

Landscape Character and Visual Impact Assessment

Rothbury Battery Energy Storage System

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**ENERGY
STORAGE**

Landscape Character and Visual Impact Assessment

Rothbury Battery Energy Storage System

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Glossary of terms and abbreviations

Term	Definition
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
EIS	Environmental Impact Statement
GLCVIA3	<i>Guidelines for Landscape and Visual Impact Assessment, Third Edition</i> (Landscape Institute and Institute for Environmental Management, 2013)
LCVIA	Landscape character and visual impact assessment
LCZ	Landscape Character Zone
LGA	Local Government Area
NEM	National Electricity Market
O&M	Operation and maintenance
REZ	Renewable Energy Zone
RMU	Ring Main Units
SEARs	Secretary's Environmental Assessment Requirements
The Project	The proposed Rothbury Battery Energy Storage System and associated infrastructure, as described in Section 1.0
Study area	A 700 m radial area around the site
View	The view experienced from a particular location by a visual receptor
Viewshed	The theoretical extent of the visibility of the Project from the surrounding landscape due to topography
Visual amenity	The overall quality or pleasantness of the visual experience available to people, as shaped by the appearance of the landscape and its individual, contributing elements

1.0 Introduction

Ausgrid proposes to construct, operate and maintain a battery energy storage system (BESS) adjacent to the existing Rothbury Zone substation, in Rothbury, NSW (the Project). The Project would comprise battery units to store energy from the grid, releasing it during high demand periods. The Project would also perform other ancillary services for the grid.

AECOM Australia Pty Ltd (AECOM) has been commissioned to undertake a Landscape Character and Visual Impact Assessment (LCVIA) for the Project. The assessment considers potential construction and operational impacts on landscape character and views associated with the Project.

1.1 Project overview

Key features of the Project would include the construction, operation, and maintenance of a BESS with Maximum power output capacity of up to 135 MW over a four-hour duration (i.e. up to 540 MWh energy capacity), and include:

- Containerised battery units and associated infrastructure, including inverters and medium voltage transformers
- Ring Main Units (RMUs)
- An auxiliary transformer
- A 33 kV underground cable connection to the existing Rothbury Zone Substation
- A combined switch and control room building
- An operation and maintenance (O&M) building
- A warehouse to store equipment and materials related to maintaining the battery units
- A backup diesel generator
- Onsite car parking spaces
- Other ancillary infrastructure including fire suppression, stormwater management infrastructure, boundary security fencing, a noise barrier, lighting and CCTV.

Access to the Project is proposed via an existing driveway on Old North Road, a council-managed, single lane, unmarked road with line marking at the intersection of Wine Country Drive.

The Project is intended to operate for 50 years with component replacements taking place as needed during this period. At the end of this time, the battery units would either be replaced or decommissioned and the site rehabilitated. Any extension to the life of the Project beyond 50 years would be subject to the relevant approval regime at the time.

The Project would operate 24 hours a day, seven days a week, primarily as an unmanned facility. Staff activities onsite would consist of scheduled inspections and maintenance of battery units, along with occasional planned or unplanned maintenance of other equipment.

The indicative layout of the Project is shown in **Figure 1-1**.

1.2 Site description

The site comprises an area of land owned by Ausgrid, within Lots 1 and 2 of Deposited Plan (DP) 1318566, covering an area of 11.8 hectares. The address is 1309 Wine Country Drive, Rothbury, NSW 2320. The site location is shown in **Figure 1-2**.

Existing features of the site include the Rothbury Zone Substation and open grassland to the west. The Project would be located in the central portion of the site, immediately to the west of the existing substation.

The site is within the Cessnock City Council Local Government Area (LGA) and is located within land zoned 'RU2 Rural Landscape' under the *Cessnock City Council Local Environment Plan 2011*. The closest residential property is located approximately 188 m south of the Project Area on Old North Road.

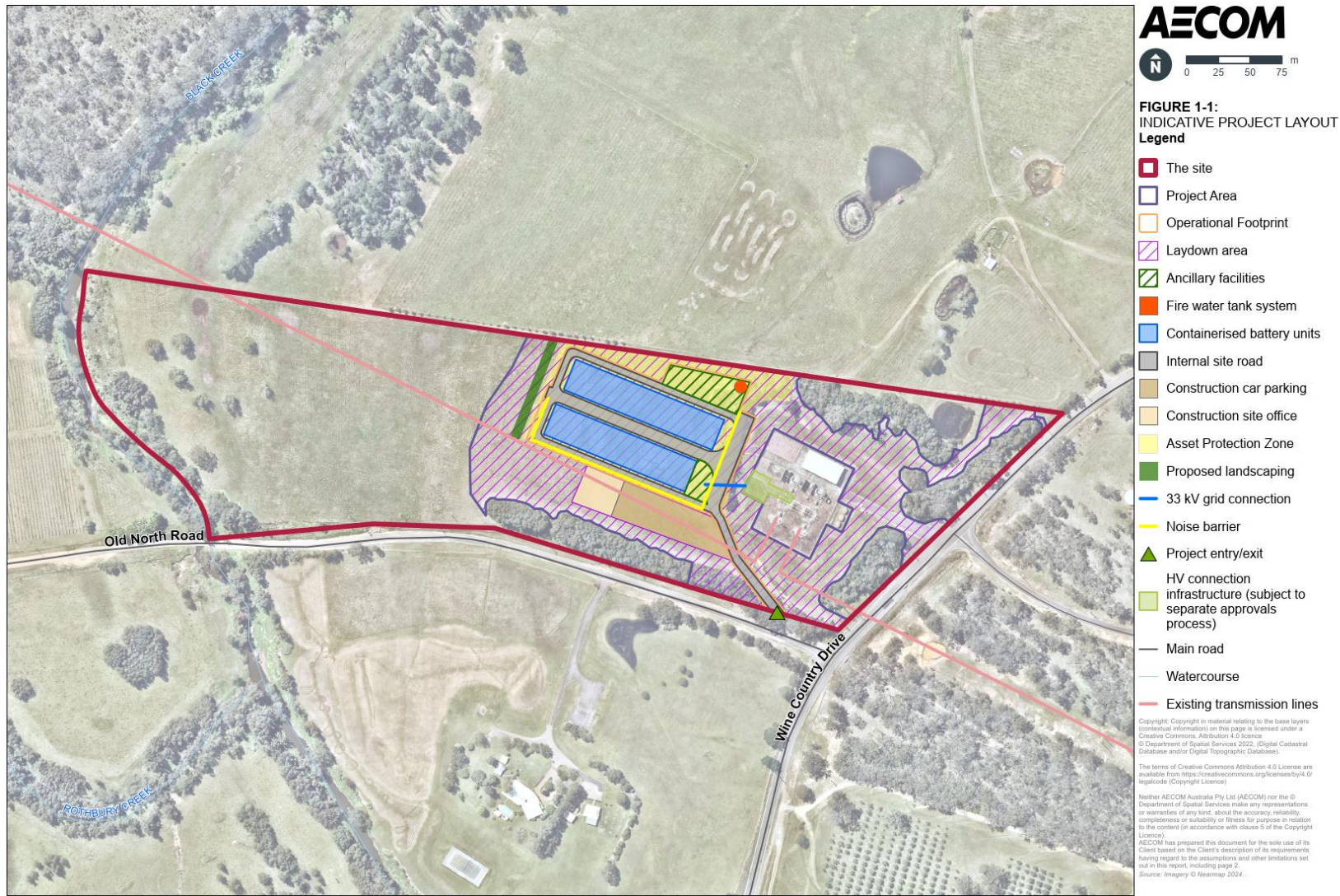


Figure 1-1 Indicative Project layout



Figure 1-2 Project location

1.3 Purpose of this report

1.3.1 Assessment objectives

This LCVIA provides an assessment of the potential construction and operational impacts on landscape character and views associated with the Project. This report has been prepared to inform the review of the environmental impact statement (EIS) and contributes to fulfilling the requirements of the SEARs, outlined in **Table 1-1** below.

1.4 Secretary’s Environmental Assessment Requirements (SEARs)

SEARs for the Project were issued on 3 July 2025. The SEARs presented in **Table 1-1** have informed the preparation of this LCVIA impact assessment.

Table 1-1 SEARs – landscape and visual

Relevant SEARs	Where addressed
Landscape and Visual	
A detailed assessment of the likely visual impacts of all components of the project on surrounding residences (including approved developments, lodged development applications and dwelling entitlements), and key locations, scenic quality of significant vistas and road corridors in the public domain.	A detailed visual impact assessment is included in Chapter 5.0 of this LCVIA.
Details of measures to mitigate and/or manage potential impacts (including a draft landscaping plan for on-site perimeter planting, with evidence it has been developed in consultation with affected landowners)	Mitigation measures, including a draft landscaping plan, are outlined in Chapter 6.0 of this LCVIA.

1.5 Relevant guidelines

This LCVIA has been undertaken in accordance with the *Environmental Impacts Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment EIA-N04* (Transport for NSW, 2023), with more detailed guidance taken from *Guidelines for Landscape and Visual Impact Assessment, Third Edition* (Landscape Institute and Institute for Environmental Management, 2013) (GLCVIA3). GLCVIA3 is widely recognised as comprising an example of ‘best practice’ in this field.

2.0 Methodology

LCVIA is a tool used to identify and assess the significance of, and the effects of, change resulting from development on both the landscape as an environmental resource in its own right, and on people's views and visual amenity.

In accordance with the guideline documents listed in Section 1.5, key steps in the assessment of landscape character and visual impact include:

1. **Contextual analysis** - analysis of the regional and local context in which the Project is located. This includes a desktop assessment to inform a site visit and a description of the existing environment, including the identification of Landscape Character Zones (LCZs)
2. **Landscape character impact assessment** - evaluation of the impact of the Project on the LCZs within the study area (defined in Section 2.1)
3. **Visual impact assessment** - evaluation of the existing views and visual amenity surrounding the site to identify and assess possible impacts placed on the community by the Project
4. **Mitigation of impact** - development of mitigation measures to reduce adverse impacts that the Project may impose within the study area.

The following sections outline the detailed methodology undertaken for the preparation of this LCVIA report.

2.1 Study area

The LCVIA study area was determined based on several factors, including:

- Topography of the surrounding landscape
- The number and complexity of LCZs surrounding the Project
- The visual containment of the Project due to its scale in comparison to surrounding built form, landform and vegetation.

The study area as defined in this LCVIA is a 700 m radial area around the site (refer to **Figure 2-1**). This was considered conservative given the flat to gently sloping topography, the scale of the existing infrastructure within the site and the visual screening provided by surrounding vegetation.



Figure 2-1 Study area

2.2 Context analysis

An analysis of the context of the landscape surrounding the Project was undertaken in the existing environment chapter (refer to **Chapter 3.0**) and includes a broad description of the landscape within which the Project is located. The context analysis is used for identification of elements and features relevant to assessment of the Project, including site setting, topography, land use, landscape and heritage values. This section was compiled using the following methodology.

2.2.1 Desktop analysis

Existing data was gathered and reviewed, including:

- Available information on sensitive visual receptors and elements which would influence landscape character and visibility of the Project. These included topography, history and heritage, hydrology, land use, vegetation, tourism etc.
- GIS mapping, including visual envelope mapping, zoning and land use, topography and heritage information
- Project design information
- Google Earth and Google Street View imagery.

