owned by Electricity Transmission Ministerial Holding Corporation (ETMHC) and operated by Transgrid.

The new transmission line for the Project would connect the Site to the Transgrid Wallerawang 330 kV substation. The new transmission line would traverse:

- Lot 8 and Lot 9 DP 252472
- Lot 2 DP 108089
- Lot 1 DP 108089
- Lot 10 DP 1168824
- Lot 1115 DP 1204803
- Lot 91 DP 1043967.

The proposed transmission line would exit from the eastern boundary of the Site, crossing Brays Lane and entering into a vegetated area to the east of Brays Lane. This vegetated area comprises mostly mature native vegetation with exotic weeds scattered throughout. The vegetated area is also criss-crossed with informal dirt roads and walking tracks. Site visits to this area indicate it is used at times for illegal dumping of large household goods (such as mattresses and disused furniture) and also for dog walking.

From the vegetated area, the proposed transmission line would travel in an east north easterly direction, before passing under Pipers Flat Creek and into the existing rail corridor where it would travel south east along the rail corridor (including its crossing of Main Street) to connect to the north western portion of the Transgrid Wallerawang 330 kV substation.

The proposed transmission line would also pass under the existing coal conveyor belt that transports coal between the nearby Springvale Colliery, Mt Piper Power Station Springdale Coal Services, and Lidsdale Siding (coal loader).

The proposed transmission line would be located on land that is currently owned and / or managed privately, by Transport for NSW, Lithgow City Council, Transgrid, and John Holland Rail.

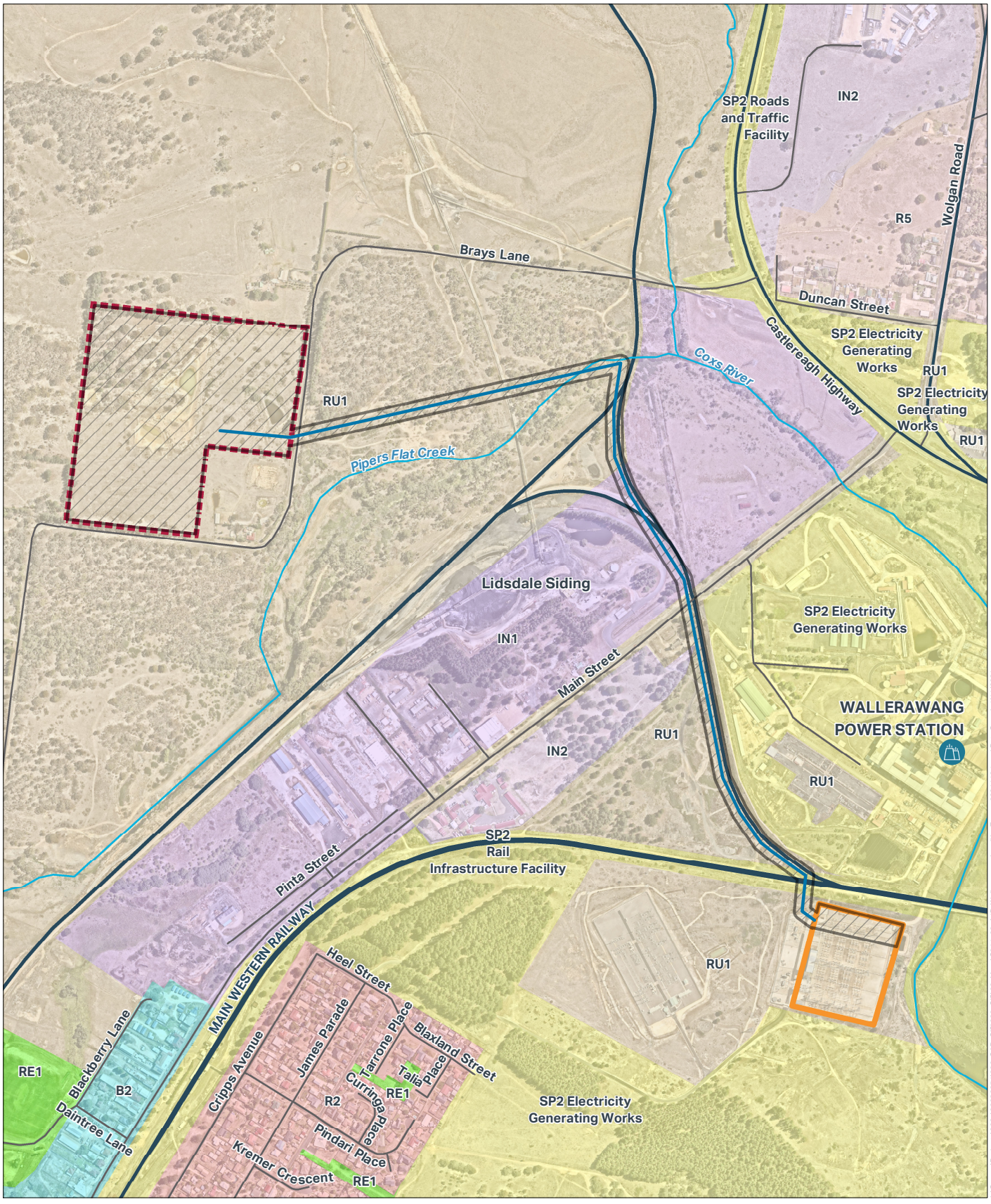

Figure 4-2
Landuse zones (Lithgow LEP 2014)

N 0 100 200 m

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Legend

- The Site
- Transgrid Wallerawang 330kV Substation
- The Project Area
- New Transmission Line
- Watercourse
- Primary Road
- Local Road
- Railway

LEP Land Zoning

- B2 Local Centre
- IN1 General Industrial
- IN2 Light Industrial
- R2 Low Density Residential
- R5 Large Lot Residential
- RE1 Public Recreation
- RU1 Primary Production
- SP2 Infrastructure

Source: Imagery © Nearmap, 2020.

4.3 Project Area history

The traditional custodians of the area west of the Blue Mountains, which includes Wallerawang, are the Wiradjuri Aboriginal Australians. The Wiradjuri people were a hunter-gatherer society, made up of small clans or family groups whose movements followed seasonal food gathering and ritual patterns (Wiradjuri Condobolin Corporation, 2021). The boundary of the Wiradjuri Nation extends from Coonabarabran in the north, along the Great Dividing Range to the Murray River in the south (Murray Lower Darling Rivers Indigenous Nations 2021).

Post-European colonisation of Australia, Wallerawang served as a large pastoral estate from around 1824. In the late 1820s, it became a key stop over for people travelling from Sydney to Mudgee. The town of Wallerawang was built up around Wallerawang railway station, which was established around 1870, continuing operation until 1989. In 1957, a thermal coal power station was established and operated until 2014, where the closure of the power station was announced by Energy Australia.

Based on a review of available historic aerial photography, the Site has undergone significant vegetation removal and ground disturbance during its ongoing use for occasional grazing and residential purposes. As a result, the majority of vegetation on the Site consists of pasture grasses and a small area of mature vegetation in located in the north western most corner of the Site.

4.4 Landuse zoning

4.4.1 Zoning

The *Lithgow Council Local Environment Plan 2014* (Lithgow LEP) governs land use within the Lithgow Local Government Area (LGA). The landuse zones that occur within the Project Area are shown on **Figure 4-2**.

