Gara Battery Energy Storage System Project

Landscape character and visual impact assessment

June 2025

Contents

Definitions and Abbreviations

Associated dwellings	Dwellings on land that is owned by the host landholder and associated with the project.
BESS	Battery energy storage system
DCP	Development Control Plan
Development footprint	The land (22.43ha) to be impacted by the construction of the project.
DPHI	Department of Planning, Housing and Infrastructure
EIS	Environmental Impact Statement
kV	Kilovolt
LGA	Local government area
LEP	Local Environmental Plan
LSPS	Local Strategic Planning Statement
MW	Megawatts
Site	The land (35.24ha) that is the subject of the application. 86 Woodlands Road, Armidale, NSW. (Lot 1 DP246878; Lot 1 DP573787; Lot 7003 DP1060212; Lot 7009 DP1060213 and Lots 144, 145 and 153 DP755826)
PV	Photovoltaic
REZ	Renewable Energy Zone
SEARs	Secretary's Environmental Assessment Requirements

1. Introduction

This report has been prepared to assess the visual impacts of the proposed Gara Battery Energy Storage System (BESS) project (the proposal) at 86 Woodlands Road, Armidale.

This report identifies the potential visual impacts of the proposal on views from surrounding areas. This will include an assessment of the impact on views from the public domain (including Waterfall Way / Grafton Road) and nearby private dwellings.

1.1. Assessment requirements

This report addresses the Secretary's Environmental Assessment Requirements (SEARS) issued by the NSW Department of Planning and Environment (DPE) on the 19th of July 2024.

For this visual impact assessment, the SEAR is:

Visual – including a detailed assessment of the likely visual impacts (including night lighting) of all components of the project (including transmission lines, substations and any other ancillary infrastructure) on surrounding residences (including approved developments, lodged development applications and dwelling entitlements) and key locations, scenic or significant vistas and road corridors in the public domain and provide details of measures to mitigate and/or manage potential impacts.

To address this requirement, this assessment includes:

- An assessment of views from the public domain (including scenic or significant vistas and road corridors) (refer to section 5.3)
- An assessment of views from surrounding dwellings (including approved developments, lodged development application and dwelling entitlements) (refer to section 5.5)
- An assessment of visual impact at night (refer to section 5.6)
- An assessment of cumulative impact (refer to section 7)
- Proposed measures to mitigate and/or manage potential impacts (refer to section 8).

1.2. Guidance for visual impact assessment

This visual impact assessment has generally been guided by the following documents:

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

A detailed methodology for the assessment of visual impact is described in Section 5 of this report.

1.3. Proposal study area

An area of between one and two kilometres from the proposal has been used as the study area for this assessment. Beyond this distance, a project of this scale and character is unlikely to be prominent in the view, and therefore the is no potential for a material visual impact.

2. The proposal

The proposal is located in the Armidale Local Government Area (LGA) and is within the New England Renewable Energy Zone (REZ).

The proposal is located on a site that includes several lots (Lot 1 DP246878; Lot 1 DP573787; Lot 7003 DP1060212; Lot 7009 DP1060213 and Lots 144, 145 and 153 DP755826). The majority of the proposal, including the BESS and switching station and would be located on located Lot 1 DP246878 and Lot 1 DP753787.

Access to the BESS would be provided from Waterfall Way / Grafton Road requiring works to the road and road reserve and impacting Lot 7003 DP1060212 and Lot 7009 DP1060213.

Subject to final design, the proposed transmission easement would impact Lot 1 DP246878 and Lots 144, 145 and 153 DP755826, together with an unconstructed Crown road reserve located between Lots 144 and 145.

The area including the construction and operational footprint of the proposal and is referred to as the 'site' in this report.

The proposal includes the following key infrastructure:

- New compound with battery enclosures (about 14 metres long x 3 metres wide x 3 metres high) and step-up transformers, separated into rows
- Switching station and connection infrastructure
- Up to around one kilometres of 132 kV overhead sub-transmission line connection to the existing 330 kV network to the north
- An operations and maintenance compound that includes a site office and parking
- Acoustic barrier, up to 3.15 metres high and a total length of about 110 metres
- Up to 1.8-metre-tall chainmesh security fencing and access gates surrounding the proposal
- Internal access roads with upgraded access from Waterfall Way / Grafton Road
- Road upgrade at access point on Waterfall Way / Grafton Road including road widening and a roadside vegetation management zone which would include tree clearing
- Outdoor security lighting (activated by sensor)
- The acoustic barrier, buildings and BESS containers will be of a colour that blends with the local landscape (a shade of green for example) to reduce the prominence of these structures from surrounding areas.

Landscape:

- Native screen planting along the outside of the perimeter fence
- Native screen planting along the eastern property boundary (adjacent to R1 and R3).

Refer to Figure 2-1 and Appendix A Landscape Concept Plan).

Construction would take up to ten months. The batteries would be manufactured offsite and delivered ready for installation.

Site preparation works would include minor earthworks to level the site and construct a flat platform on which to install the proposal.

The BESS would operate 24 hours a day, seven days a week. Although the project will be monitored and controlled remotely during operation, some routine maintenance will be periodically performed on-site. On-site maintenance activities will only require limited personnel.

The BESS would be operational for a period of approximately 23 years after which time the BESS would be removed and the site would be decommissioned. Decommissioning would include the removal of all above ground infrastructure and the remediation of the site.