Using this data, a preliminary assessment of the existing landscape and visual environment was undertaken and used to inform the site inspection.

2.2.2 Site inspection

A site inspection was undertaken by AECOM on 15 October 2025. The purpose of the inspection was to:

- Identify views from sensitive visual receptors within publicly accessible locations and selected private and commercial premises
- Assess landscape character
- Undertake photography to record key views and landscape character.

2.2.3 Landscape character zones

A landscape character assessment identifies what makes a place distinctive, without necessarily assigning a value to it. It considers the way different components of the environment - both natural (the influences of topography, geology, soils, climate, flora and fauna), and cultural (the historical and current impact of land use, settlement, enclosure and other human interventions) interact together and are perceived to form a distinct pattern, which gives it a particular sense of place.

To provide a framework for more clearly describing the area and assessing how the Project would affect landscape character, distinct areas have been defined and mapped as LCZs. Based on consideration of the existing environment, a landscape character assessment was then undertaken.

2.3 Impact assessment

2.3.1 Landscape character impact assessment

Landscape character impact assessment considers the effect of change on the landscape, as a resource in its own right.

The consideration of the potential impact of the Project on landscape character has been determined based on each LCZ's sensitivity to change, and the magnitude of change that is likely to occur. These factors are defined as follows:

- Sensitivity of landscape to a proposed change is determined based on its:
 - Susceptibility to change - this describes the ability of the landscape receptor (whether it be the overall character or quality/condition of a particular LCZ, or an individual element and/or feature, or a particular aesthetic and perceptual aspect) to accommodate the Project without

undue consequences for the maintenance of the existing situation, and/or the achievement of landscape planning policies and strategies

- Value of landscape - the qualities of a place which make it valued, such as natural or ecological characteristics, the presence of heritage items or cultural values, spatial characteristics, recreational elements or scenic qualities.
- The magnitude of a change is determined based on its:
 - Type/nature of change
 - Geographical extent
 - Duration and reversibility.

The Landscape Character and Visual Impact Grading Matrix (refer to **Table 2-1**) has been used to combine the ratings for sensitivity and magnitude to determine an overall landscape character impact rating. Ratings of high and 'high to moderate' are considered to be significant.

Table 2-1 Landscape Character and Visual Impact Grading Matrix*

		Magnitude			
Sensitivity		high	moderate	low	negligible
	high	high	high to moderate	moderate	negligible
	moderate	high to moderate	moderate	moderate to low	negligible
	low	moderate	moderate to low	low	negligible
	negligible	negligible	negligible	negligible	negligible

*Source: GLCVIA3 and Environmental Impacts Assessment Practice Note – Guideline for Landscape Character and Visual Impact Assessment EIA-N04 (Transport for NSW, 2023)

2.3.2 Visual impact assessment

Visibility of the Project

Research into the likely visibility of the Project, once operational, from surrounding visual receptors has been undertaken to define locations where the Project may be seen. This was undertaken by identifying the most visible elements of the Project and visual receptors who may have views to the Project considering topography, vegetation and built form to define where views are likely to be possible.

Representative visual receptors and viewpoints

Visual receptors with potential views to the Project were identified and mapped. Potential visual receptors include both private residences and those on publicly accessible land, such as roads. Based on visual receptors identified, representative viewpoints were selected for assessment of visual impact.

Assessment of visual impact

The assessment of visual impact considered the impact of changes due to the Project on the views available to people as well as the overall change to their visual amenity.

The impact on visual amenity is determined by the combination of:

- the sensitivity of the people who experience the view, and
- the magnitude of change incurred by the Project.

In this context, sensitivity is a function of:

- The occupation or activity of the people experiencing the view
- The extent to which their attention or interest may be focused on, or value the view and the visual amenity they experience, for example:

- People who are engaged in outdoor recreation, where their attention or interest is likely to be focused on views and the visual amenity they experience, are likely to be more sensitive to a proposed change in that view
- Where the view has indicators of value attached to it, e.g. through appearing on tourist maps, or provision of facilities for their enjoyment (such as parking places, sign boards and interpretative material).

The magnitude of change to views and visual amenity considers:

- The type/nature of change to the view with regard to the:
 - Loss or addition of features in the view and changes in its composition
 - Degree of contrast or integration of any new features with the existing landscape in terms of form, scale and mass, line, height, colour and texture
 - Nature of the view in terms of the amount of time it would be experienced, and whether the views would be full, partial or glimpses
- The geographical extent of the change to the view:
 - Angle of view between the viewpoint and the change
 - Distance between the viewpoint from the change
 - Extent of area over which the change would be visible
 - Duration and reversibility of the change, classified as either short term (0-5 years), medium term (6-15 years) or long-term (16-30+ years).

The sensitivity and magnitude are combined using the same Landscape Character and Visual Impact Grading Matrix used for landscape character (refer to **Table 2-1**). Impact ratings of 'high' and 'high to moderate' are considered to be significant.

In addition to the above rating a qualitative evaluation was also assigned to characterise the change as adverse, neutral or beneficial.

Mitigation and management measures

Where impacts to landscape character or views are identified as adverse, mitigation measures have been recommended to avoid or reduce the impact of the Project on landscape character or views.

3.0 Existing environment

3.1 Site context

Regional context

The Project is located on Wonnarua Country, which also encompasses the traditional lands of the Darkinjung and Awabakal Peoples. It is situated approximately 14 kilometres (km) north of Cessnock and 48 km west of Newcastle in the Hunter Region. The site is located on Wine Country Drive, a key regional route that connects the local centres of Cessnock and Branxton, as well as Old North Road which connects to Hermitage Road to the west.

The site sits within the Hunter-Central Coast Renewable Energy Zone (REZ), which extends from Scone to Newcastle. This REZ is designed to deliver key infrastructure supporting the transition to renewable energy across the National Electricity Market (NEM). A key transmission corridor Hunter-Central Coast REZ runs to the north of the Project, through Branxton.

Rothbury is situated within the Hunter Valley wine region, a well-established tourist destination known for its wineries, event venues and other attractions. Wine Country Drive functions as a key access corridor for visitors travelling to local wineries and associated facilities. The region is primarily shaped by the viticulture industry, with many surrounding properties used for grape production, hospitality and tourism. Additional land uses include grazing and other forms of agriculture. The landscape is mostly cleared, with windbreaks and scattered remnants of bushland contributing to its rural character.

Local context

The site is positioned near the intersection of Wine Country Drive and Old North Road (a local road), adjacent to Ausgrid's existing Rothbury Zone Substation. The landscape comprises open paddocks which are visually compartmentalised by areas of dense vegetation, often associated with riparian corridors, patches of remnant bushland, or planted bands of trees. An electrical overhead transmission line easement runs through the site in an east-west orientation, connecting to the Rothbury Zone Substation.

Development within the study area include:

- Residential housing, comprising either single dwellings set on large, rural cadastral lots, or dwellings on smaller lots but within denser housing estates
- Commercial enterprises, typically associated with wineries, hospitality or accommodation, including Black Creek Farm (Thélème Wines) to the west of the Project, Lucy's Run Wines to the east of the Project (east of Wine Country Drive), and Scarborough Cottage to the north.

**LEGEND**

- | | |
|-----------------------------|-------------------|
| The site | Waterbody |
| Study area | Watercourse |
| Road | Winery |
| Cadastre boundary | Hospitality venue |
| Existing Ausgrid substation | |

Commercial properties within the study area:

- | | |
|---|----------------------------------|
| 1 | Black Creek Farm (Thélème Wines) |
| 2 | Lucy's Run Wines |
| 3 | Scarborough Cottage |

Figure 3-1 Site context

3.2 Land zoning

The Project lies within the Cessnock City Council LGA. As shown in **Figure 3-2**, the land surrounding the site comprises a range of land use zones. The site itself sits within Rural Landscape (RU2) zoning which extends west to Black Creek as well as to the northeast. Extending south from Old North Road, the predominant land zoning is Primary Production Small Lots (RU4). Wine Country Drive, which runs along the eastern boundary of the site, is zoned as Infrastructure (Classified Road): Wine Country Road (SP2).

A large area zoned as Tourist (SP3) lies approximately 800 m south of the Project and includes properties associated with wine production and their associated tourist activities. This also includes a large area of land proposed for a future golf resort and residential development.

An area of Large Lot Residential (R5) land is located to the west and north of the site, bounded by bushland to the northwest, which is zoned as National Parks and Nature Reserves (C1) and Environmental Management (C3).

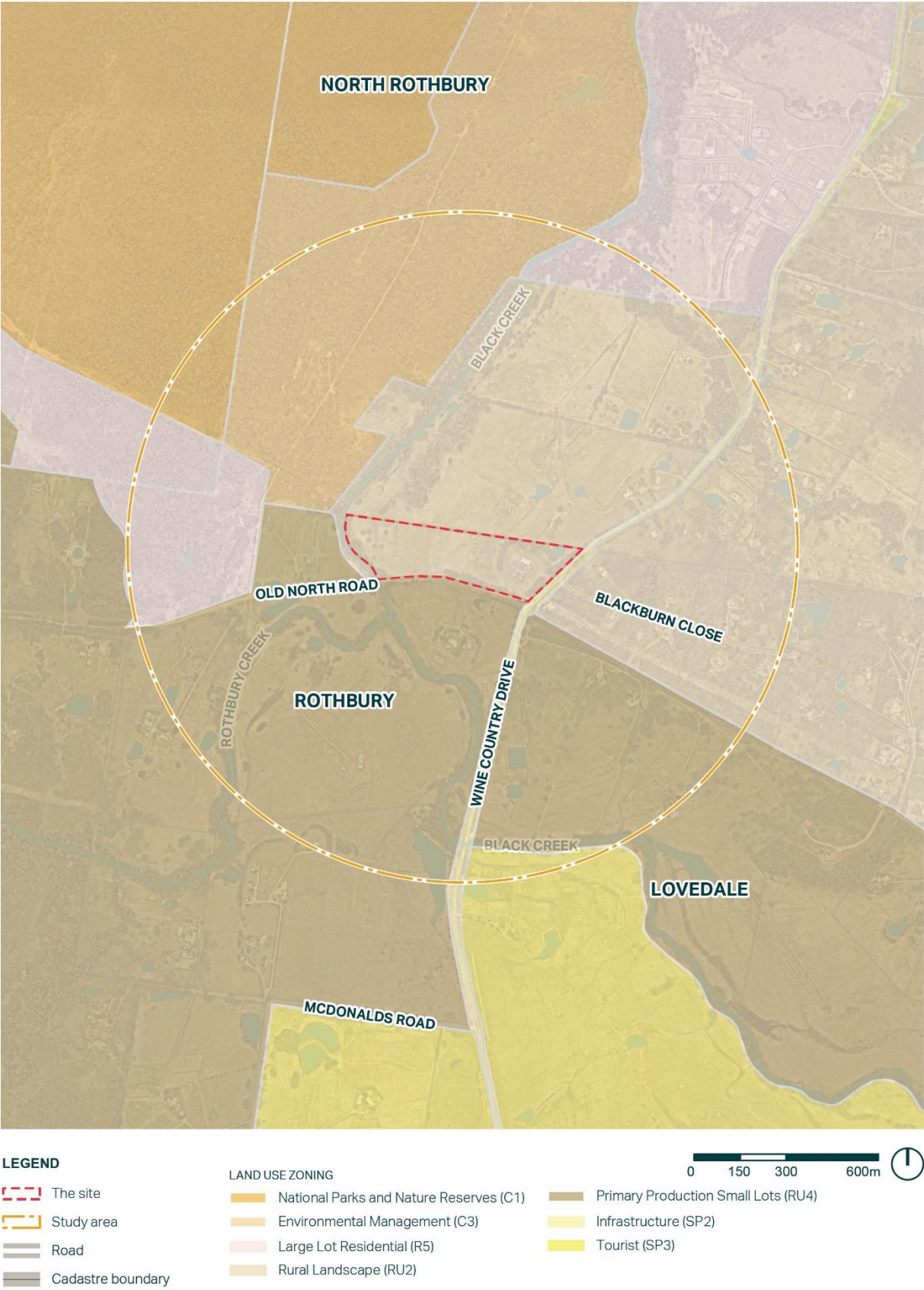


Figure 3-2 Land use zoning within the site context

3.3 Topography and hydrology

The landscape within and surrounding the study area comprises flat to gently undulating agricultural land within the floodplain of Black Creek and Rothbury Creek. This is framed by a low north-south ridgeline to the west and several low, localised peaks to the east and south. Elevation across the surrounding landscape ranges from 0 to 301 metres AHD, with the site situated within a low-lying valley between these elevated features.