The Site in its entirety and a small portion of the proposed transmission line corridor would be located on land zoned as: RU1 Primary production. The landuse objectives of RU1 Primary production, as described in the Lithgow LEP aim to:

- Encourage sustainable primary industry production by maintaining and enhancing the natural resource base
- Encourage diversity in primary industry enterprises and systems appropriate for the area
- Minimise the fragmentation and alienation of resource lands
- Minimise conflict between land uses within this zone and land uses within adjoining zones
- Minimise the environmental and visual impact of development on the rural landscape
- Provide for recreational and tourist development and activities of an appropriate type and scale that do not detract from the economic resource, environmental or conservation value of the land.
- Maintain or improve the water quality of receiving water catchments.

The transmission line component of the Project would also cross the IN1 General Industrial, and SP2 Infrastructure (Rail Infrastructure Facility) land use zones. The land use objectives of IN1 General Industrial, as described in the Lithgow LEP aim to:

- Provide a wide range of industrial and warehouse land uses
- Encourage employment opportunities
- Minimise any adverse effect of industry on other land uses
- Support and protect industrial land for industrial uses
- Maintain or improve the water quality of receiving water catchments.

The land use objectives of SP2 Infrastructure, as described in the Lithgow LEP aim to:

- Provide for infrastructure and related uses

- Prevent development that is not compatible with or that may detract from the provision of infrastructure
- Maintain or improve the water quality of receiving water catchments.

The Project is defined as '*electricity generating works'* under the under the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP) and Lithgow LEP. Electricity generating works are permitted with consent in the RU1 Primary Production, IN1 General Industrial and SP2 Infrastructure land use zone under clause 34 of the ISEPP.

5.0 Review of proposed landuse change

5.1 Proposed land use

The Project would result in the introduction of additional land uses at the Lot and on the Site. The existing primary land use of the Lot is agricultural/grazing land. The Project would maintain this use on part of the Lot and introduce an electricity storage land use to the south western part of the Lot. The main activities associated with this change are outlined in **Section 2.0**.

It is not proposed to change the land use zone of the proposed BESS, as the Project is permissible under the existing land use zoning (RU1). Permissibility regarding the Project including the proposed subdivision is discussed in **Chapter 5 Strategic and statutory context** of the EIS.

5.2 Subdivision of Lot 4 DP 751651

Following construction of the BESS, the Project involves the subdivision of Lot 4 DP 751651 to separate the existing rural residential use and remaining pastoral land of the Lot from the proposed BESS. After construction, the subdivision would aim to return as much land back to the landowner and leave only the essential operational BESS infrastructure under a new Lot (referred to as Lot 5).

Following subdivision, the area occupied by the BESS would be about 7 hectares (ha) in size and is proposed to form Lot 5 of DP 751651. The remaining approximate 9.5 ha of land would be returned to the existing property owner as Lot 4. The proposed subdivision is shown on **Figure 2-2.**

During operation Lot 5 would be used for the ongoing operation of the BESS and would be land used for the purpose of electricity generating works. Lot 4 would continue to be used for rural residential proposes consistent with current activities.

5.3 Compatibility with surrounding land uses

The development of the Project would change the existing land use within the Site from exclusively rural residential to a mix of rural residential and electricity storage. The introduction of the new land use would introduce new amenity impacts to the land immediately around the Site including increased noise levels and visual impacts, which may affect residential uses close to the Site but would not affect primary production or agricultural land uses. However, a change in noise levels or visual impacts does not mean that land uses are incompatible or that these uses cannot continue.

The proposed transmission line would pass through land currently used for the operation of rail infrastructure, road infrastructure and electricity transmission activities. The vegetated area immediately east of Brays Lane is owned by Transport for NSW and is currently considered to be part of the rail corridor by Transport for NSW and John Holland Rail, who manage the land on behalf of Transport for NSW. The proposed transmission line would be compatible with these land uses.

To understand the compatibility of the Project with surrounding land uses at the Site, it is important to understand the relevant environmental and amenity issues arising from the BESS that have the potential to affect adjacent and nearby land uses.

A review of the existing environment has been conducted against potential impacting land uses related to the Project. The following environmental matters have been considered:

- Landscape and visual amenity
- Aboriginal heritage
- Future land use capability
- Biodiversity
- Surface water and flooding
- Geology, soils, groundwater and contamination
- Surface water, flooding and water use

- Noise and vibration
- Traffic and access
- Waste management.

5.3.1 Landscape and visual amenity

The landscape character of the local area is a mixture of agricultural, residential, industrial, electricity generating, and extractive industry (mining) uses set in a gently undulating topography. This mixed character is reflected in the ad-hoc presence of open cut mines, power stations, coal loading infrastructure (including a vast network of conveyer belts across the landscape), a complex of large transmission gantries and cabling, open rural land, rural residential housing, medium density residential housing, bushland and commercial forestry. The Project would introduce new electricity generating works into this complex, mixed landscape.

The introduction of the Project would be unlikely to have a significant impact on the regional landscape character of the Project Area given the existing mixed uses within the local area, including those that are industrial or electricity infrastructure and generation in nature.

Construction of the Project would temporally result in visual impacts to neighbouring residents who pass the Site or can see it from their properties through the introduction of construction activity, equipment, workers and plant / machinery. This would result in temporary impacts and would be largely mitigated through appropriate controls such as construction hoarding and existing vegetation screening.

The new transmission line would be installed underground, as such any visual impacts during operation are expected to be limited to the BESS and associated built elements (such as fencing, noise walls, buildings, transformers and water tanks) on the Site. During operation, the BESS and associated built elements would be in the viewshed of a relatively small number of residences and road users as shown in **Figure 5-1**. Residential properties with a view of the Site and the Project are limited to three immediate neighbouring homesteads with mature vegetation and screening structures (such as sheds) are present between these properties and the proposed BESS facility. Section 18.2.2 of the EIS provides a series of photographs taken from these viewpoints that demonstrate the extent of existing screening between these receivers and the Site. Section 18.3.3 of the Environmental Impact Statement provides a series of photomontages taken from nearby receptors. The location from which these photomontages have been taken are also shown on **Figure 5-1**.

Vehicle movements on Bray Lane are anticipated to be infrequent, resulting in minimal anticipated visual impacts to road users. The visual sensitivity of the road users is likely to be low due to the temporary, transient nature of the view.

The significance of the visual impacts were assessed as moderate to low for two residences and low for one resident. The visual impact to road users of Brays Lane was assessed as low.

Appropriate mitigation and management measures have been integrated into the Project design to reduce visual impacts and allow the BESS to integrate better within the existing landscape.

Given the mixed character of the local area and the small number of visual receivers likely to be impacted, it is considered that with the implementation of suitable management measures, it is unlikely that the Project would result in significant adverse visual or landscape impacts.