The infrastructure may be upgraded rather than decommissioned, and the lifespan extended.

The layout of the BESS and associated infrastructure is shown on Figure 2-1 and Figure 2-2.

On Figure 2-1 the 'site' (35.24ha) is shown by a red boundary and is defined as the land that is the subject of the application. The 'Development Footprint' (22.43ha) is shown by a yellow boundary and is defined as the land to be impacted by the construction of the project.

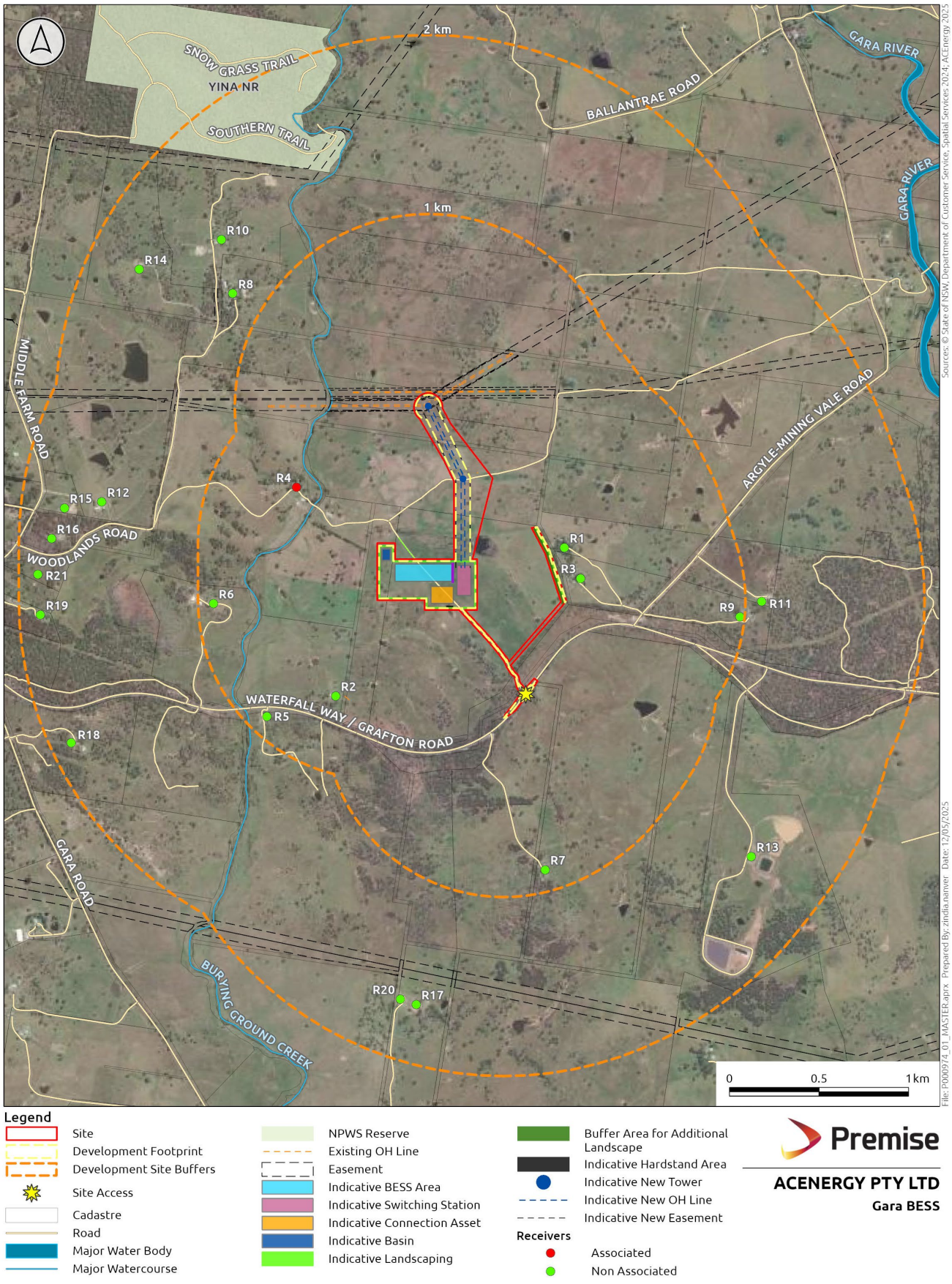


FIGURE 2-1 GARA BESS LOCALITY DIAGRAM

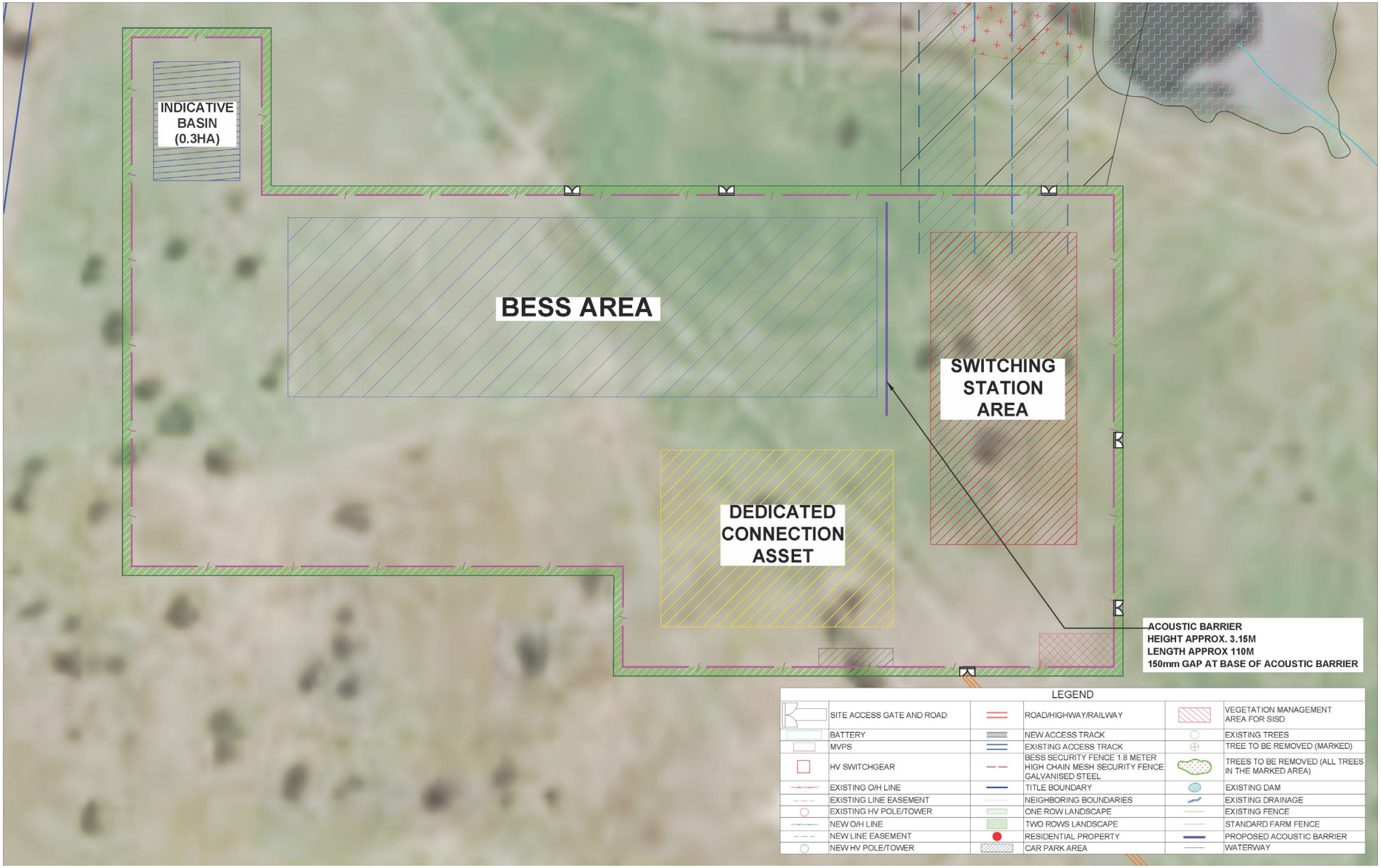


FIGURE 2-2 GARA BESS SITE LAYOUT

3. Planning context

There are several state and local government planning documents which provide guidance for the consideration of visual impact and also set out the desired planning outcomes for the study area. These are summarised in the following paragraphs

3.1. State and regional planning documents

3.1.1. New England North West Regional Plan 2041

The *New England North West Regional Plan 2041* (DPE, 2023) is intended to guide the NSW Government's land use planning priorities and decisions over the next 20 years. Objective 9 of this plan is "*Lead renewable energy technology and investment*" (p.43), with the New England Renewable Energy Zone (REZ) identified as a key initiative. There are no specific views or character areas identified for protection in this plan.

3.2. Local Government planning

The proposal is located in the Armidale Regional Council area. This project is State Significant Development, and not subject to the local planning provisions, however, the relevant parts of the Armidale Local Strategic Planning Statement (LSPS), Armidale Regional Local Environmental Plan 2012 (LEP) and Armidale Dumaresq Development Control Plan 2012 (DCP) are summarised in the following paragraphs for context.