The Broken Back and Rosebrook Ranges are large topographical elements, standing out as backdrops against the relatively flat floodplain associated with Black Creek and Rothbury Creek (refer to **Figure 3-3**). These mountainous elements provide a backdrop to the flatter areas of the landscape within the region.

The Project sits in the Hunter River catchment with two key waterways, Black Creek and Rothbury Creek, located to the west and the south of the site. Black Creek connects to the Hunter River approximately 11 km north of the Project. These creek lines typically comprise narrow, meandering channels that traverse cleared paddocks, with established trees lining their banks. A substantial area of remnant bushland extends across the regional landscape, with smaller tracts within the study area extending north and west on the hillside west of Black Creek. A series of farm dams are scattered throughout surrounding properties, including within the adjacent paddocks to the Project.

The topography and creeks within the study area are shown in **Figure 3-4**.



Figure 3-3 Landscape including and surrounding the Project site, and the Broken Back Range (Source: AirBnB, 2025)



Figure 3-4 Topography and hydrology

3.4 Vegetation

Most of the land within the study area comprises open, disturbed paddocks, with a mix of native and exotic vegetation. Remnant vegetation (including identified PCTs) is typically positioned along watercourses and on steeper land. Three PCTs have been identified using desktop mapping within the study area (refer to **Figure 3-5**):

- PCT 3315 Central Hunter Ironbark-Spotted Gum Forest, comprising grassy woodlands within the northeast boundary of the site, extending eastwards
- PCT 3431 Central Hunter Ironbark Grassy Woodland, comprising dry sclerophyll forests in smaller clusters within the broader landscape
- PCT 4023 Coastal Valleys Swamp Oak Riparian Forest, comprising forested wetlands associated with creek lines and low-lying areas, including within wind break planting on the southern boundary of the site.

The Biodiversity Development Assessment Report (BDAR) (Niche Environment and Heritage, 2026) confirmed the presence of PCT 3315 and PCT 4023 within the site boundary during their field survey.

For further detail regarding vegetation, refer to Section 6.2 (Biodiversity) and the BDAR in Appendix E of the EIS.

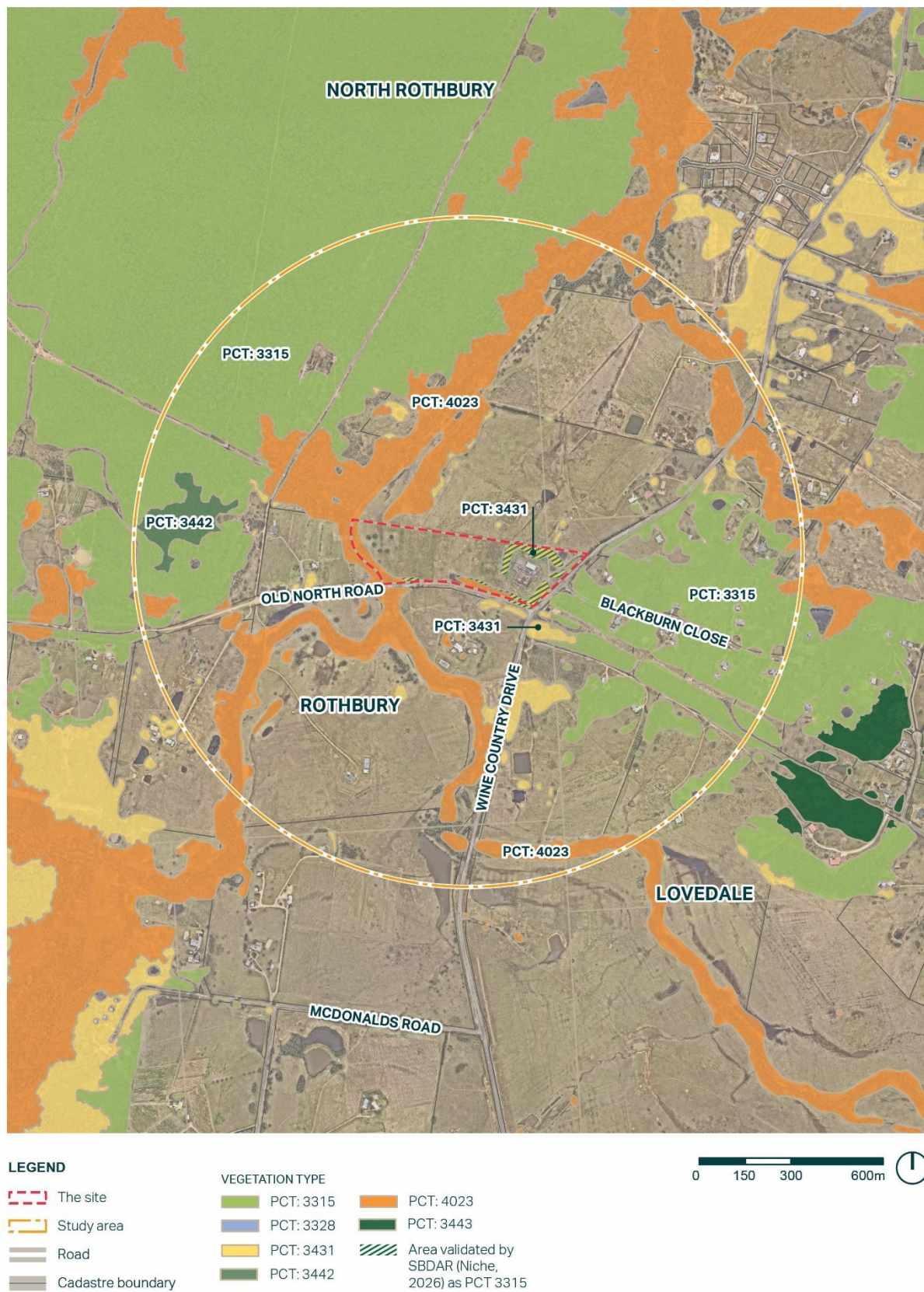


Figure 3-5 Plant community types (Data source: State Vegetation Type Map, NSW Government - only vegetation contained within the site boundary has been validated within the BDAR report (Niche, 2026))

3.5 Heritage

3.5.1 Aboriginal Cultural Heritage

The site falls within the Wonnarua language group, with bordering language groups including the Geawegal to the north, the Darkinjung to the south, the Worimi and Awabakal to the east, and the Wiradjuri to the west (Apex Archaeology, 2026). An Aboriginal Cultural Heritage Assessment Report has been prepared for the Project by Apex Archaeology (2026) (Appendix G of the EIS). Key findings from this assessment include:

- No previously recorded Aboriginal Heritage Information Management System (AHIMS) sites are located within the study area (defined as Lots 1 and 2 of DP 1318566, 1309 Wine Country Drive, Rothbury, NSW 2320)
- 12 AHIMS sites have been identified within a 1 km buffer of the site
- An area of potential archaeological deposit (PAD) within the western portion of the site was identified (refer to **Figure 3-6**)
- A total of 80 cultural objects were recovered from 13 of 14 test pits within the eastern portion of the PAD area. Only one test pit did not contain any objects, indicating the presence of a near-continuous scatter of objects across the tested area
- The Project design would avoid impacts to this PAD.

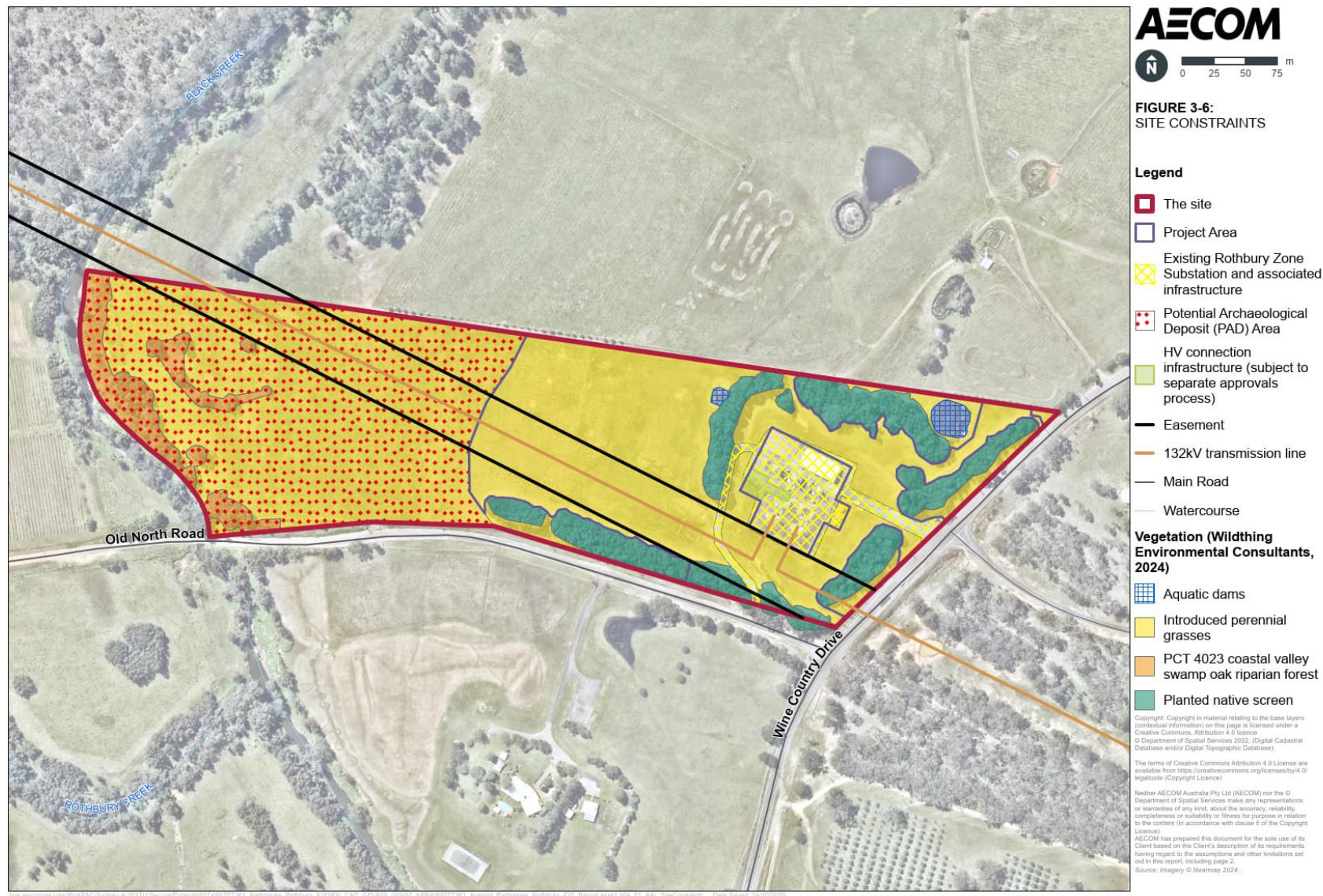


Figure 3-6 Site constraints showing Potential Archaeological Deposit Area

3.5.2 Non-Aboriginal heritage

Two non-Aboriginal local heritage items lie within 1.5 km of the site, although only one lies within the study area:

- *Old North Road remnant* (LEP #I177) which is a remnant of early road route associated with the European occupation and development within the Hunter Valley. This land has been altered from its original condition through erosion and bush regeneration. It is not in use as a road corridor.
- *Blick Bros graves at Belbourie Winery* (LEP #I178) which are noted to be evidence of early European settlement and typical of European burial in the early years of settlement in this region (not within the study area for this assessment).

The non-Aboriginal heritage assessment in this EIS has identified the Pokolbin Valley Landscape Conservation Area, listed on the (now-archived) Register of the National Estate for its historical landscape values linked to early viticulture and scenic rural character. Although this listing is non-statutory and does not trigger the need for a formal assessment, it is a helpful reference for cultural significance.

Based on the results above, construction of the Project is not expected to affect any known heritage features.

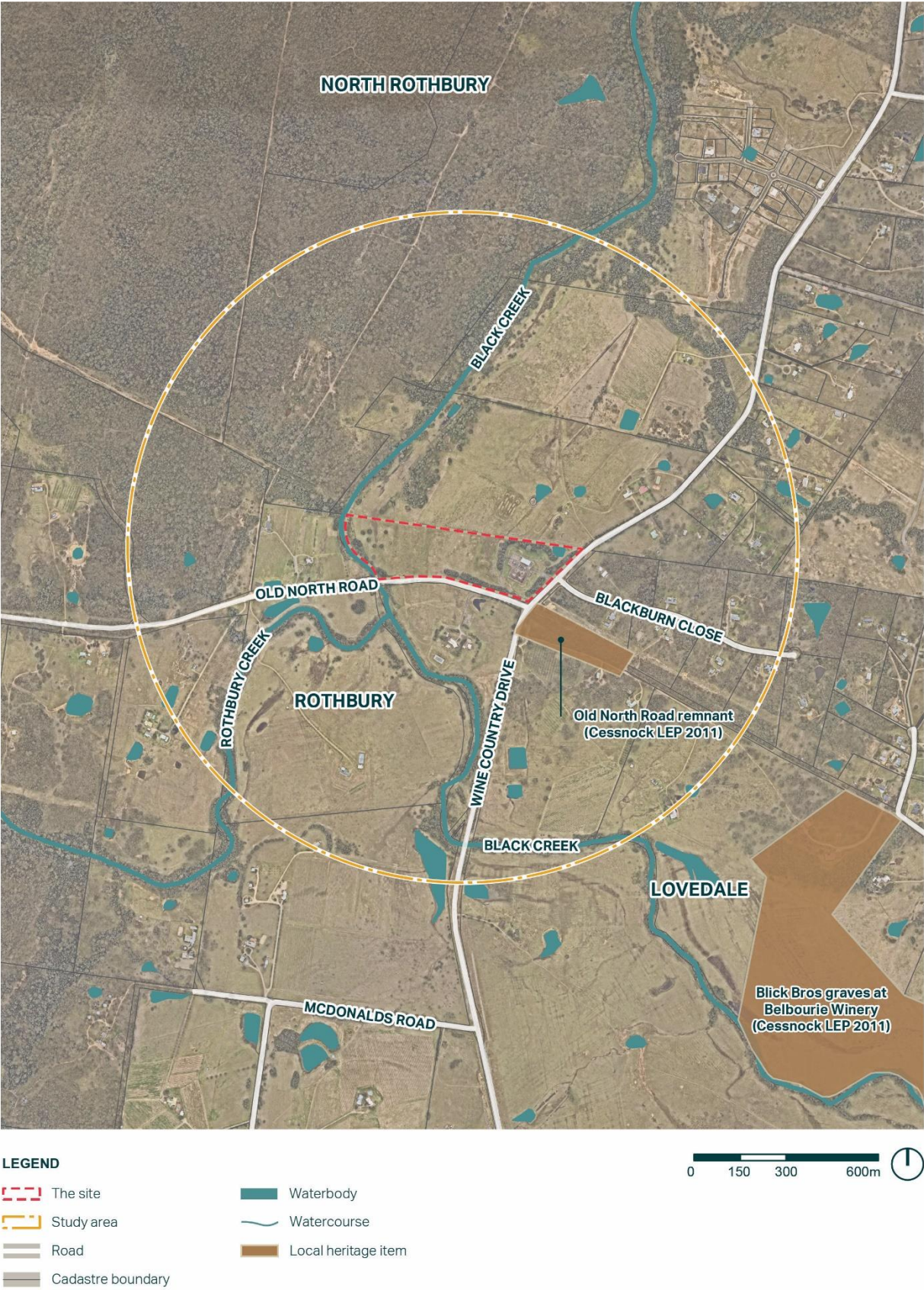


Figure 3-7 Documented heritage items within the study boundary and surrounding landscape

3.6 Landscape character zones

Three LCZs have been identified within the study area (refer to **Figure 3-8**):

- LCZ 1: Rural/ Residential/ Tourism
- LCZ 2: Environmental Living
- LCZ 3: Bushland.

LCZ 1 comprises the majority of the landscape within the study area, with smaller areas of LCZ 2 to the east of the site and a large area of bushland (LCZ 3) to the northwest. The Project lies within LCZ 1.



Figure 3-8 Landscape character zones within the study area

3.6.1 LCZ 1: Rural/ Residential/ Tourism

Description

LCZ 1: Rural/ Residential/ Tourism comprises the largest proportion of the landscape within the study area, from the southwest to the northwest (refer to **Figure 3-8**). This LCZ is characterised by broad, open, flat to gently undulating paddocks, set against a backdrop of bushland as well as the Broken Back and Rosebrook Ranges, with stands of trees characteristic of the landscape. It includes rural homesteads scattered throughout the landscape, generally associated with vineyards or accommodation (refer to **Figure 3-9**). Refer to **Table 3-1** for a description of LCZ components.

Table 3-1 Description of LCZ 1: Rural/ Residential/ Tourism

Component	Description
Land Use	- Rural Landscape (RU2) - Primary Production Small Lots (RU4) - Infrastructure (Classified Road): Wine Country Road (SP2) - Tourist (SP3) - Large Lot Residential (R5).
Topography and Drainage	Flat to gently undulating landscape with low lying areas associated with the Black Creek and Rothbury Creek corridors. A series of unnamed dry creek lines are scattered through the LCZ, associated with the main creek lines, forming connections between farm dams.
Vegetation	Primarily open landscape containing stands of trees and sporadic clusters of vegetation within largely open paddocks. Vegetation lining Black Creek, Rothbury Creek and associated dry creek beds form distinctive corridors through the landscape.
Built Form	Rural homesteads, many of which are listed as accommodation, are situated within the open paddocks and vineyards, scattered throughout this LCZ. These homesteads usually consist of a cluster of buildings, including a house, sheds, and garages, with both formal and informal landscaping surrounding the properties. The Rothbury Zone Substation is also located within the site.
Spatial Form	A sparse network of roads is present within the landscape, typically fringed by trees. The main connecting road is Wine Country Drive, running along the site's eastern boundary and Old North Road, running along the southern boundary. The spatially open paddocks and viticulture lots do not follow a particular pattern, with the landscape divided in irregular ways as informed by waterways and remnant bushland.
Heritage	One heritage item sits adjacent to this LCZ, but within LCZ 2: Environmental Living. This heritage item is the Old North Road remnant, located east of the site, south of Blackburn Close. Refer to Section 3.5 for further information.



Figure 3-9 Views characteristic of LCZ 1: Rural/ Residential/ Tourism

Sensitivity: Moderate

Considering the value of the landscape (high) and the susceptibility of the landscape to change (moderate), the sensitivity of this LCZ is considered to be **moderate** for the reasons listed in **Table 3-2**.

Table 3-2 Sensitivity of LCZ 1

Component	Description
Susceptibility to change: Moderate	- The LCZ is spatially open and picturesque, however, is compartmentalised by tall vegetation, which reduces the visual prominence of built form within the greater landscape - Similar infrastructure exists within the site and is somewhat characteristic of the area, with other electrical infrastructure dotted within the surrounding landscape - The Project is also not commonly aligned with the RU2 zoning classification - The change to the landscape would be long-term.
Value of the landscape: High	- The landscape has substantial value due to its tourism, agricultural (wine making), cultural and ecological characteristics - The landscape is characteristic of the broader region, with a number of viticulture and tourism related land uses throughout the landscape, characteristic of the area and climate - One heritage item is present adjacent to this LCZ.

3.6.2 LCZ 2: Environmental Living

LCZ 2: Environmental Living comprises clusters of properties set within bushland settings throughout the landscape within the study area (refer to **Figure 3-8**). This LCZ is characterised by dense to scattered vegetation surrounding homesteads and farm buildings, and gently undulating landscape (refer to **Figure 3-10**). Refer to **Table 3-3** for a description of LCZ components.

Table 3-3 Description of LCZ 2: Environmental Living

Component	Description
Land Use	- Rural Landscape (RU2) - Primary Production Small Lots (RU4).
Topography and Drainage	Gently undulating landscape, generally associated with rising topographic elements, including a ridgeline associated with Blackburn Close.
Vegetation	The vegetation within private lots typically comprises dense to scattered clusters of mature native/ remnant trees surrounding properties which encloses the landscape. Vegetation breaks in the landscape are present along road and easement corridors. Formalised street trees are uncommon within this LCZ.
Built Form	Single storey residential housing on large blocks typically comprise a cluster of buildings, including a house, sheds, and garages surrounded by bushland at a buffer from the homestead.
Spatial Form	Medium to large lot sizes are positioned adjacent to a relatively sparse road network. Blackburn Close forms a key spine connecting residential properties to the east of the site. Properties along this corridor are regularly dispersed and follow a similar character. Other property clusters within this LCZ do not follow a clear structure, with the landscape divided in irregular ways, as informed by waterways and remnant bushland.