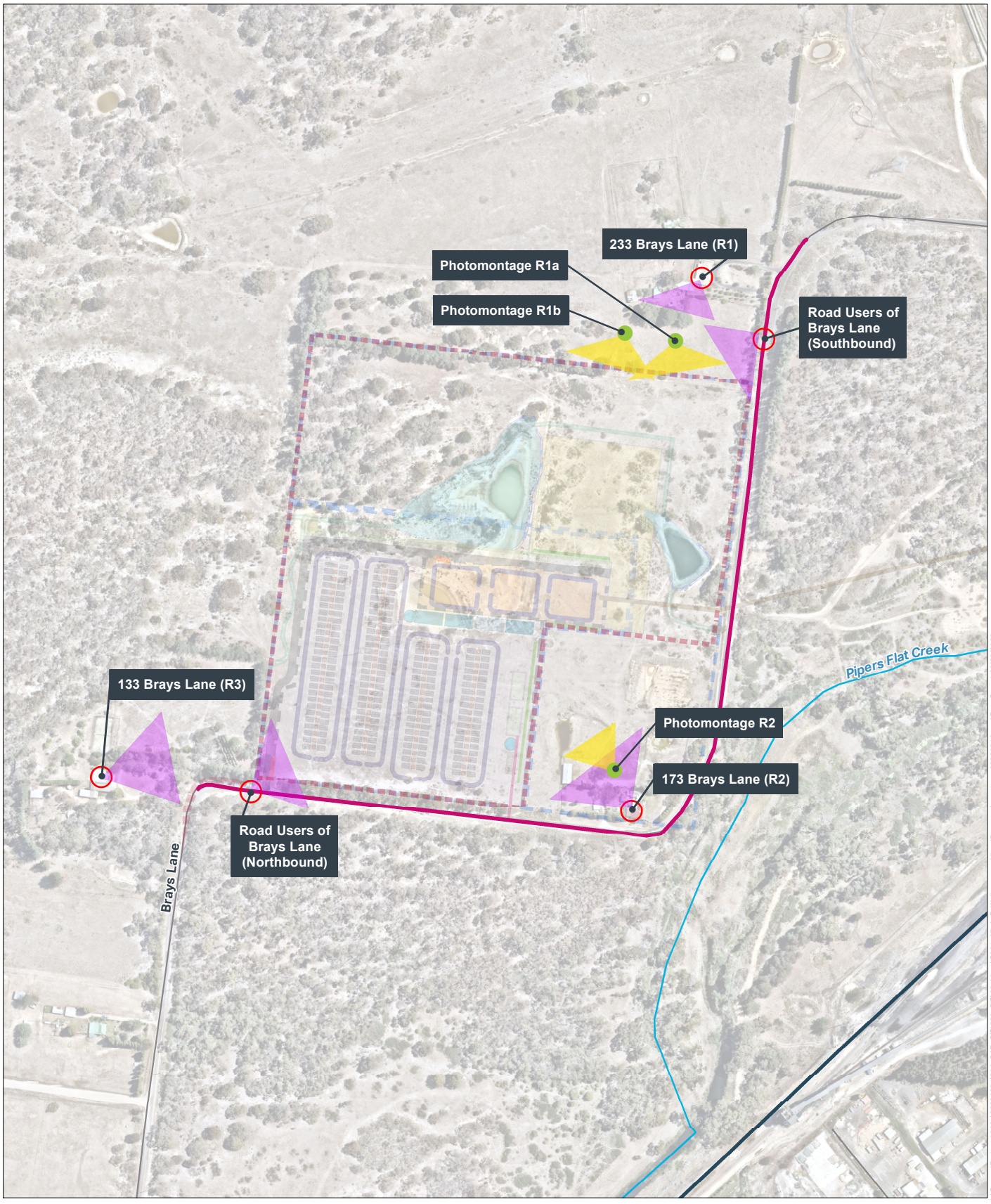

Figure 5-1
Location of visual receptors and viewpoints

Legend

- The Site
- Road Users
- Visual Receptor
- Viewpoint
- Photomontage Location
- Photomontage Viewpoint
- Internal access road
- Noise wall
- Access Gate
- Security Fencing
- Water Connection Point
- Transmission Line Alignment
- Water Tank
- Large Transformers
- Battery and Inverter
- Transformers
- Bioretention System
- Dam Walls
- Swales
- 330 kV Substation
- Control Room
- Switch Rooms
- Landscape Planting
- O&M Building
- Approx Extent Of Dam Modification
- Construction Laydown, Storage And Parking
- BESS Area
- Carpark

0 50 100 m

AECOM

Source: Imagery © Nearmap, 2020.

5.3.2 Aboriginal Heritage

Two Aboriginal archaeological sites are recognised within the Project Area. Identified sites consist of surface and subsurface artefact scatter SU1a-A5 and surface and subsurface stone quarry site GWB-STQ1-21 and is shown in **Figure 5-2** and discussed in **Appendix D Aboriginal Cultural Heritage Assessment Report**.

Impacts to the stone quarry (GWB-STQ1-21) would occur as a result of the construction of multiple project components. Artefact-bearing soil profiles and surfaces within the Site would be disturbed due to earthworks associated with the construction of the BESS pad and new substation area. This would result in a near-complete, permanent loss of the scientific, historic and aesthetic value associated with the stone quarry.

Construction of the transmission line within and immediately surrounding artefact scatter SU1a-A5 would occur using Horizontal Directional Drilling (HDD) to a depth of about 1.5 m below ground level (BGL). The HDD process would only disturb surface soils above 1.5 m BGL at the launch pit and receiving pit, located at each end of the drilling path. The launch pit and receiving pit would be located outside of the SU1a-A5 site and would not impact on its heritage value. As the maximum observed depth of subsurface Aboriginal objects within SU1a-A5 was at 40 cm below ground level, the HDD works are not expected to impact the cultural value of the site.

The vehicle track within SU1a-A5 would not be used for access. The Site would be accessed via Brays Lane, which is an existing sealed road, located outside the identified Aboriginal sites. The transmission line area would be accessed via Brays Lane, or via Main Street.

Subject to the implementation of appropriate protective measures such as the HDD process, with its associated launch and receiving pits and light and/or heavy vehicle movements carry a negligible impact risk for SU1a-A5.

The construction and operation of the BESS on the Site would result in a near-complete, permanent loss of value for stone quarry GWB-STQ1-21. A comprehensive salvage program has been proposed to mitigate this impact.

Overall, it is estimated that the Project would result in a 0.02% decline in the region’s potential Aboriginal archaeological resources. On this basis, it is concluded that the impact of the Project on this resource would be negligible.