3.2.1. Armidale Local Strategic Planning Statement 2020

The *Armidale Regional Council Local Strategic Planning Statement* (Armidale Regional Council, 2020) sets out a vision for the shire in 2040 and the actions that will be taken to achieve this vision. It includes a land-use planning framework for the region, based around four key themes. Each of these themes includes several sub-themes and planning priorities to ensure the Region's… "*rich agricultural lands and its attractive natural environment*" are protected and enhanced (p.14).

Sub-theme 3h: Renewable Energy, aims to… "*investigate and facilitate potential opportunities for development of renewable energy production facilities*" within the region (p.31). The Armidale Region is described as a… "*prime location for renewable energy with strong potential for wind, solar and bioenergy power*" (p.9).

There are no specific views or character areas identified for protection in this LSPS.

3.2.2. Armidale Regional Local Environmental Plan 2012

Land use zoning

The site is zoned RU1 Primary Production. Relevant objectives of this zone include … "*To minimise conflict between land uses within this zone and land uses within adjoining zones.*" (Land Use Table, Zone RU1 objectives) Land to the north, east and south of the site are also zoned RU1 Primary Production.

Land to the west of the site is zoned RU4 Primary Production Small Lots, one of the aims of this zone is to "*enable sustainable primary industry and other compatible land uses*" (Land Use Table, Zone RU4 objectives).