Component	Description
Heritage	One heritage item sits within this LCZ, being the Old North Road remnant, located east of the site, south of Blackburn Close. Refer to Section 3.5 for further information.



Figure 3-10 Views characteristic of LCZ 2: Environmental Living

Sensitivity: **Moderate**

Considering the value of the landscape (moderate) and the susceptibility of the landscape to change (moderate), the sensitivity of this LCZ is considered to be **moderate** for the reasons listed in **Table 3-4**.

Table 3-4 Sensitivity of LCZ 2: Environmental Living

Component	Description
Susceptibility to change: Low	- This LCZ comprises smaller, dispersed portions of the broader study area - While there is similar infrastructure existing on the site, the Project is also not commonly aligned with the RU2 zoning classification. - The change to the landscape would be long-term.
Value of the landscape: Moderate	- The landscape has value due to its ecological and topographical characteristics - Being a combination of a bushland landscape and rural living, the landscape is characteristic of the broader region where housing is located over a more steeply sloping landscape - Areas of this LCZ has been disturbed over time due to development practices, including thinning of bushland areas and the establishment of vegetation breaks for elements such as roads and easement corridors - One heritage item is present within this LCZ.

3.6.3 LCZ 3: Bushland

LCZ 3: Bushland comprises a large portion of the landscape in the northwest of the study area, with a smaller, secondary area in the southwest (refer to **Figure 3-8**). This LCZ is characterised by dense bushland, set along a ridgeline with a backdrop of bushland, as well as the Broken Back and Rosebrook Ranges (refer to **Figure 3-11**). No built form elements are situated within this LCZ. Refer to **Table 3-5** for a description of LCZ components.

Table 3-5 Description of LCZ 3: Bushland

Component	Description
Land Use	• Rural Landscape (RU2) • Primary Production Small Lots (RU4) • Large Lot Residential (R5) • National Parks and Nature Reserves (C1) • Environmental Management (C3).
Topography and drainage	The largest portion of this LCZ sits along a minor ridgeline running to the northwest of the site. Black Creek lies within this LCZ in the study area.
Vegetation	This LCZ comprises dense bushland vegetation, characterised by the following plant community types: • PCT 3315 Central Hunter Ironbark-Spotted Gum Forest • PCT 3431 Central Hunter Ironbark Grassy Woodland • PCT 4023 Coastal Valleys Swamp Oak Riparian Forest • PCT 3442 Lower Hunter Lowland Ironbark-Paperbark Forest.
Built Form	No built form is situated within this LCZ.
Spatial Form	Spatially enclosed, primarily dense canopy cover and ground layer composition (refer to Figure 3-11). This LCZ spatially encloses the more open LCZs such as LCZ 1, forming a visual backdrop to this and other more open landscapes.
Heritage	No heritage items are present within this LCZ.



Figure 3-11 Views characteristic of LCZ 3: Bushland

Sensitivity: Moderate

Considering the susceptibility of the landscape to change (low) and the value of the landscape (high), the overall sensitivity of this LCZ is considered to be moderate for the reasons listed in **Table 3-6**.

Table 3-6 Sensitivity of LCZ 3: Bushland

Component	Description
Susceptibility to change: Low	• The LCZ is picturesque • While the Project involves works that do not visually align with the existing character of the LCZ, the spatially enclosed nature of the LCZ, reduces its susceptibility to change due to the Project.

Component	Description
Value of the landscape: High	• The landscape has value due to its geological, topographical, natural drainage and ecological characteristics • The spatial qualities of the areas of this LCZ are important as they spatially define other, more open LCZs • This LCZ does not feature heritage items, however, has ecological and cultural values.

4.0 Landscape character impact assessment

4.1 LCZ 1: Rural/ Residential/ Tourism

Description of works

The Project sits wholly within LCZ 1, comprising a new BESS adjacent to the existing Rothbury Zone Substation. Visible elements within the Project Area include all aboveground components listed within the Project overview (refer to **Section 1.1**).

Sensitivity: **Moderate**

The sensitivity of this LCZ has been rated moderate, as assessed in Section 3.6.1.

Magnitude: **Moderate**

Refer to **Table 4-1** for the magnitude of change within LCZ 1 due to the Project.

Table 4-1 Magnitude of change – LCZ 1: Rural/ Residential/ Tourism

Criteria	Comments
Size / scale of change	- The Project would cover a moderate portion of the LCZ within the study area - The Project would introduce visually prominent infrastructure, with structures up to 8 m tall, increasing the scale of development in the LCZ - While the changes are characteristically similar to the existing Rothbury Zone Substation, they do not align with the broader character of the LCZ - Some of the existing vegetation within the site would be cleared to allow for the proposed infrastructure - The scenic qualities of the area may be affected due to an increase in electrical infrastructure positioned within the site.
Geographical extent of impact	- The changes are bounded by Black Creek, Old North Road, Wine Country Drive and the boundary of the property at 1337 Wine Country Drive - The changes would primarily occur in the central portion of the site, adjacent to the existing Rothbury Zone Substation infrastructure - The changes would typically affect the immediate setting of the Project within the LCZ, with large portions of the LCZ unaffected. The Project would roughly impact ten percent of the LCZ within the study area.
Duration and reversibility of impact	The change to the landscape would be long-term.
Magnitude of change	Moderate

Landscape character assessment: **Moderate (adverse)**

Overall, the change in landscape character within the LCZ due to the Project is considered to be moderate (adverse). The changes would affect a moderate portion of the LCZ due to the spatially open nature of the pastoral / viticulture landscape, with the Project resulting in the addition of built form of a substantial scale. While the changes are characteristically similar to the existing Rothbury Zone Substation infrastructure, the adverse qualitative rating is due to the increased quantity and scale of infrastructure within a landscape which is valued for its rural and tourism (winery and hospitality) attributes, as well as the removal of vegetation, which is currently providing visual screening to the Rothbury Zone Substation.

4.2 LCZ 2: Environmental Living

Description of works

The Project sits immediately adjacent to the western boundary of LCZ 2, with no changes due to the Project occurring within LCZ 1. Visible Project elements within the adjoining LCZ 1 include all aboveground components listed within the Project overview (refer to **Section 1.1**).

Sensitivity: Moderate

The sensitivity of this LCZ has been rated moderate, as assessed in **Section 3.6.2**.

Magnitude: Negligible

Refer to **Table 4-2** for the magnitude of change within LCZ 2 due to the Project.

Table 4-2 Magnitude of change – LCZ 2: Environmental Living

Criteria	Comments
Size / scale of change	- No vegetation within LCZ 2 would be removed, with the existing visual buffering vegetation to be retained on the southern and eastern boundaries of the site, immediately adjacent to the LCZ - No new elements would be introduced within the LCZ - Where the Project sits nearby the boundary of the LCZ, the change in the scale of the structures is balanced by the vegetation cover within the LCZ, particularly adjacent to the site.
Geographical extent of impact	The proposed changes would occur outside of this LCZ.
Duration and reversibility of impact	The change to the landscape would be long-term.
Magnitude of change	Negligible

Landscape character assessment: Negligible (neutral)

Overall, the change in landscape character within the LCZ due to the Project is considered to be Negligible (neutral). Considering that the Project would be located outside LCZ 2 and would not impact the character inside the LCZ, it would have no impact on the character or quality of the LCZ.

4.3 LCZ 3: Bushland

Description of works

The Project sits adjacent to the south-eastern border of LCZ 3. The elements included as part of the Project are outlined in **Section 4.1**.

Sensitivity: Moderate

The sensitivity of this LCZ has been rated moderate, as assessed in **Section 3.6.3**.

Magnitude: Negligible

Refer to **Table 4-3** for the magnitude of change within LCZ 3 due to the Project.

Table 4-3 Magnitude of change – LCZ 3: Bushland

Criteria	Comments
Size / scale of change	• No vegetation within LCZ 3 would be removed • No new elements would be introduced within the LCZ • Where the Project sits along the boundary of the LCZ, scale of the infrastructure is minimal in comparison to the size of the overall LCZ.
Geographical extent of impact	The proposed changes would occur outside of this LCZ.
Duration and reversibility of impact	The change to the landscape would be long-term.
Magnitude of change	Negligible

Landscape character assessment: Negligible (neutral)

Overall, the change in landscape character within the LCZ due to the Project is considered to be negligible (neutral). The proposed changes would not result in a characteristic change to the LCZ, nor affect the quality of the LCZ.

5.0 Visual impact assessment

5.1 Visibility of the Project

The most visually prominent elements of the Project would include:

- Containerised battery units and associated infrastructure, including inverters and MV transformers, standing at a height of approximately 2.8 m
- Clearing of vegetation, including mature trees
- A combined switch and control room building (30 m length x 30 m width x 5 m height)
- O&M building
- A warehouse to store equipment and other materials or plant related to maintaining the battery units
- Other ancillary infrastructure including boundary security fencing, a noise barrier and lighting.

Two visual receptor groups have been defined that would be sensitive to change in the character of the current views:

- **Private domain**, including:
 - Residents in one of the 20 dwellings within the study area that are not owned by, or otherwise associated with, the Project (refer to **Figure 3-1**). Of these, three may experience direct views of the Project:
 - 1337 Wine Country Drive (refer to Viewpoint 01 in **Figure 5-2**)
 - 803 Old North Road (residential home within Black Creek Farm, Viewpoint 07, refer to **Figure 5-2**)
 - 864 Old North Road (Quambatook House) (refer to Viewpoint 03 in **Figure 5-2**, which is located at the entrance to this property on Old North Road)
 - Visitors to and workers at commercial properties including:
 - Scarborough Cottage accommodation at 1401 Wine Country Drive (refer to Viewpoint 02 in **Figure 5-2**)
 - Black Creek Farm / Winery (refer to Viewpoint 06 in **Figure 5-2**)
 - Farms and horticultural enterprises (including the property at Viewpoint 01, refer to **Figure 5-2**).
- **Public domain**: motorists using Wine Country Road and Old North Road, noting that Wine Country Road is a key connector route for visitors to the Hunter Valley region and its associated hospitality and tourism venues.

Overall, there would be a moderate to low number of visual receptors that would see the changes at any one location surrounding the Project. The highest number of visual receptors would be those using Wine Country Road and Old North Road, with residents of and visitors to surrounding properties comprising the next highest visual receptor groups.

A viewshed map was generated using the visibility tool in ArcGIS Pro to illustrate the theoretical visibility of the Project. This was undertaken using a 1-meter DEM raster downloaded from ELVIS as the ground surface and a target offset of 1.5 m to represent average human eye level, and an estimated height of the taller elements on the site (in this case the proposed 8m tall noise walls).

Note that the viewshed mapping was based on the terrain surface only (DEM) and does not consider the screening effect that vegetation or built form may have. In addition, the viewshed shown does not consider the amount of the Project visible (e.g. if whole structures or only the top of structures may be visible), and so a worst-case scenario is generated. As a large amount of tall, dense vegetation is present, the actual visibility of the Project is substantially less than Figure 5-1 suggests.