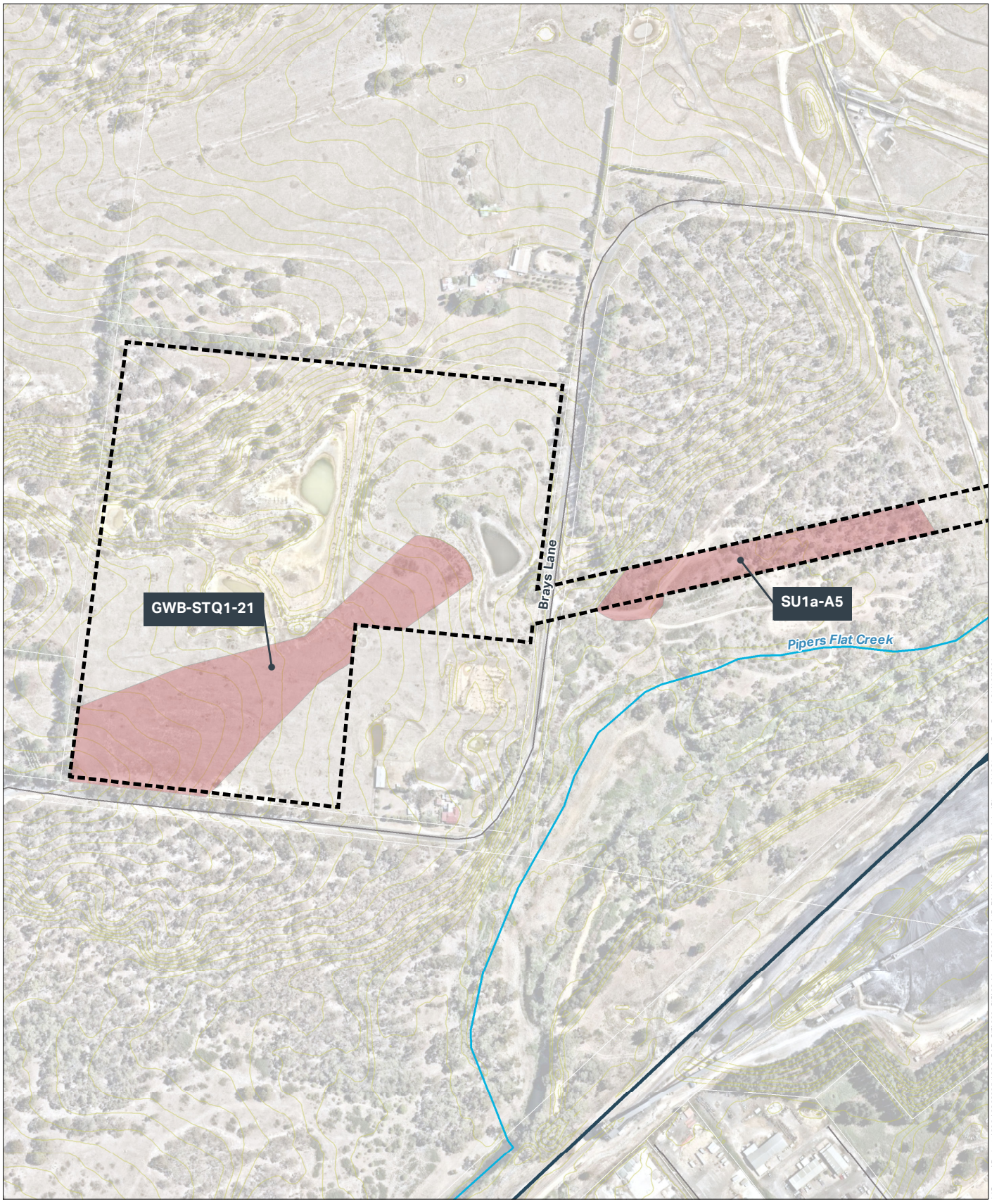

Figure 5-2
Aboriginal Sites

Legend
- Study Area
- Watercourse
- Railway
- Local Road
- Contours
- Aboriginal Sites

N
0
100
200
m

AECOM

Source: Imagery © Nearmap, 2020.

5.3.3 Subdivision and future land use capability

With the construction and operation of the BESS, part of an existing greenfield site would be developed and would not be able to be used for its existing marginal agricultural use. Whilst this land would be developed, the remaining 9.5 ha of land within the Lot would not change use. Indeed that the land is proposed to be used to construct and operate the Project is considered to have 'moderate to severe limitations' for agricultural use[1], has not been used for intensive agriculture and has only been used for occasional grazing which in turn has likely contributed little to the primary production of the local area. The Site is also situated amongst other rural residential properties and is not considered a viable site for intensive agricultural land purposes under existing conditions. As such, the expected impact on agricultural land uses during operation is considered to be negligible given the benign nature of the Project, the existing mixed-use nature of the surrounding landscape and the limited existing potential for agricultural productivity in this location.

5.3.4 Biodiversity

This section summarises the findings of the Biodiversity Development Assessment Report has been prepared for the Project (Biosis 2021). This report is available in **Appendix C** of the EIS.

The Project Area comprises mostly pasture grasses, within both the Site and along the existing rail corridor where the proposed transmission line would be located. Stands of mature native vegetation are found at the southern boundary of the Site, the north west corner of the Site and the area between Brays Lane and the rail corridor, through which the new transmission line would traverse.

Native vegetation communities that occur within the Project Area include:

- Broad-leaved Peppermint - Ribbon Gum grassy open forest in the north east of the South Eastern Highlands Bioregion
- Black Gum grassy woodland of damp flats and drainage lines of the eastern Southern Tablelands, South Eastern Highlands Bioregion

A large number of Black Gum (*Eucalyptus aggregate)* have been recorded within the Project Area. The Black Gum is listed as a vulnerable threatened species It is likely that up to five Black Gum individuals would require removal to allow for the construction of the Project.

The Project Area also contains potential viable habitat for two threatened fauna species, including the Bathurst Copper Butterfly (*Paralucia spinifera*) and the Greater Glider (*Petauroides volans*). This potential habitat has been mapped as occurring within the north west corner of the Site, as well as within the vegetated areas to the east of Brays Lane.

HDD is proposed to be used to install the transmission line to the east of Brays Lane to avoid potential impacts to vegetation in this location, and as such no vegetation removal is proposed in this area. Therefore, impacts to the threatened species habitat or Black Gum individuals within the vegetated area to the east of Brays Lane are not expected.

Potential impacts to biodiversity from the Project may result from clearing of vegetation for the construction of the BESS, and vehicle access to the Site. As a result of this vegetation clearance, three individual Black Gums would be removed. Biodiversity offsets would be acquired to mitigate this impact. Vegetation clearance is not expected to occur in the north west corner of the Site in the vicinity of the mapped Bathurst Copper Butterfly and Greater Glider habitat.

Priority weeds are plants classified under the *Biosecurity Act 2015* as presenting a biosecurity risk to the State or a particular region. It is likely that a number of priority weeds either present or may have the potential to be encountered during construction of the Project.

The increase in construction vehicle movements associated with the Project would have the potential to facilitate the spread of weeds. Suitable management measures have been identified for implementation during construction to prevent the potential spread of weeds further afield during disposal. By

[1] NSW Land and Soil Capability Mapping. Found at: https://geo.seed.nsw.gov.au/Public_Viewer/index.html?viewer=Public_Viewer&locale=en-AU&runWorkflow=AppendLayerCatalog&CatalogLayer=SEED_Catalog.111

implementing these measures, the overall weed impact associated with construction is expected to be minimal.

5.3.5 Geology, soils, groundwater and contamination

The Project would involve various earthworks at the Site to bench the land where the BESS is proposed and to install stormwater controls and a new access point on Brays Lane. These works would involve the removal of surface vegetation and the excavation, transport, storage and reuse of soils across the southern part of the Site. These activities could result in bare ground or exposed areas of soil either within excavations or as stockpiles which could be subject to erosion by wind or water. If not managed, erosion of exposed soil could generate dust leading to reduced air quality and soil could be mobilised in surface water flows increasing sediment loads in downstream watercourses. These potential impacts could affect people and ecological receptors to varying degrees depending on the level of erosion and sensitivity of the receptors.

Soil testing completed at the Site confirmed that the soils are not highly erodible. Nevertheless, if not managed correctly the erosion of soils could result in potential impacts to human and ecological receptors.

HDD is proposed to be used to install the transmission line under sensitive areas such as Pipers Flat Creek and the rail corridor. HDD would expose minimal areas of bare soil. Some areas soil may be associated with the construction of the launch pit and receiving pit. Underboring would also produce liquid drilling waste would be collected and disposed of appropriately.

The construction of the BESS would convert approximately 7 hectares of marginal farmland into a sealed impervious surface. This would marginally reduce the area where infiltration and recharge of groundwater could occur. This impact on the groundwater table is likely to be negligible.