Of relevance to the landscape character and visual impact assessment, is the potential influence of the project on the rural landscape character of the area, and views from existing and future dwellings.

Heritage

No State or local heritage listed places have been identified within or near the site. The closest item is a culvert at the Gara Road and Grafton Road intersection, located around two kilometres to the west of the site, and a mountain gum tree (*Eucalyptus dalrympleana*), located at the corner of Middle Farm Road and Somerset Lane, located around two kilometres to the northwest of the site. Neither of these items would be impacted by this project.

3.2.3. Armidale Dumaresq Development Control Plan 2012 (Revision date 29 October 2020)

Section 1: Development Control Plan General Matters, Aims and objectives of this plan

A key objective of this Development Control Plan (DCP) is … '*O.6 To preserve and protect rural and scenic landscapes.'* (Chapter 1.1, section 1.7)

The landscape surrounding Armidale includes a … "*series of prominent hills and ridges*" which have "*prominent scenic values when viewed from the approach roads to Armidal*"" (Section 1.7), such as Arthur's Seat and Knobs Hill to the south of the City, the ridge between Donald Road and Puddledock Road to the north east of the City and Mount Duval to the north of the City. Knobs Hill is also described as… "*a visual landmark on the Armidale skyline*" (Section 1.7). These elevated areas are zoned C3 Environment Management in Council's Local Environmental Plan (LEP) and are not located within or near to the site.

Landscaping

Two objectives of this section of the DCP are relevant, these are:

- *O.2 To ensure that landscaping of the site is carried out in a way that acknowledges and reinforces the scenic and biodiversity values of the land, including enhancement of wildlife corridors.*
- *O.3 To provide benefits to residents by locating new landscaping for increased privacy, wind and sun protection, a pleasant outlook as well as attracting wildlife.*

4. Existing conditions

4.1. The study area

The site is located in an undulating, rural landscape around 9.5 kilometres east of Armidale (refer to Figure 4-1 Site location and context and Figure 4-2 Topography).

The majority of the site and surrounding rural area has been historically cleared for grazing, with areas of improved pastures. Groups of native trees and patches of bushland generally occur alongside roads, gullies, ridgelines and within steeper locations. Wind break planting of native and exotic species, including *Pinus radiata* (Radiata Pine) plantations, are also prominent features to the north, east and south of the site, screening some views towards the site. Vegetation surrounding the rural dwellings in this area also provide some screening between the site and nearby receivers.

There are rural dwellings scattered across the rural areas surrounding the site. Two of the closest dwellings are non-associated receivers located around 495 metres to the east of the proposed site, at 7 and 25 Argyle-mining Vale Road Metz (refer to R1 and R3, Figure 4-1 Site location). Other dwellings near the site include rural dwellings along Waterfall Way / Grafton Road to the south and southwest of the site, along Middle Arm Road and Woodlands Road to the northwest and west of the site. The dwelling 86 Woodlands Road (R4) is associated with the project.

Grafton Road is located around 400 metres to the south of the site. This roads forms part of the 'Waterfall Way', a 185-kilometre tourist route starting in Armidale. This route winds through Bellingen via World Heritage-listed National Parks, valleys, gorges and waterfalls. There are no railway lines with passenger services near the site.

Yina Nature Reserve is located around 1.5 kilometres northwest of the site and consists of dry open forest and woodlands. There are no visitor facilities within the reserve.

The site is located within the New England Renewable Energy Zone (REZ). Several renewable energy projects are located near the site, including Oxley Solar Farm and BESS located around 2.5 kilometres southeast of the site (approved December 2023, not yet constructed) and Metz Solar Farm (built) located around 7.5 kilometres to the northeast. There are also several projects proposed, but not yet approved, including the Armidale East BESS located around nine kilometres to the northeast, the Armidale BESS and Eathorpe BESS projects, located near the existing TransGrid Armidale substation, around 4 – 4.5 kilometres west of the site.

4.2. The site

The site is located around 500 metres to the north and set back from Waterfall Way / Grafton Road.

There are two ridgelines located to the east and west of the proposal, extending north-south to either side of the Burying Ground Creek valley. The site is located to between and slightly below these ridges, with landform gently sloping in a westerly direction towards the Burying Ground Creek valley (refer to Figure 4-2 Topography).

The site is mostly cleared of vegetation, comprising pasture fields and with scattered trees. Existing 132 kV and 330kV transmission lines are located to the north of the BESS, extending to/from the TransGrid Armidale substation.

While the site is mostly cleared of vegetation, there are groups of mature trees on and in the vicinity of the project site. There are also mature trees along field boundaries, gullies and associated with existing dwellings and agricultural structures. There are also mature eucalyptus trees along Waterfall Way / Grafton Road to the south of the site, part of a native revegetation reserve, providing visual separation between the site and the road.