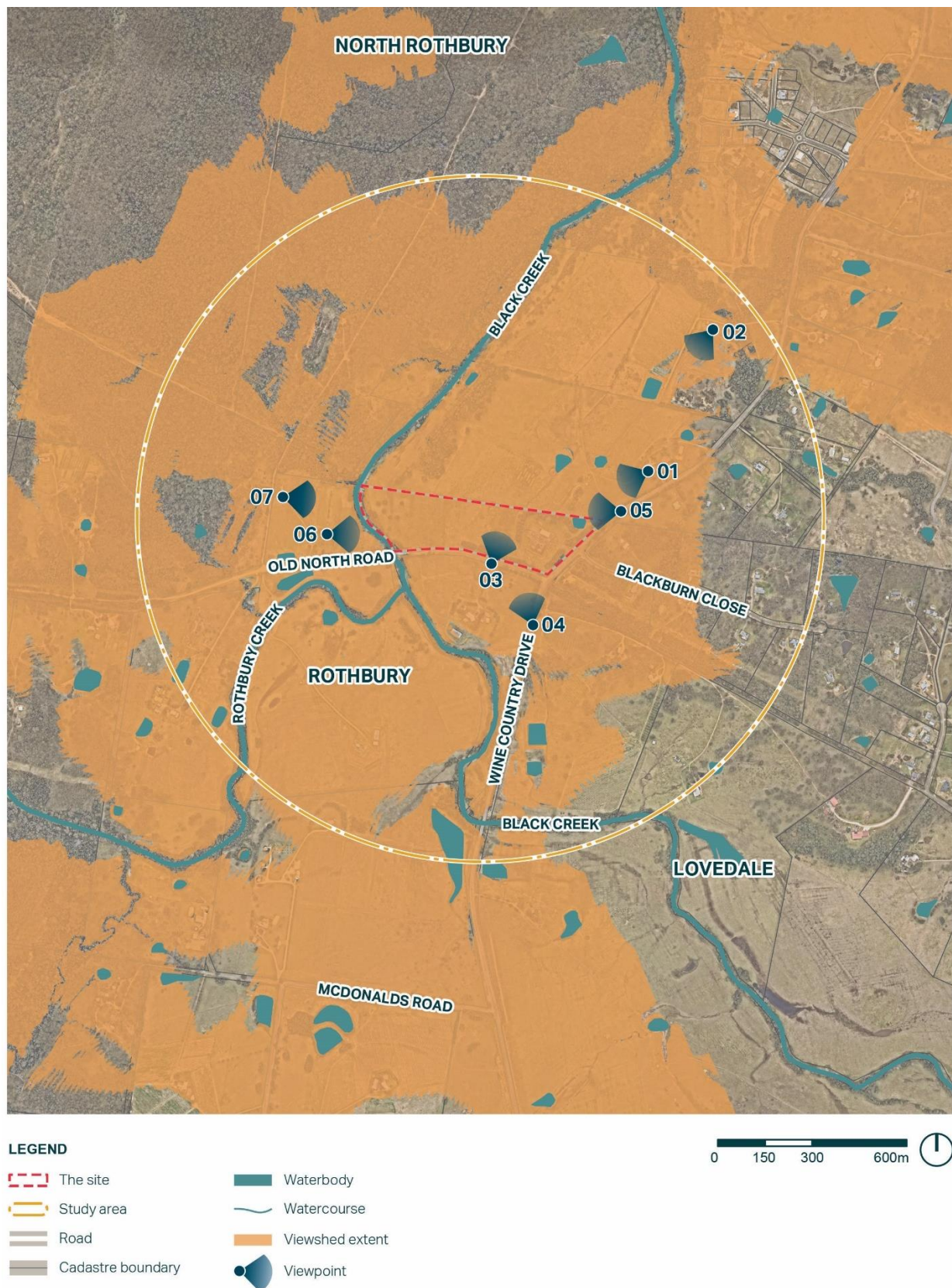


Figure 5-1 Theoretical visibility of the Project based on terrain surface only (i.e. screening by vegetation or built form was not considered)

Figure 5-1 suggests that the Project is highly visible from the surrounding landscape, with views theoretically available from more distant locations to the north and south of the Project, and from closer

proximity locations from the east and west. Ground verification has confirmed that dense bushland extends west of the extent of Black Creek (north of Old North Road) and screen views to the Project from western locations. Patches and bands of vegetation within the Black Creek / Rothbury Creek floodplain limit views to the Project from the lower areas to the north and south of the Project. More open woodland vegetation to the east of the Project also limits views from residential areas to the east.

5.2 Construction impact assessment

5.2.1 Visual impact of construction

Construction works would involve enabling works, as well as various civil, structural, mechanical and electrical works, testing and commissioning and demobilisation. Construction laydown areas would be provided within the Project's Construction Footprint. Subject to equipment lead times and availability, it is anticipated that construction of the Project would commence in late 2027 and be completed by mid-2029 (approximately 22 months).

Visual receptors likely to see the Project during construction are outlined above. The most sensitive of these are likely to be people within residences and commercial properties (particularly those which value picturesque views from their properties, such as at Black Creek Farm and Scarborough Cottage).

Residents near to the Project would experience a moderate degree of visibility to the construction works, particularly the operation of heavy machinery and tree removal. However, views would be at least partially screened by mature tree cover and other vegetation from most locations, with the exception of 1337 Wine Country Drive, who would experience direct and unmitigated views of construction activities.

From surrounding roads, bushland and other tall vegetation provides visual filtering of views during construction. The most detailed views to construction work on roads would be seen from receptors travelling on Old North Road. However, existing planting and vegetation would provide visual screening to most of the road, with only some locations where the construction would be visible.

The construction work and machinery are likely to be substantially visible within the landscape. However, as the works are temporary, construction would not have any lasting impacts on receptors.

Overall, these visual receptors are considered to have a high sensitivity to change, particularly the residents and visitors to the adjacent accommodation and winery locations. Residents would have a higher sensitivity based on their proprietary interest in views from their properties. Tourists would have an interest in the view from their accommodation, and their enjoyment of their travel would be somewhat tied to the visual amenity of their surrounds.

Visually prominent elements of the construction activity would include above-ground components listed in **Section 1.1**. These changes would comprise a high magnitude of change to the existing views, with the visual clutter of construction uncharacteristic within the surrounding landscape.

Overall visual impact of construction: High (adverse)

The visual impact of the Project during construction is considered to be high (adverse). This is based on the introduction of large construction equipment and industrial infrastructure within a primarily rural, viticulture landscape. The visual clutter associated with construction would be seen over a prolonged period of time.

5.3 Operational impact assessment

5.3.1 Viewpoints

Seven representative viewpoints have been chosen to assess potential impact of the Project on existing views. These viewpoints are positioned at key locations to represent views from sensitive receptors such as residences, tourist destinations and motorists along adjacent roads. The views of workers and visitors to neighbouring properties are also considered.

The viewpoint locations are (refer to **Figure 5-2**):

- Viewpoint 01: Residence at 1337 Wine Country Drive
- Viewpoint 02: Scarborough Cottage accommodation

- Viewpoint 03: Entry Drive of Quambatook House
- Viewpoint 04: Wine Country Drive southern view
- Viewpoint 05: Wine Country Drive northern view
- Viewpoint 06: Black Creek Farm Wine tasting deck
- Viewpoint 07: Residence at 803 Old North Road.



Figure 5-2 Representative viewpoints

5.3.2 Viewpoint 01: Residence at 1337 Wine Country Drive

This viewpoint is located adjacent to a farm shed, and illustrates the view that residents, workers and visitors to this property may see. This location was selected as it comprises the closest point within the curtilage of the house that has views to the Project. Views to the Project from the house itself would be screened by the farm shed to the right of the viewpoint, and existing tall vegetation in the yard surrounding the home.

Existing view

The existing view from this location is shown in **Figure 5-3**. The view comprises a gently rolling, open pastoral landscape, with paddocks extending from the foreground of the view to a heavily vegetated middle and background.

The foreground includes a paddock with an open farm gate to the right of frame. Two small farm sheds and a stock ramp are situated within the central middle ground of the view, along with a dense band of trees which extend from the east (left of frame). The dense vegetation in the middle ground screen the view to the background from the east to the centre of the view. Densely vegetated hillsides are visible in the background to the west (right of frame within the view) with Broken Back Range seen on the horizon.



Figure 5-3 Existing view from Viewpoint 01: Residence at 1337 Wine Country Drive

Sensitivity: High

Overall, the sensitivity of this viewpoint is considered to be high for the following reasons:

- Visual receptors at this viewpoint would comprise residents (and visitors) who would have a vested interest in the quality of the view from their property
- The viewpoint is located approximately 400 m from the site
- While there would be no direct view from the house to the Project, there would be a view from the curtilage of the property (i.e. the entry driveway and inner yard area surrounding the house)
- Residents within the property are likely to experience the view towards the Project for short to moderate periods of time, as a direct, unimpeded view is only available at the fenceline to the inner curtilage (yard) surrounding the house.

Description of change

Within the view, visible elements of the Project include:

- Some battery units and associated infrastructure, including inverters and MV transformers, standing at a height of approximately 2.8 m
- ancillary structures, such as the O&M building, warehouse, and proposed noise barrier
- Clearing of vegetation
- Boundary security fencing, noise barriers and lighting.

Refer to **Figure 5-4** to **Figure 5-6** for photomontages showing the likely changes visible in the view.



Figure 5-4 Photomontage with the built form of the Project overlaid with a pink transparency to show the position of the Project within the view, although part of the Project would be screened by existing vegetation to be retained, as shown in Figure 5-5 and Figure 5-6



Figure 5-5 Photomontage illustrating the Project as it would be seen within the view, with the white dotted box showing the extent of the detail image in Figure 5-6



Figure 5-6 Detail of dotted box in Figure 5-5, showing the extent of the Project likely to be seen behind vegetation to be retained within the neighbouring paddock and the site

Magnitude: Low

Refer to **Table 5-1** for the magnitude of change of Viewpoint 01 due to the Project.

Table 5-1 Magnitude of change – Viewpoint 01: Residence at 1337 Wine Country Drive

Criteria	Comments
Size / scale of change	- The Project would introduce new BESS infrastructure in the middle to background of the view, the scale and form of which would be visually similar to the existing farm sheds within the view - There would be some loss of trees in the middle ground of the view - Within the breaks in vegetation in the centre of the view, the proposed noise wall and some of the ancillary structures of the Project would be seen. These structures would be visually recessive if a neutral colouring was selected for the structures (refer to mitigation recommendations in Section 6.0) - While most of the existing infrastructure is screened by a planted buffer, any additional planting proposed to mitigate the change within the view would not screen the proposed infrastructure for a long time, with trees taking up to 20 years to reach mature height.
Geographical extent of impact	- The changes would be experienced over a very small portion of the view in the middle to background - While the Project would introduce a new element within the view, the existing foreground of the view (i.e. open paddock) and vegetation would remain unchanged.
Duration and reversibility of impact	The duration of the change would be long-term, with the visual prominence of the Project reducing over time as screening vegetation matures.
Magnitude of change	Low

Visual impact assessment: Moderate (adverse)

Overall, the impact of the Project on the view from Viewpoint 01 is considered to be moderate (adverse). The proposed changes would result in the addition of infrastructure up to 8 m in height which would be visually similar to other built elements within the view. Visual receptors at this location would have a vested interest in the view and would experience the views over moderate periods of time when they were within the curtilage of their home, however, not while they were inside their house or in the area immediately surrounding it. The change comprises only a small portion of the overall view and the visual prominence of the Project would reduce over time as any trees planted to mitigate the impact mature.