The earthworks on the Site would include the reshaping of the existing dams onsite into a single large dam to the north of the BESS and a secondary dam to the east of the BESS, connected by a series of swales. These dams would continue to allow water to be retained and to percolate into the groundwater, similar to the existing conditions onsite.

5.3.6 Surface water, flooding and water use

The development of the BESS would require the rearrangement of the existing dams on the Site, earthworks to level parts of the Site, an increase in hard stand and installation of stormwater management controls (including swales and a bioretention system) to retain and manage the release of runoff as required. This is discussed in **Appendix E Water Cycle Management Study.**

While the transmission line for the Project would traverse Piper Flat Creek, un underboring construction method would be employed to avoid work occurring within the waterway. As such, no works are proposed within waterways. The Site incorporates two ephemeral drainage lines, which join within it to form one south-easterly trending ephemeral drainage line. Through a review of historical aerial imagery, it is understood these drainage lines have been heavily modified through historical land use activities (including construction of farm dams and/or road/vehicle tracks) and no evidence of natural stream morphology (such as defined banks, beds or riparian vegetation) can be observed within the Site.

During construction, surface water flows would be managed to avoid sediments or other materials being mobilised offsite and impacting the water quality of nearby waterways. Equally the quantity and rate of runoff leaving the Site would also be managed to avoid offsite erosion impacts.

During operation, surface runoff would derive primarily from hard surfaced areas which would be directed to the stormwater management controls within the Site. During operation the quality of stormwater flows exiting the Site would represent an improvement on the existing modelled surface water quality outputs. The quantity of stormwater runoff could potentially increase and therefore stormwater management controls would be installed to mitigate potential erosion / scour impacts. These would include the rearrangement of the dams, and construction of swales and a bioretention basin. With the establishment of these controls, the quantity of stormwater runoff is expected to be equal to existing conditions. Runoff once treated would exit the Site to the east and be directed to Pipers Flat Creek, as per current conditions. Therefore, the Project is not expected to significantly alter existing surface water flow regimes or water quality.

As the Site is sloped and elevated above the surrounding area, the risk of flooding impacting the Site and Project is low.

5.3.7 Noise and vibration

The immediate area surrounding the Project can be described as rural in nature with a number of notable industrial land uses. Residences in the vicinity are sparsely distributed with one residence typically located on a lot measuring several hectares in size. Existing background noise levels in the area around the Site are influenced by nearby light to heavy industrial, low density residential, commercial and rural land uses.

The township of Wallerawang is located about 1.4 km south of the Site (measured from the Wallerawang Post Office) and approximately 800 m from the closest point of the transmission line corridor. Residential properties within the township of Wallerawang generally comprise low to medium density housing. Commercial receivers are also scattered across the town including hotels, cafes, property managers and offices. Wallerawang Public School and two places of worship are close to the Project Area, including St John the Evangelist Church and the Church of the Scared Heart. St John the Evangelist Church is a listed heritage item and is located adjacent to the Lidsdale Siding coal loading facility.

The following residential receivers occur within 300 m of the Site:

- 233 Brays Lane, Wallerawang
- 173 Brays Lane, Wallerawang
- 137 Brays Lane, Wallerawang
- 113 Brays Lane, Wallerawang
- 91 Brays Lane, Wallerawang.

Noise generated during the construction phase of the Project would be temporary and associated with construction traffic movements, enabling works, civil, structural, mechanical, electrical works and commissioning and demobilisation. This would include the movement of materials, equipment and personnel to and from the Project Area, as well as the operation of machinery required to complete earthworks and construct the Project.

Construction noise impacts were modelled to determine the potential noise impacts at nearby noise sensitive receivers and compared against the NSW EPA's Interim Construction Moise guideline (ICNG) (DECC 2009), Noise Management Levels for construction scenarios. The modelling showed that some residential noise sensitive receivers are predicted to exceed construction noise management levels during the day as discussed in **Appendix F Noise and Vibration**. That said, the construction of the Project is generally expected to comply with the noise management levels during standard construction hours and none of the construction is expected to result in noise levels that exceed the 'highly noise affected' level of 75 dB(A) for noise sensitive receivers. The noise from traffic generated by the construction activities to and from the Project Area are considered acceptable according to the NSW EPA's Road Noise Policy.

During construction, the most vibration-intensive equipment proposed to be used includes a vibratory roller, piling rig and jackhammer. With the implementation of minimum working distances of this equipment to nearby receivers, no adverse impacts from vibration intensive works are anticipated. The separation distance between the Project Area and the nearest receivers is sufficient for vibration levels to be compliant with both the human comfort and cosmetic damage criteria.

During operation noise would be generated by electrical plant associated with the BESS, such as inverters and transformers. The noise modelling for the Project indicates that:

- During the evening period, under standard meteorological conditions, noise levels comply at most receivers with exceedances of up to 2 dB at three receivers. Under noise enhancing meteorological conditions, the criteria are exceeded by up to 4 dB at three same receivers (137, 173, and 233 Brays Lane)
- During the night-time period, under standard meteorological conditions, noise levels from the operation of the Project comply at most receivers with exceedances of up to 2 dB at three

receivers. Under noise enhancing meteorological conditions the criteria are exceeded by up to 4 dB at three same receivers.

Although the NMLs are only likely to be marginally exceeded at residential receivers, reasonable and feasible noise mitigation measures and work practices would be implemented. Treatment of the three residential receivers worst affected properties is therefore recommended in line with the *Noise Policy for Industry* (EPA, 2017) to address residual impacts.

5.3.8 Traffic and access

From the north, the Site can be accessed via the Castlereagh Highway, which feeds traffic directly onto Brays Lane. From the south, traffic can turn from the Great Western Freeway to Barton Avenue, which provides access into the township of Wallerawang. From Barton Avenue, traffic would turn onto Pipers Flat Road, which then leads to Brays Lane, and the Site. A new access driveway on to the Site would be constructed off Brays Lane at the most south west corner of the Site. This new access point would be used for construction and eventually operation as seen in **Figure 2-1**. An internal access road would also be provided for construction traffic to navigate to the construction laydown, storage and parking area where vehicles would be able to park, offload deliveries, and turn to exit.

The new transmission line would be accessed via Brays Lane and / or Main Street, and via the existing rail corridor within which it would be located.

During construction, the Project would introduce additional traffic to Brays Lane, generated as a result of the delivery of plant, equipment and materials and the movement of workers. This additional traffic would generally consist of up to 50 light vehicles and 20 heavy vehicles per day.

Heavy vehicles would be required for the delivery of construction equipment, removal of spoil (if required) and the delivery of the various Project components. Light vehicles would be used by the construction workforce. Oversized and over mass vehicles are expected to be required to deliver large pre-fabricated elements for the construction of the Project. This is likely to include eight oversized vehicles to transport large prefabricated elements to the Site.

During construction, parking would be provided for up to 50 light vehicles within the Site. Overspill parking for workers would be provided at a location that would be determined in consultation with Lithgow City Council. The selection of this site would seek to minimise local parking impacts to the community. Workers would be bussed from this parking overflow location to the Site. No parking of workers vehicles (light or heavy) would occur along the verges of Brays Lane or on other public roads.