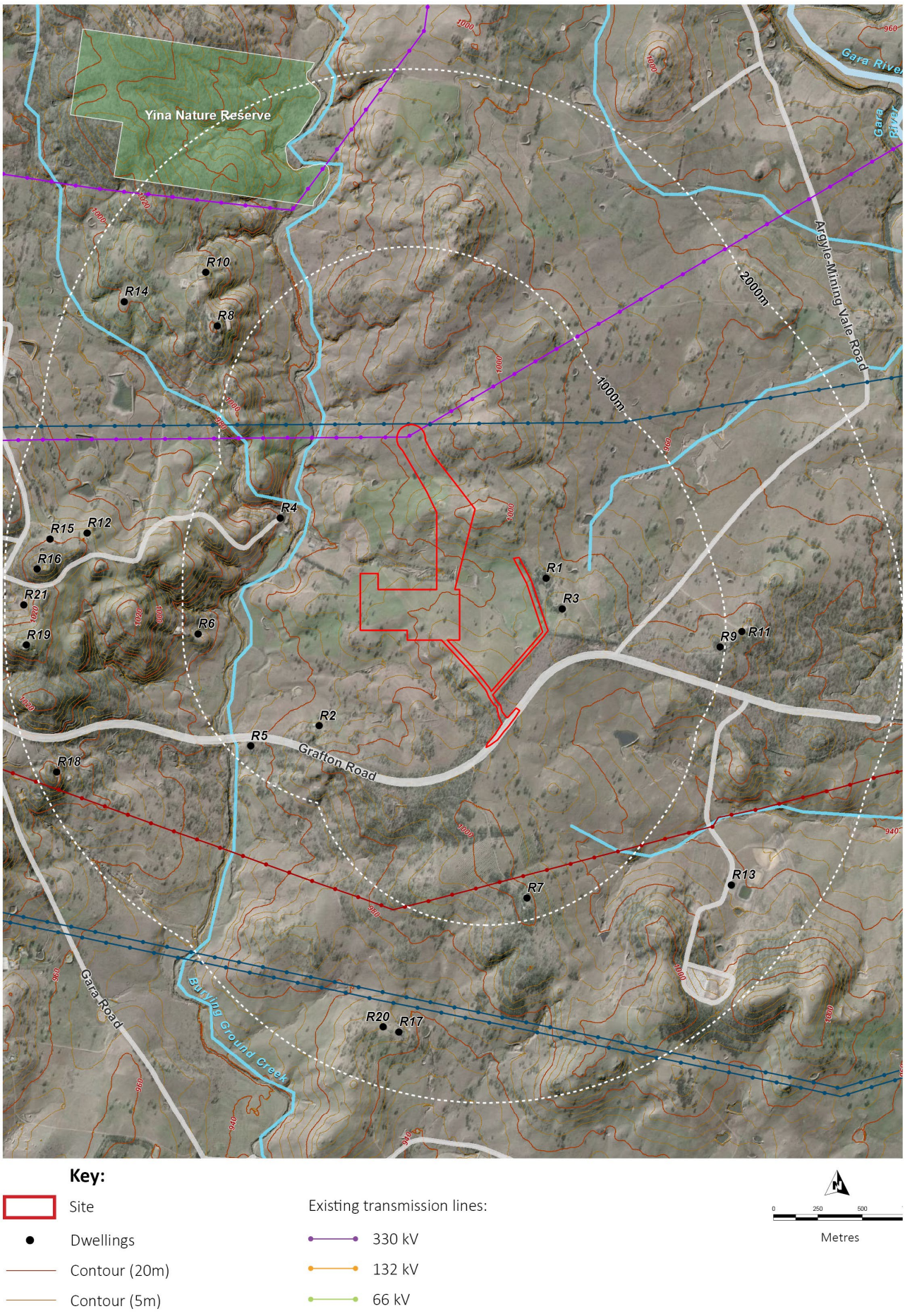


FIGURE 4-1 SITE LOCATION AND CONTEXT

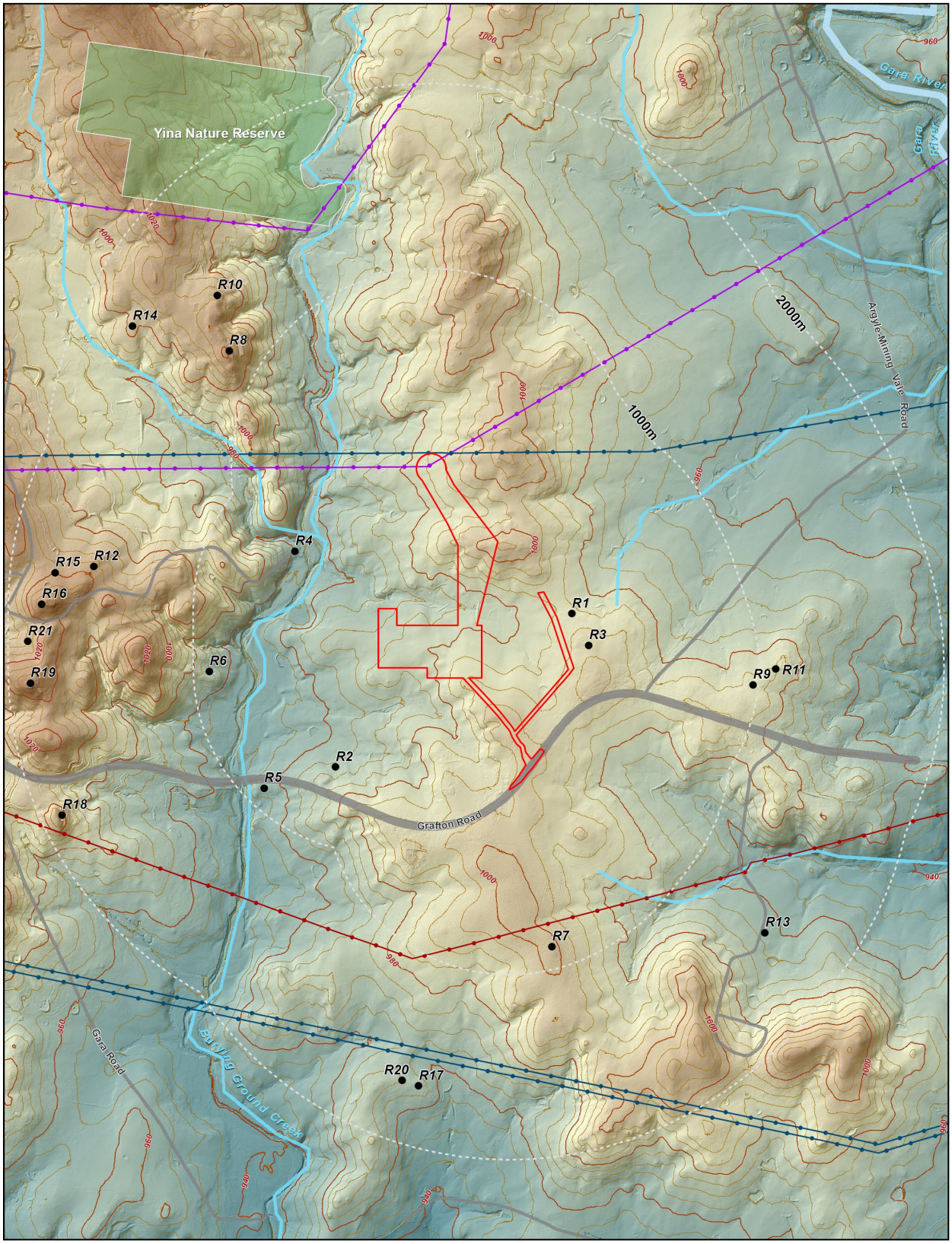


FIGURE 4-2 TOPOGRAPHY

5. Landscape character assessment

5.1. Approach

This assessment of landscape character has been undertaken in the following steps:

- Identify **landscape character zone** for the site and surrounding study area
- Describe the **existing conditions** of the landscape character zone
- Identify the **sensitivity** of the landscape character zone
- Identify the **magnitude of change** created by the proposal
- Combine these factors to assign a level of **landscape character impact**.

The following paragraphs describe this process in further detail.

5.1.1.1. Identifying landscape character zones

The landscape assessment begins with the identification of landscape character zones.

> *'Landscape character zones should divide the landscape based on common distinguishing visual characteristics including landforms and major land cover patterns. These patterns are formed by combinations of vegetation, water bodies, landforms and land use, from which the key landscape features can also be identified.' (Page 10, NSW DPE 2022)*

5.1.1.2. Landscape sensitivity

The sensitivity of a landscape is described by NSW DPE in the Technical Supplement as … *'the capacity of a landscape or viewpoint to absorb the impacts from a proposed land use change and/or built form'* (NSW DPE 2022). Generally, the sensitivity level assigned to a landscape will also reflect the valued characteristics of landscape such as scenic quality value and rarity.

A frame of reference for the scenic quality values of landscapes in NSW have been provided in the Technical Supplement (NSW DPE, 2022). This includes a description of the typical characteristics of the landscape features which contribute to scenic quality. These descriptions are provided in Table 5-1.