5.3.3 Viewpoint 02: Scarborough Cottage accommodation

This viewpoint is located at Scarborough Cottage accommodation and is representative of the view seen by visitors to the accommodation. This viewpoint is also representative of the view seen by workers in the surrounding paddocks and vineyards of the property (refer to **Figure 5-2**).

Existing view

The existing view from this location is shown in **Figure 5-7** and comprises an open view to paddocks and vineyards, framed by densely vegetation hills.

Two mature trees frame the lawn and post and wire fence in the foreground, with the lawn extending beyond the internal property fence to a secondary fence and an open paddock. Vineyards are visible beyond the paddock to the south and west (right of frame) in the middle ground of the view. Vegetated

low, rolling hills are visible in the middle ground to the right and left of frame within the view, framing a view to the Broken Back Range visible in the far background of the view on the horizon. Power poles and lines are visible in the middle ground of the view, extending in a north-south direction.



Figure 5-7 Existing view from Viewpoint 02: Scarborough Cottage accommodation

Sensitivity: High

Overall, the sensitivity of this viewpoint is considered to be high for the following reasons:

- Visual receptors at this viewpoint would comprise visitors to the Scarborough Cottage accommodation who would have a high sensitivity, considering their enjoyment of holiday accommodation would be tied to views seen from their accommodation
- The view includes vineyards which add to the quality of the view and are generally sought out within the region for their picturesque qualities
- Those staying at the property would be seeing this view for long periods of time, as the view is visible from the house veranda, which is set up for an outdoor BBQ / eating area.

Description of change

Within the view it is unlikely that the Project would be visible, considering the distance to the Project, screening by vegetation, and the existing topography which obscures the lower parts of the site from view. This is evident in that only the tops of high voltage power poles on the site are visible within the view, as shown in **Figure 5-8**, which is a detail of the central portion of **Figure 5-7**.



Figure 5-8 Detail of Figure 5-7 showing the top of power poles within the site

Magnitude: Negligible

It is unlikely that any of the Project would be seen within the view, therefore the magnitude of change is negligible.

Visual impact assessment: Negligible (neutral)

Overall, the impact of the Project is considered to be negligible (neutral). The Project would have no impact on the quality of the view from this location.

5.3.4 Viewpoint 03: Entry Drive to Quambatook House

This viewpoint is located at the driveway to Quambatook House at 864 Old North Road and is representative of the view seen by residents and guests at the property. Quambatook House is a private property which has previously been utilised as accommodation, however, does not currently operate as a commercial premises (refer to **Figure 5-2**).

Existing view

The existing view from this location is shown in **Figure 5-9**. The view comprises an asphalt driveway extending from the central foreground of the image to join Old North Road, which runs across the middle ground of the image. A turf verge lies adjacent to the driveway and road corridor, with two posts and reflective indicators lining the western side of the driveway. A turf verge with power line runs along the far side of the road corridor, bounded by a post and wire fence with a gate. A band of densely planted tall trees line the far side of the fence situated on top of a linear berm.



Figure 5-9 Existing view from Viewpoint 03: Entry Drive to Quambatook House

Sensitivity: Moderate

Overall, the sensitivity of this viewpoint is considered to be moderate for the following reasons:

- Visual receptors at this viewpoint would comprise residents of Quambatook House and visitors to the property who would have a vested interest in the quality of the view
- The residence is surrounded by dense planting with entertaining areas positioned at the rear of the house (facing away from the site). The only direct view to the site from within the residence would be from the front door
- Those on the property would be seeing the view for long periods of time, rather than passing through
- The viewpoint is located approximately 20 m from the site, and the residence is located approximately 188 m from the site.

Description of change

Within the view, visible elements of the Project potentially include boundary security fencing and noise barriers (refer to **Figure 5-10**).



Figure 5-10 Photomontage with the built form of the Project overlaid with a pink transparency to show the position of the Project within the view, although most of the Project would be screened by existing vegetation as shown in Figure 5-11



Figure 5-11 Photomontage showing the proposed view from Viewpoint 03: Entry Drive to Quambatook House, showing the Project mostly screened by an existing vegetative screen

Magnitude: Low

Refer to **Table 5-2** for the magnitude of change of Viewpoint 03 due to the Project.

Table 5-2 Magnitude of change – Viewpoint 03: Entry Drive to Quambatook House

Criteria	Comments
Size / scale of change	- The Project would introduce infrastructure in the view, however, most of this would be visually screened by the existing trees planted on a berm between the Project and the viewpoint. There may be glimpse views through the trees where the lightly coloured noise wall would be in contrast to what would have been previously views through landscape and sky beyond - There would be no loss of trees visible within the view.
Geographical extent of impact	The changes would be experienced over a small portion of the overall view.
Duration and reversibility of impact	The duration of the change would be long-term.
Magnitude of change	Low

Visual impact assessment: Moderate to low (neutral)

Overall, the impact of the Project on the view from Viewpoint 03 is considered to be moderate to low (neutral). While this viewpoint may include sensitive visual receptors, vegetation surrounding the house and within the existing berm adjacent to the site provides enough visual screening to minimise the visual prominence of the Project. While there may be glimpse views through to small gaps in the vegetation cover of the existing planting, these would not comprise a substantial change to the view.

5.3.5 Viewpoint 04: Wine Country Drive southern view

This viewpoint is located south of the driveway into Lucy's Run Wines on Wine Country Drive and is representative of the view seen by motorists travelling north along Wine Country Drive towards the Project (refer to **Figure 5-2**).

Sensitivity: Low

Overall, the sensitivity of this viewpoint is considered to be low for the following reasons:

- Visual receptors at this viewpoint would comprise a moderate number of motorists travelling along Wine Country Drive (a tourist route through the Hunter Valley wine region) towards Huntlee and Branxton
- Motorists are likely to comprise a mix of locals travelling between work and home, and visitors accessing local wineries and other attractions in the area
- Visual receptors are anticipated to have a passing interest in the landscape, but would have their attention also focussed on the act of driving
- Receptors would view the site at speeds up to 80 km per hour as they drive past, and their view to the site would be one of many experienced as they travel through the landscape.

Existing view

The existing view from this location is shown in **Figure 5-12**, comprising a view along Wine Country Drive, which extends from the southern (left of frame) foreground to the northern (right of frame) middle ground of the view. Wine Country Drive is a two-lane road with a gravel verge and a W-beam guardrail on the far side. The ground level drops from the western (far) verge of the road towards a lower, open floodplain landscape, where Quambatook House is visible against a backdrop of vegetation associated with Black Creek. Bands of mature trees fringing Wine Country Drive are visible in the middle ground of the view (near the intersection with the Old North Road), with the planted band of vegetation on a berm on Old North Road visible within the central background of the view. The view terminates in the Broken Back ridgeline seen in the distance on the horizon.



Figure 5-12 Existing view from Viewpoint 04: Wine Country Drive southern view

Description of change

Within the view elements of the Project which would be visible are the removal of vegetation on Old North Road, and noise barriers, and shown in **Figure 5-13** and **Figure 5-14**.



Figure 5-13 Photomontage showing the proposed view from Viewpoint 04: Wine Country Drive southern view, showing changes due to the Project



Figure 5-14 Detail of Figure 5-13 showing the noise barriers visible in breaks in the vegetation barrier due to tree removal

Magnitude: **Low**

Refer to **Table 5-3** for the magnitude of change of Viewpoint 04 due to the Project.

Table 5-3 Magnitude of change – Viewpoint 04: Wine Country Drive southern view

Criteria	Comments
Size / scale of change	- The noise barriers would be visible between the remaining tree canopy, however, comprise a small proportion of the overall view. - The noise barriers introduce an uncharacteristically large built element within the view, albeit partially screened by trees - Existing vegetation screens a majority of the Project.
Geographical extent of impact	- The visible changes would be experienced over a small portion of the overall view, with changes between retained trees - Most of the view, including the open landscape and vegetation, would remain unchanged.
Duration and reversibility of impact	- The duration of the change would be long-term - Further tree planting may be introduced within the middle ground of the view to fill the gaps in the boundary vegetation to the site which previously provided screening, however, would take around 10 to 15 years to fully screen the noise barriers.
Magnitude of change	Low

Visual impact assessment: Low (adverse)

Overall, the impact of the Project on the view from Viewpoint 04 is considered to be low (neutral). The Project would change a small portion of the overall view, with the typical view seen by motorists as they travel along the road remaining largely unchanged. The change may only be seen for a short period as motorists pass the site along Wine Country Drive. There is a high likelihood that this will go unnoticed, given the speed at which motorists would pass, with their attention split between driving and the more open, picturesque view over the floodplain and towards Quambatook House and vineyards.

The adverse qualitative rating reflects introduction of built form of a large scale, albeit partially screened, which is uncharacteristic within the existing view.

5.3.6 Viewpoint 05: Wine Country Drive northern view

This viewpoint is located north of a driveway into the property at 1337 Wine Country Drive and is representative of the view seen by motorists travelling south along Wine Country Drive towards the Project (refer to **Figure 5-2**).

Existing view

The existing view from this location is shown in **Figure 5-15**. The view comprises gravel and turf of the western verge of the Wine Country Drive corridor, running adjacent to the road pavement which stretches from the southern (left) foreground of the view to the northern (right) middle ground of the view. The verge comprises overgrown grasses and a power line. The open lawn yard of Quambatook House provides open views across the landscape to a backdrop of planting that surrounds the residence, and lines Black Creek behind. A series of mature trees line the road around the intersection with the Old North Road, with the buffer planting visible within the northern (right) background of the view.



Figure 5-15 Existing view from Viewpoint 05: Wine Country Drive northern view

Sensitivity: Low

Overall, the sensitivity of this viewpoint is considered to be Low for the reasons listed in **Section Error!** Reference source not found..

Description of change

Within the view, the only visible elements of the Project potentially include security fencing at the northern boundary of the site, as all the other proposed built elements would be screened from view by existing vegetation.

Magnitude: Negligible

Given the angle of viewing, visual screening by existing vegetation in the fore and middle ground and the speed at which travellers on Wine Country Drive would be moving at, it is unlikely that any changes to fencing surrounding the site would be noticeable from Wine Country Drive. The magnitude is therefore considered to be negligible.

Visual impact assessment: Negligible (neutral)

Overall, the impact of the Project on the view from Viewpoint 05 is considered to be negligible, with no change in the quality of the view.

5.3.7 Viewpoint 06: Black Creek Farm wine tasting deck

This viewpoint is located on the elevated rear deck at Black Creek Farm, which is used to hold wine tastings overlooking the property's vineyards. The view is representative of the view seen by guests and workers at the winery (refer to **Figure 5-2**).

Existing view

The existing view from this location is shown in **Figure 5-16**. The view comprises rows of grape vines extending from the fore into the middle ground of the view. A water tank sits prominently on the northern side (left of frame) within the view, with a mown turf access path extending between the vines from the northern side of the view into the central middle ground. The background of the view comprises the densely vegetated area associated with Black Creek. Old North Road and power lines are visible to the right of frame within the southern portion of the view.