A Traffic and Transport Impact Assessment (TTIA) was completed for the Project (AECOM, 2021c). In order to consider a worst-case scenario for assessing the construction traffic impacts, the TTIA assumed that all construction worker vehicles would arrive during the same peak hour. As the peak hour mid-block capacity of Castlereagh Highway is 900 passenger cars (pc) per hour for each direction, there would be sufficient capacity to accommodate the construction traffic on the road network into Brays Lane **Appendix G Traffic and Access Impact Assessment**.

A Route Analysis Report was prepared for the Project (Rex J Andrews Engineered Transportation, 2021). This report identified that the proposed construction haulage routes are approved B-double routes. For culvert crossing of Brays Lane, a temporary bridging beam would be installed to allow for the safe passage of oversized / overmass vehicles. The Route Analysis Report concluded that the construction access route for the Project is in an appropriate condition to accommodate construction traffic associated with the Project.

No temporary diversions are proposed to accommodate the construction of the Project. If required, the potential locations of temporary diversions would need to be identified through a Construction Traffic Management Plan (CTMP). Road Occupancy Licence (ROL) and Traffic Control Plans (TCP) would also be prepared, as required.

No material change to traffic would arise from the operation of the Project. Private property access would be unaffected and no offsite parking would be required. The Project would require relatively few vehicle movements during operation, thus the operational traffic impacts are considered negligible. The Project is not considered to be ‘traffic generating development’ under Schedule 3 of the ISEPP due to its likely low number of day-to-day traffic movements that would be required to accommodate an

intermittent work force of up to five to six people. No operational traffic impacts are expected due to the low numbers of operational staff.

5.3.9 Waste management

The Project would generate several waste streams that would require management in accordance with relevant legislation and guidelines.

It is expected that during construction, the primary waste generated would consist of excess construction materials and excavated material which may include:

- Spoil
- Vegetation
- Concrete
- Soil
- Steel
- Bitumen
- Plastic
- Sewerage and other construction worker related wastes.

Small quantities of waste may be produced intermittently during operational maintenance activities; however, operation of the Project would have little or no impact on waste disposal resources in the region. Operational waste is likely to be mainly limited to waste associated with human use such as general solid waste and sewerage.

5.3.10 Summary

Potential adverse impacts due to the operation of the proposed BESS would include a change in the use of part of the existing Lot, a change in landscape character and visual amenity for visual receptors and some marginal exceedances in noise amenity above the existing low background levels.

Whilst the Project would impact land that provides some agricultural value, it is anticipated that the same grazing activity would occur on the remaining residential property. This change is not considered to be a significant impact in the context of agricultural activity across the Lithgow LGA.

Upon decommissioning, the BESS infrastructure would be removed and the Site would be returned to a pre-development condition, which would be suitable for future agricultural activities such as grazing.

Given the overall benign nature of the Project, with appropriate mitigation measures, the operation of the Project is anticipated to be compatible with adjacent land uses.

6.0 Land use conflict risk assessment

6.1 Risk evaluation methodology

The LUCRA process uses a “probability and consequence” matrix to estimate the potential for land use conflict. It assesses the environmental, public health and amenity impacts according to the:

- Probability of occurrence
- Consequence of the impact.

The risk ranking matrix used by the Land Use Conflict Risk Assessment Guide has been reproduced below in **Table 6-1**.

Table 6-1 Risk ranking matrix

Probability	A	B	C	D	E
Consequence					
1	25	24	22	19	15
2	23	21	18	14	10
3	20	17	13	9	6
4	16	12	8	5	3
5	11	7	4	2	1

The risk ranking matrix provides a risk ranking from 25 to 1. It covers each combination of five levels of ‘probability’ (a letter A to E as defined in **Table 6-2**) and five levels of ‘consequence’ (a number 1 to 5 as defined in **Table 6-3**) to identify the risk ranking of each impact. For example, an activity with a ‘probability’ of D and a ‘consequence’ of 3 creates a risk rank of 9.

Table 6-2 Probability table descriptions

Level	Descriptor	Description
A	Almost certain	Common or repeating occurrence
B	Likely	Known to occur, or ‘it has happened’
C	Possible	Could occur, or ‘I’ve heard of it happening’
D	Unlikely	Could occur in some circumstances, but not likely to occur
E	Rare	Practically impossible

Table 6-3 Consequence table descriptions

Level	Descriptor	Description
1	Severe	Severe and/or permanent damage to the environment Irreversible Severe impacts on the community Neighbours are in prolonged dispute and legal action involved.
2	Major	Serious and/or long-term impact to the environment Long-term management implications Serious impact on the community Neighbours are in a serious dispute
3	Moderate	Moderate and/or medium-term impact to the environment and community Some ongoing management implications Neighbour disputes occur

Level	Descriptor	Description
4	Minor	Minor and/or short term- impact to the environment and community Can be effectively managed as part of normal operations Infrequent disputes between neighbours
5	Negligible	Very minor impact to the environment and community Can be effectively managed as part of normal operations Neighbour disputes unlikely

6.2 Initial risk evaluation

This section details:

- The activity that may cause a conflict
- The potential conflict arising from that activity
- Risk rating without mitigation or management measures.

A list of the potential sources of conflict arising from the Project have been developed and are presented in **Table 6-4** below.

Table 6-4 Initial risk evaluation

Activity	Identified potential conflict	Unmitigated risk ranking
Construction	Generation of dust affecting human health and amenity	17
Construction	Near-complete, permanent loss of the scientific, historic and aesthetic value associated with the stone quarry site (GWB-STQ1-21)	20
Construction	Exceedance of noise management levels during construction, affecting human amenity	13
Construction	Spread of high-priority weeds into neighbouring properties	13
Construction	Contamination, erosion or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock or licensed users using nearby watercourses as a water source	13
Construction	Increased heavy vehicle movements resulting in road safety issues for people, and other vehicles (including other heavy vehicles accessing nearby industrial sites)	13
Construction	Degradation of local access roads through consistent heavy vehicle movements, resulting in road conditions that may cause damage to other vehicles or compromise road safety	13
Operation	Potentially adverse impacts upon the existing visual amenity of surrounding residents and road users	20
Operation	Operation noise would be generated by electrical plant associated with the BESS, such as inverters and transformers, resulting in marginal exceedances at residential receivers	17
Operation	Contamination, erosion or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock or licensed users using nearby watercourses as a water source	9

6.3 Risk reduction controls

As per the Land Use Conflict Risk Assessment Guide (Department of Primary Industries, 2011) the process of risk reduction aims to identify management strategies that affect the probability of an event occurring, such as the implementation of certain procedures; new technology or scientific controls that might lower the risk probability values.

It is also appropriate to look at management strategies which affect consequences, e.g. supply staff with a mechanism to change impacts or establish better communication procedures. Such matters can sometimes lower negative consequences.

The objective of risk reduction controls is to lower the risk ranking score to 10 or below.

A revised risk evaluation for the potential sources of conflict arising for the Project is provided below in **Table 6-5**.