From this frame of reference, a matrix has been developed that combines scenic quality rankings from the Technical Supplement (NSW DPE, 2022) with the absorption capacity of the landscape, to determine a sensitivity level (refer to Table 5-2).

5.1.1.3. Magnitude of change

The changes to landscape character that would occur as a result of the proposal are assigned a magnitude of change level. The Technical Supplement (NSW DPE, 2022) recommends that the magnitude of change for landscape character considers the:

- *Size and scale of the change, including:*
  - *the extent of existing landscape elements that may be lost and the contribution of that element to the character of the landscape*
  - *the extent to which the project becomes a minor or major element in the landscape and its dominance in the visual catchment*
  - *the extent to which the project changes the key characteristics of the landscape, which are critical to its distinctive character*
- *geographical area – the area of the landscape over which the effects will be experienced, having regard to the nature and scale of the project's effects. This could vary from the immediate setting of the site to larger scales where the project may influence several landscape characters zones*
- *duration and reversibility of the effects on the landscape*.' (NSW DPE, 2022)

Table 5-3 Includes examples of the size and scale, geographical area, duration and reversibility factors that contribute to assigning a magnitude of change level.

5.1.1.4. Assigning impact levels

A landscape impact level has been determined by combining the sensitivity and magnitude level according to the matrix presented in Table 5-4.

This matrix is based on the impact rating matrix contained in the … *Technical Supplement – Landscape and Visual Assessment*, NSW DPE 2022 (Table 9 Visual impact matrix, p.28, NSW DPE 2022), with the addition of a negligible magnitude of change level where there is no change. This matrix has been used as there is no specific impact matrix identified for landscape character impact levels.