Figure 5-16 Existing view from Viewpoint 06: Black Creek Farm tasting deck

Sensitivity: High

Overall, the sensitivity of this viewpoint is considered to be high for the following reasons:

- The view from the elevated rear deck of the property is picturesque, characterised predominantly by natural elements
- Visual receptors at this viewpoint would comprise guests and owners / workers at the Black Creek Farm. The owners / workers of the venue would have a proprietary interest in the view from their property, while visitors would be paying guests whose enjoyment of the venue would be influenced by the view over the vineyards as they do their wine tasting
- Those on the property would be spending prolonged stretches of time at the property, with their attention on the activity of dining or tasting wine, but with opportunities to look at the view, rather than just passing through.

Description of change

Within the view it is unlikely that any of the Project would be visible due to vegetative screening provided along Black Creek (refer to **Figure 5-17**).



Figure 5-17 Photomontage showing the proposed view from Viewpoint 06: Black Creek Farm tasting deck, with the indicative location of the Project shown in pink

Magnitude: Low

Given the angle of viewing and visual screening by existing vegetation along Black Creek, it is unlikely that any of the Project would be seen from this location. The magnitude is therefore considered to be negligible.

Visual impact assessment: Negligible (neutral)

Overall, the impact of the Project on the view from Viewpoint 06 is considered to be negligible, with no change in the quality of the view.

5.3.8 Viewpoint 07: Residence at 803 Old North Road

This viewpoint is located at the residence at 803 Old North Road, on the Black Creek Farm property and assesses the impact of the Project on residents of and visitors to the property (refer to **Figure 5-2**).

Existing view

The existing view from this location is shown in **Figure 5-18**. The view comprises an open, elevated, picturesque view across a vineyard, terminating in bushland vegetation. Rows of grape vines extend from the foreground into the middle ground of the view. The winery's tasting venue lies in the middle ground to the right of the centre of the view, with smaller pieces of rural infrastructure (e.g. sheds and water tanks) visible within the view but visually subservient to the larger tasting venue.

The background of the view comprises densely vegetated areas, some of which are associated with the Black Creek riparian corridor, extending into the distant background. The tops of electrical infrastructure within the Rothbury Zone Substation are visible above the trees. Gently rolling hills with bushland vegetation are seen against the horizon.

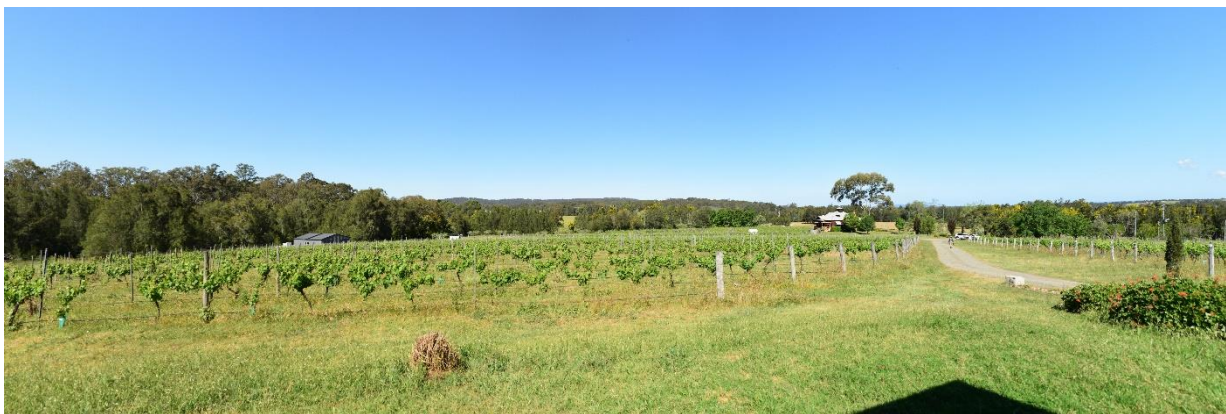


Figure 5-18 Existing view from Viewpoint 07: Residence at 803 Old North Road

Sensitivity: High

Overall, the sensitivity of this viewpoint is considered to be high for the following reasons:

- Visual receptors at this viewpoint would comprise owners and visitors to the house. The owners would have a proprietary interest in the view from their property
- The home is orientated to take advantage of the view, with the front veranda angled to appreciate the elevated location and picturesque outlook
- Those on the property would be spending prolonged stretches of time at the property with opportunities to look at the view, rather than just passing through.

Magnitude: Low

Refer to **Table 5-4** for the magnitude of change of Viewpoint 07 due to the Project.

Table 5-4 Magnitude of change – Viewpoint 07: Residence at 803 Old North Road

Criteria	Comments
Size / scale of change	• The Project would introduce new BESS infrastructure in the middle to background of the view • The proposed infrastructure would be seen against a dark backdrop of existing vegetation and partially screened by vegetation in the middle ground, which would reduce its visual prominence within the view • Within the breaks in vegetation in the centre of the view, the proposed noise wall and the BESS would be seen. These structures would be visually recessive if a neutral colouring was selected for the structures (refer to mitigation recommendations in Section 6.0).
Geographical extent of impact	• The changes would be experienced over a very small portion of the view in the middle to background • While the Project would introduce a new element within the view, the existing foreground of the view (i.e. vineyard, bushland and vegetation associated with Black Creek) would remain unchanged.
Duration and reversibility of impact	• The duration of the change would be long-term, with the visual prominence of the Project reducing over time as screening vegetation matures.
Magnitude of change	Low

Visual impact assessment: Moderate (adverse)

Overall, the impact of the Project on the view from Viewpoint 07 is considered to be moderate (adverse). The proposed changes would result in the addition of infrastructure up to 8 m in height which would be partly screened by vegetation along Black Creek. Visual receptors at this location would have a vested interest in the view and would experience the views over moderate periods of time when they were on their veranda, however, it is unlikely that the Project would be seen from within their house. The change comprises only a very small portion of the overall view and the visual prominence of the Project would reduce over time as any trees planted to mitigate the impact mature.

6.0 Mitigation and management measures

Detailed design

- Existing trees should be retained and protected, where reasonable and feasible (subject to outcomes of bushfire and fire safety assessments). Every effort should be made to retain and protect existing vegetation along the northern boundary of the site, which provides visual screening for properties to the north, and southern boundary vegetation along the site, which provides visual screening from Wine Country Drive
- Exclusion zones should be identified within the construction footprint to protect stands of important vegetation and existing trees
- Tree and shrub screening planting is recommended, in accordance with the draft landscaping plan (refer to **Figure 6-1**) to reduce visual prominence of the Project over time
- Tree, shrub and grass species should be chosen from the PCTs identified within **Section 3.4**.
- A detailed landscaping plan should be produced to confirm areas and volume of planting, species selection and installation requirements
- Stakeholder consultation on fencing and screen planting along or near property boundaries is recommended for immediate neighbours surrounding the site
- Colour and materiality of the proposed noise wall and other structures to be a neutral colour such as a glaucous green or mid-grey to help visually blend with the adjacent vegetation and reduce the visual prominence of the structures
- Minimise lighting within the site to reduce the visual prominence of the infrastructure at night within the predominantly dark surrounding landscape.

Construction

The following mitigation measures are recommended to reduce visual impacts as a result of construction:

- Establish Tree Preservation Zones (TPZs) around trees to be retained. Tree protection would be undertaken in accordance with AS 4970-2009 *Protection of Trees on Development Sites*
- Provide cut-off or directed lighting within and outside of the construction site, with lighting location and direction considered to ensure glare and light spill outside of the Construction Footprint is minimised
- Keep construction areas clean and tidy and place refuse in appropriate receptacles
- Provide well-presented and maintained site fencing with shade cloth (or similar material) to reduce visual impacts. Site fencing is to be removed following construction completion.

ROTHBURY BATTERY ENERGY STORAGE SYSTEM

Indicative landscape and visual impact mitigation diagram

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Figure 6-1 Draft plan showing indicative landscaped areas to mitigate landscape character and visual impacts

7.0 Conclusion

The Project is located within the Hunter Valley, a semi-rural viticulture region with tourism values related to the numerous wineries and its picturesque landscape. The landscape typically comprises open paddocks and vineyards positioned within tracts of bushland, which spatially compartmentalise the paddocks and farms. The Project is positioned within a local floodplain associated with Black Creek, and is surrounded by several properties including wineries, residences, and hospitality businesses.

Three LCZs were identified and assessed, with the results shown in **Table 7-1**. Overall, the Project is considered to have a low (adverse) effect on landscape character within the study area, with the changes limited to one LCZ.

Table 7-1 Landscape Character Impact Assessment overview

	Sensitivity	Magnitude of change	Impact rating	Qualitative rating
LCZ 1: Rural/ Residential/ Tourism	Moderate	Moderate	Moderate	Adverse
LCZ 2: Environmental Living	Moderate	Negligible	Negligible	Neutral
LCZ 3: Bushland	Moderate	Negligible	Negligible	Neutral

Seven viewpoints were assessed (refer to **Table 7-2**). The Project would be located within an open area but surrounded by patches of tall vegetation which visually compartmentalise the site. While the proposed operational infrastructure would comprise tall, uncharacteristic elements (such as noise walls), the surrounding vegetation would largely filter views to the Project Area.

Table 7-2 Visual Impact Assessment overview

	Sensitivity	Magnitude of change	Impact rating	Qualitative rating
Viewpoint 01: Residence at 1337 Wine Country Drive	High	Low	Moderate	Adverse
Viewpoint 02: Scarborough Cottage accommodation	High	Negligible	Negligible	Neutral
Viewpoint 03: Entry Drive to Quambatook House	Moderate	Low	Moderate to low	Neutral
Viewpoint 04: Wine Country Drive southern view	Low	Low	Low	Adverse
Viewpoint 05: Wine Country Drive northern view	Low	Negligible	Negligible	Neutral
Viewpoint 06: Black Creek Farm tasting deck	High	Negligible	Negligible	Neutral
Viewpoint 07: Residence at 803 Old North Road	High	Low	Moderate	Adverse

The greatest visual impacts of the Project at operation would be to residents of 1337 Wine Country Drive, and at 803 Old North Road, where visual receptors were considered to be highly sensitive. However, the changes due to the Project would only affect a very small portion of the existing view from both properties, and the Project would be visually similar in scale to existing pieces of farming infrastructure within the landscape (e.g. sheds). The Project would not be visible from the house itself at 1337 Wine Country Drive, only from the curtilage of the house near the inner fences.

Overall, the visual impact of the Project at operation is considered to be low (adverse), based on the impact of the Project on both public and private visual receptors. No viewpoints have resulted in a significant rating (with 'significant' defined as high or high to moderate).

During construction, the visual impact of the Project is considered to be high (adverse). This is based on the introduction of large construction equipment and industrial infrastructure within a primarily rural, viticulture landscape. The higher impact rating of the Project during construction than at operation is due to the larger equipment and visual clutter associated with construction which would be seen over a prolonged period of time, and the lack of mitigation of the construction activity.

Mitigation measures to reduce the impact of the Project at operation on landscape character and views have been identified. With consideration of these mitigation measures, the impact of the Project on landscape character and views is considered to be acceptable, given its alignment with the existing infrastructure on the site and limited visibility.

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