Table 6-5 Revised rink rankings

Activity	Identified potential conflict	Existing risk rating	Management strategy	Revised risk ranking
Construction	Generation of dust affecting human health, animal health and viability of grazing activities	17	• Develop and implement environmental management controls that aim to avoid visible dust being mobilised beyond the Site boundary. These will include proactive measures for dry and high wind days and reactive measures to reduce dust creating works as needed. • Use water trucks as far as practicable for dust minimisation throughout the construction and decommissioning phases particularly in the vicinity of adjacent residential dwellings. • All disturbed areas shall be re-vegetated as soon as practicable to minimise exposed areas • Vehicle speed limits shall be controlled to minimise dust from vehicle movement	5
Construction	Near-complete, permanent loss of the scientific, historic and aesthetic value associated with the stone quarry.	20	• An Aboriginal Cultural Heritage Management Plan (ACHMP) would be prepared for the Project. This would guide the management of Aboriginal cultural heritage within the Project area for the duration of the Project. The ACHMP would be subject to periodic review to ensure that all management policies are being adhered to and are working effectively. • An archaeological salvage program incorporating surface collection and manual open area excavation would be conducted for the stone quarry site, GWB-STQ1-21. • An Unexpected Aboriginal Heritage Finds Procedure (UAHFP) would be included in the ACHMP to cover the unanticipated discovery, at any point outside of the GWB-STQ1-21 salvage program, of an actual or potential Aboriginal heritage item for which Neoen does not have an existing management process in place. The procedure would cover all Aboriginal objects (as defined by the NPW Act), including human skeletal remains. • Provisions regarding appropriate consultation protocols with RAPs would be incorporated into the ACHMP. Contact details and preferred contact methods for each RAP, as well as other relevant stakeholders, would be specified. • The Project's standard environmental site induction would include an Aboriginal heritage component. At a minimum, this would outline current protocols and responsibilities with respect to the management of Aboriginal cultural heritage within the Project Area (including the unexpected finds protocol) and provide an overview of the diagnostic features of potential Aboriginal sites and objects. • Any Aboriginal archaeological works carried out under the ACHMP for the Project would be prepared to a standard comparable to that required by the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW*. Printed and/or digital copies of any associated reports would be made available to RAPs upon request.	11
Construction	Exceedance of noise management levels affecting amenity	13	Preparation of a Construction Noise Management Plan that specifies: • Appropriate plant and equipment would be selected for each task to minimise the noise contributions • Turn off plant that is not being used where practicable • ensure plant is regularly maintained, and repair or replace equipment that becomes more noisy • Noisier activities to be scheduled during less noise sensitive periods • Use non-tonal reversing alarms where practicable • Wherever feasible, turning circles would be created at the end points of vehicle work legs, which would allow trucks to turn and avoid the need for reversing • Emphasis would be placed during driver training and site induction sessions on the potential adverse impact of reversing alarms and the need to minimise their use • Consult with sensitive receivers that have been identified as likely to experience noise levels exceeding the noise management levels for the Project prior to, during and after construction	8
Construction	Spread of high priority weeds to neighbouring properties	13	To prevent the spread of weed seed, all weed material removed would be disposed of in a suitable waste facility and not mulched on site. This is to avoid the reintroduction and further spread of weeds in the area. Weed management would be undertaken in accordance the *Biosecurity Act 2015* and would include: • General Biosecurity Duty: All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who	5

Activity	Identified potential conflict	Existing risk rating	Management strategy	Revised risk ranking
			knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable • In addition, machinery would be washed between sites following best practice hygiene protocols to prevent the spread of weed seed, pathogens and fungi. Hygiene protocols would be in accordance with the *Biosecurity Act 2015* • Vehicles and personnel would not enter neighbouring properties, unless agreed with relevant neighbouring property owner	
Construction	Contamination, erosion or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock using it as a water source	13	A Soil and Water Management Plan (SWMP) would be produced which would include measures to manage potential impacts related to soils, surface water flows and contamination risks. This SWMP would include: • Measures to manage erosion and stormwater including a specific Erosion and Sediment Control Plan (ESCP) for the construction works at the Site to show where specific controls will be employed and to help ensure that erosion is minimised and nearby watercourses are protected • Stockpile management procedures for segregating spoil and preventing cross-contamination of clean spoil (virgin excavated natural material or excavated natural material) with potentially contaminated soil • Measures for stockpiles and storage areas – where practicable and does not impact other construction activities – to be located near the upstream (eastern) end of the Site, to prevent any loose materials being washed away into the downstream drainage system • Procedures for handling and storing spoil, including potentially or known contaminated soil/fill in accordance with the POEO Act, and protocols for waste classification and tracking for off-site disposal • Measures to manage the unexpected interception of groundwater during construction • Measures to manage unexpected contamination finds during construction • Emergency response measures including clean-up and reporting procedures. Measures within the SWMP and ESCP would be developed in line with the 'Blue Book' Managing Urban Stormwater: Soils and Construction Guidelines (Landcom, 2004). The ESCP would be designed to ensure that surface water flows leaving the Site would have a neutral of beneficial effect on the water quality of Pipers Flat Creek. Where soil or ground is to be left exposed for more than 3 days, a soil binder would be used to help prevent water and wind induced erosion. Where water is removed from excavations that are likely to be contaminated, it will be collected, contained, tested and disposed offsite to an appropriately licenced facility. Binders or covers would be used on soil stockpiles where these stockpiles are to be in situ for more than 24 hours. Bare ground and exposed soils across the Site would be rehabilitated and returned to its pre-development condition or would be landscaped. The approach to managing contaminated soils, fill or groundwater would be detailed in the SWMP for the Project. Areas along the transmission line corridor where trenching is proposed would be identified, if these areas are contaminated and could pose a risk to human health or ecological receptors, measures required to manage these risks will be identified.	9
Construction	Increased heavy vehicle movements causing safety issues including striking people, and other vehicles	14	Preparation of a Construction Traffic Management Plan (CTMP) in consultation with Lithgow City Council and Transport for NSW prior to construction that covers: • Programs for monitoring road traffic conditions, to repair damage caused or exacerbated by construction traffic • The designated routes of construction traffic to the Site • Consideration for cumulative traffic impacts with any nearby developments • Scheduling delivery of major components where possible to minimise safety risks to other road users including avoiding major deliveries during school pick-up and drop-off times where practicable • Temporary traffic controls such as signage, speed restrictions and traffic controllers as necessary to ensure safety of all road users and the public	8

Activity	Identified potential conflict	Existing risk rating	Management strategy	Revised risk ranking
			• Procedure for monitoring traffic conditions and adapting controls to minimise impacts traffic risks. Implementation of a communication and consultation strategy with stakeholders including Lithgow City Council, Transport for NSW, emergency services, local stakeholders (landholders and business owners) regarding changes to roads uses during construction and decommissioning. Transport for NSW and Lithgow City Council would also be consulted on the access route, particularly regarding oversized vehicle movements to the Site. Implementation of a complaints management system as part of the Construction Environmental Management Plan (CEMP) for the Project to ensure any community concerns regarding traffic are addressed effectively and promptly	
Construction	Degradation of local access roads through consistent heavy vehicle movements, resulting in road conditions that may cause damage to other vehicles or lead to road accidents	13	In selecting the proposed routes for the delivery of materials, the proponent has considered the nature of existing road surfaces, as well as the potential impact of project vehicles. The selected route generally travels along large regional, sealed arterial roads which are designed to handle such vehicles. Vehicle routes from the Castlereagh Highway would be subject to a dilapidation survey prior to construction occurring and as a minimum once construction is complete to identify where the Project may have impacted local roads and if any compensation to Transport for NSW or Lithgow City Council is required.	8