TABLE 5-1 FRAME OF REFERENCE FOR SCENIC QUALITY VALUES (TABLE 6, PAGE 26, NSW DPE 2022)

Landscape feature	Low scenic quality	Moderate scenic quality	High scenic quality
Landform	Large expanses of flat or gently undulating terrain Indistinct, dissected or unbroken landforms that provide little illusion of spatial definition or landmarks with which to orient.	Steep, hilly and undulating ranges that are not visually dominant Broad shallow valleys Moderately deep gorges or moderately steep valley walls Minor rock outcrops.	Isolated peaks, steep rocky ridges, cones or escarpments with distinctive form and/or Large areas of distinctive rock outcrops or boulders Well defined steep sided valley gorges.
Vegetation	Extensively cleared and cropped areas with very limited variation in colour and texture.	Predominantly open forest of woodland combined with some natural openings in patterns that offer some visual relief Vegetative stands that exhibit a range of size, form, colour texture and spacing including human influenced vegetation such as vineyards, and orchards	Strongly defined patterns with combinations of native forest, naturally appearing openings, streamside vegetation and/or scattered exotics.
Waterbodies	Absence of natural waterbody. Farm dams, irrigation canals or stormwater infrastructure.	Intermittent streams, lakes and rivers, swamps and reservoirs	Visually prominent lakes, reservoirs, rivers, streams, wetlands and swamps
Social / cultural	Places of worship, cemeteries / memorial parks, private open space	Local heritage sites Distinguishable entry ways to a regional city identified in the Transport and Infrastructure SEPPs	Culturally important sites, world heritage areas, national parks / reserves Commonwealth and state heritage sites
Human presence	Dominating presence of infrastructure, human settlements, highly modified landscapes and higher density populations such as regional cities, industrial areas, agricultural transport or electricity infrastructure.	Dispersed yet evident presence of human settlement such as villages small towns, isolated pockets of production and industry, lower scale and trafficked transport infrastructure.	Natural / undisturbed landscape Minimal evidence of human presence and production.

TABLE 5-2 LANDSCAPE SENSITIVITY LEVELS

Sensitivity level	Details
High	Landscape features (landform, vegetation, waterbodies, social/cultural, human presence) are predominantly of high scenic quality (refer to Table 6-1) These landscapes have a low inherent capability to absorb changes from the proposal.
Moderate	Landscape features (landform, vegetation, waterbodies, social/cultural, human presence) are predominantly of moderate scenic quality (refer to Table 6-1) These landscapes have a moderate inherent capability to absorb changes from the proposal.
Low	Landscape character includes features (landform, vegetation, waterbodies, social/cultural, human presence) which have low scenic quality values (refer to Table 6-1) These landscapes have a high inherent capability to absorb changes from the proposal.

TABLE 5-3 MAGNITUDE OF CHANGE LEVELS

Magnitude level	Size and scale	Geographical area	Duration and reversibility
High	Extensive loss of existing landscape elements The lost landscape elements make a substantial contribution to the character of the landscape The proposal would become a major element in the landscape and dominant in the visual catchment The proposal fundamentally changes the key characteristics of the landscape, which are critical to its distinctive character	Very large geographical area impacted This would result in an extensive and / or severe change in landscape values.	Permanent change Irreversible changes to the landscape
Moderate	Moderate extent of existing landscape elements will be lost The lost landscape elements make a considerable contribution to the character of the landscape The proposal would become a major element in the landscape and somewhat dominant in the visual catchment The proposal results in moderate changes the key characteristics of the landscape, which are critical to its distinctive character	Large geographical area impacted This would result in a considerable and / or unsympathetic change in landscape values.	Long term change Changes are somewhat reversible
Low	Small extent of existing landscape elements will be lost The lost landscape elements make a notable contribution to the character of the landscape The proposal would become a minor element in the landscape and would somewhat prominent in the visual catchment The proposal results in minor changes the key characteristics of the landscape, which are important to its distinctive character	Moderate geographical area impacted It would result in a slight change in landscape values.	Medium term change Changes are reversable
Very low	Very small extent of existing landscape elements will be lost The landscape elements do not make a particular contribution to the character of the landscape The proposal would become a very minor element in the landscape and would not be prominent in the visual catchment The proposal results in very minor changes the characteristics of the landscape, which are not particularly important to its distinctive character	Very small geographical area impacted If there is a change, it would not be perceived as altering the landscape values.	Short term change Changes are entirely reversable
Negligible	The proposal would not change the landscape characteristics, or There would be improvement to the landscape character as a result of the proposal.	No direct impact	No change

TABLE 5-4 LANDSCAPE IMPACT LEVELS

	High sensitivity	Moderate sensitivity	Low sensitivity
High magnitude	High	Moderate	Moderate
Moderate magnitude	Moderate	Moderate	Low
Low magnitude	Moderate	Low	Low
Very low magnitude	Low	Low	Very low
Negligible	Negligible	Negligible	Negligible

5.2. Assessment of landscape character

5.2.1. Landscape character of the study area

The study area has one homogeneous landscape character zone (LCZ) associated with the undulating rural hills alongside and including the Burying ground Creek valley. For the purposes of this assessment, this zone has been called the Gara undulating rural hills and valleys landscape character zone (LCZ1).

This zone contains undulating landform, consisting of low rolling hills rising from and extending alongside the broad and shallow Burying Ground Creek valley. This landscape includes large pasture fields used for livestock grazing, with associated rural dwellings and sheds. There are groups of smaller rural lifestyle holdings to the west of the proposal, along Middle Farm Road, zoned RU4 Primary Production Small Lots.

The trees in this landscape are generally grouped along field boundaries and roads, forming dense windbreaks in elevated locations. The dwellings in this landscape are often located adjacent to agricultural buildings and surrounded by vegetation.

There are existing transmission lines crossing this landscape, influencing the character of this zone.