Operation	Amenity issues arising from views of the BESS facility in its current landscape	20	The Project has been designed to reduce its zone of theoretical visibility (ZTV) to reduce the impact on the local area.
			The following would be further considered as part of the detailed design of the Project:
			• Refinement in the design and layout which may assist in the mitigation of bulk and height of proposed structures
			• A review of materials and colour finishes for selected components in keeping with the surrounding landscape including the use of non-reflective finishes to structures
			• A review of night lighting that minimises off-site impacts of Project related lighting and ensures that external lighting:
			  ○ is installed as low intensity lighting (except where required for safety or emergency purposes);
			  ○ does not shine above the horizontal; and
			  ○ complies with Australian/New Zealand Standard AS/NZS 4282:2019 – Control of Obtrusive Effects of Outdoor Lighting, and the Dark Sky Planning Guidelines (DPE 2018) or the latest versions.
				8

Operation	Operation noise would be generated by electrical plant associated with the BESS, such as inverters and transformers, resulting in marginal exceedances at residential receivers	17	Ongoing detailed design would continue to seek opportunities to further reduce noise impact at the three residential receivers. If required following detailed design, treatment of the three residential receivers worst affected properties would be carried out in line with with the *Noise Policy for Industry* (EPA, 2017) to address exceedances. Treatment could comprise the provision of mechanical ventilation and/or comfort conditioning systems. This would allow windows to be closed without compromising internal air quality/amenity. As the exceedance of the trigger levels is both during the evening and night-time periods, the treatment would apply to bedrooms and living rooms. Treatment would be installed before the Project becomes operational.	7
Operation	Contamination, erosion or sedimentation of watercourses resulting in a degradation of watercourse health and quality, in-turn affecting the health of neighbouring livestock using it as a water source	9	• A Spill Management Plan would be prepared and implemented to minimise the risk to surface water quality of pollution arising from spillage or contamination on the Site and adjoining areas during operation. The Spill Management Plan be included in the Operational Environmental Management Plan (OEMP) and would address, but not necessarily be limited to: • Management of any stored chemicals (such as household chemicals) and potentially polluting materials (such as fuels and oils) • Any specialised containment, security and bunding requirements • Maintenance of plant and equipment • Emergency management, including notification, response, and clean-up procedures Water sensitive urban design (WSUD) measures would be incorporated into drainage design to treat surface water before discharging to the receiving waterway. Stormwater treatment devices would be	5

Activity	Identified potential conflict	Existing risk rating	Management strategy	Revised risk ranking
			used to ensure a Neutral or Beneficial Effect (NorBE) on runoff water quality since the Site is located in the Sydney Drinking Water Catchment. A bioretention system is proposed, but other options may be considered provided that an equivalent or better performance outcome can be achieved. The battery design would incorporate spill containment measures and response procedures to prevent spillage from impacting surface water quality and runoff. Following the completion of construction all distributed areas would be reinstated and the opportunity for erosion and sedimentation would be negligible.	

6.4 Performance monitoring

The performance of the proposed mitigation and management measures would be evaluated through a process of internal auditing and consultation with affected receivers and stakeholders. These audits and consultation activities would be undertaken in accordance with the mitigation measures outlined in the EIS, as well as the environmental management plans prepared for construction and operation. These plans describe how various activities would be undertaken and detail measures to reduce their impacts to the environment and to sensitive receivers.

These plans include:

- Construction Environmental Management Plan (CEMP)
- Operational Environmental Management Plan (OEMP).

Each of these plans will outline the conditions and measures that must be complied with for each of the key stages of the Project. For key environmental matters, separate sub-plans would be produced for the CEMP and/or the OEMP. Subplans may include:

- Biodiversity Management Plan
- Aboriginal Cultural Heritage Management Plan
- Soil and Water Management Plan which includes an Erosion and Sediment Control Plan for the Site
- Drilling Fluid Management Plan
- Noise Management Plan
- Traffic Management Plan
- Bushfire Management Plan
- Waste Management Plan.

Early considerations regarding the future upgrade or decommissioning of the Project would be contained in a section of the OEMP.

Throughout the various phases of the Project, the activities within those phases would be checked against the conditions of consent and relevant environmental management plans by a suitably qualified environmental practitioner with view to compliance with these requirements. In doing so the proponent seeks to reduce the extent of amenity impacts to neighbouring properties and affected stakeholders, in-turn reducing the potential for a land-use conflict.

In addition to the above, consultation would be undertaken throughout the different Project phases to ensure that the community and relevant agencies have the opportunity to comment and seek clarification. Reasonable and practical efforts would be made to respond in good time.

Neoen proposes to implement the following broad targets with regard to monitoring the performance of measures aimed at reducing land use conflict:

- Full compliance with relevant legislation, conditions of consent, management and mitigation measures and relevant environmental management plans throughout each phase of the Project
- Availability of contact details on the Project website at all times
- Contact made with relevant stakeholders or community members within five business days of receiving a complaint, with a view to swift resolution.

7.0 Conclusions and recommendations

Whilst this LUCRA has identified several potential sources of land use conflict it is recognised that the development would allow the existing and neighbouring land-uses to continue largely unaffected. The potential for land use conflict is considered to be manageable, especially in light of the mitigation/management measures and environmental management plans that would be implemented to manage amenity and other offsite impacts.

The primary potential sources of land use conflict predicted for the Project are a result of amenity impacts arising from the construction and operational phases of the Project. These include:

- Construction works:
    - Generation of dust
    - Erosion and sediment run off
    - Loss of Aboriginal heritage value
    - Noise
    - Spread of noxious weeds
    - Contamination or sedimentation of watercourses
    - Heavy vehicle movements causing safety issues and damaging roads.
- Operational:
    - Landscape impacts
    - Reduced productivity of the land for agricultural and grazing activities.

With the application of relevant mitigation measures, each of the potential sources of conflict are considered to be low, with the exception of visual amenity. In this case the initial high-end potential conflict has been reduced to a low-middle conflict with the application of relevant mitigations. This is based on the fact that the BESS would remain visible for some receptors despite screening vegetation and noise wall proposed around the perimeter. This potential conflict is however expected to ease over time for most receptors as screening vegetation matures and people become accustomed to the development.

Operational noise would be generated by the electrical plant associated with the BESS and potential sources of conflict with these residential receivers are considered to be low. Although the NMLs are only likely to be marginally exceeded at residential receivers, reasonable and feasible noise mitigation measures and work practices would be implemented.

The construction and operation of the BESS on the Site would result in a near-complete, permanent loss of value for stone quarry GWB-STQ1-21. Although the mitigated risk rating remained above 10, appropriate measures and work practices would be implemented. Continued consultation with RAPs would be undertaken to avoid any potential conflict with the removal of stone quarry GWB-STQ1-21. In addition to this, it is estimated that the Project would result in a 0.02% decline in the region's potential Aboriginal archaeological resources and potential sources of conflict as a result of the Project are considered to be negligible.

The mitigation measures proposed in this LUCRA have been largely sourced from the Project EIS. They are specific, easily understood, easily designed and relatively easy to implement by the proponent. The measures are proven and common methods for reducing potential amenity impacts from large construction projects.

The implementation of various treatments and measures outlined in this LUCRA, especially with regard to noise, surface water, Aboriginal heritage and visual attenuation measures, would allow the Project to integrate well with the surrounding landscape and to avoid significant land use conflict.

8.0 References

NSW Environmental Protection Authority 2017. Noise Policy for Industry Biosis 2021, Great Western Battery Biodiversity Development Assessment Report

AECOM 2021a, Great Western Battery Water Cycle Management Study

AECOM 2021b, Great Western Battery Noise and Vibration Impact Assessment

AECOM 2021c, Great Western Battery Traffic Impact Assessment Report