Refer to Figure 5-1 to Figure 5-4 for photos showing the existing landscape character and features of the Gara undulating rural hills and valleys LCZ.

FIGURE 5-1 UNDULATING RURAL HILLS

FIGURE 5-2 TRANSMISSION LINES NORTH OF THE SITE

FIGURE 5-3 MATURE TREES ALONG GRAFTON ROAD

FIGURE 5-4 TREES ALONG FIELD BOUNDARY AT SOUTHERN PART OF THE SITE

5.2.2. Assessment of landscape character impact

The analysis undertaken for the assessment of impacts on the Gara undulating rural hills and valleys LCZ is presented in Table 5-5.

Overall, there would be a **low landscape character impact** on the Gara undulating rural hills and valleys LCZ. This is because of the relatively low scenic quality, landscape sensitivity and magnitude of change.

TABLE 5-5 LANDSCAPE CHARACTER IMPACT ASSESSMENT – GARA UNDULATING RURAL HILLS AND VALLEYS LANDSCAPE CHARACTER ZONE (LCZ1)

Consideration	Assessment	
Absorption capacity	Moderate Moderate inherent capability to absorb changes from the proposal due to existing presence of electricity infrastructure and rural structures, undulating landform, and absence of vegetation within the site i.e. (site already mostly cleared of mature vegetation and used for pasture grazing).	
Scenic quality	Moderate	
Landform	*Gently undulating landform with low hills and broad shallow valleys*	*Moderate*
Vegetation	*Vegetation mostly cleared for agricultural use with some vegetative stands and areas of woodland*	*Moderate*
Waterbodies	*Waterbodies include creeks, gullies and farm dams present*	*Moderate*
Social / cultural	*Modified landscape with presence of electricity infrastructure; local and state heritage sites located over one kilometre away*	*Low*
Human presence	*Dispersed dwellings, presence of electricity infrastructure, lower scale and trafficked roads*	*Low*
Landscape sensitivity	**Moderate**	
Magnitude of change	**Low**	
Size and scale	*The proposal would become a minor element in the landscape and would not be prominent in the visual catchment.*	*Low*
Geographical area	*The proposal would impact a small geographical area of this landscape character zone and result in a slight change in landscape values.*	*Low*
Duration and reversibility	*Medium to long term change, with changes that are reversible.*	*Low*
Landscape character impact	**Low**	

6. Visual Impact Assessment

6.1. Visual catchment

The visual catchment is a theoretical area from which the proposal may be seen. This area has been identified using a digital elevation model (landform only) and the height of the proposed BESS enclosures using GIS software.

The visual catchment area does not include the screening effect of existing or future vegetation or development. However, it identifies the areas where there is the potential for a direct line of sight between the BESS and surrounding areas.

The visual catchment map shows that views to this proposal is limited by the surrounding landform (refer to Figure 6-1). The ridgelines located to the east and west of the site, extending north-south either side of the Burying Ground Creek valley, restrict views from the east, south and west.

Generally, the visual catchment shows the potential for views extending:

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

This visual catchment was used to inform fieldwork and the selection of viewpoints for the assessment of public domain views and views from private dwellings.

The visual catchment map and site investigations confirmed that there would not be a view, and therefore there would not be a visual impact from the following locations:

- Residential communities in Armidale, including schools (including The Armidale School, a local heritage register item in Armidale Regional LEP 2012), parks, sporting fields, and state heritage register items within the city centre.
- Yina Nature Reserve and Oxley Wild Rivers National Park.

6.2. Assessment of impact on views in the public domain

6.2.1. Approach

Views have been selected from within the visual catchment to represent the range of locations from which the proposal would be seen by the public. These viewing locations were selected to include locations where there would be a larger number of potential viewers, and areas that have particular scenic value. In this case, that is views from Waterfall Way.

An assessment of each public domain view has been undertaken in the following steps:

- Describe the existing view
- Identify the visual sensitivity:
  - Determine the **viewpoint sensitivity** of the view (refer Table 6-1)
  - Determine the **scenic quality** of the view (refer Table 6-2)
  - Combine the viewpoint sensitivity and scenic quality rating to determine the **visual sensitivity** (refer Table 6-3)
- Identify the **magnitude of change** created by the proposal (refer Table 6-4)
- Combine the viewpoint sensitivity and magnitude of change characteristics to assign a level of **visual impact** (refer Table 6-5).

This methodology is explained more fully in the following paragraphs.

Visual sensitivity

Visual sensitivity combines viewpoint sensitivity with the scenic quality of the view.

Table 5-1 includes the viewpoint sensitivity levels as described in the *Technical Supplement – Landscape and Visual Assessment Large-Scale Solar Energy Guideline* (NSW DPE 2022).

Table 5-2 describes the scenic quality values of landscapes (*Technical Supplement – Landscape and Visual Assessment Large-Scale Solar Energy Guideline*, NSW DPE 2022) and explains the sensitivity levels that have been used for this assessment.

These factors have been combined to assign a visual sensitivity according to the visual sensitivity matrix in Table 5-3. This table is based on the 'Visual sensitivity matrix' contained in the *Technical Supplement - Landscape and Visual Impact Assessment Large-Scale Solar Energy Guideline* (Table 8, p.28, NSW DPE, 2022).

Magnitude of change

Magnitude is the … "*measurement of the scale, form and character of a development proposal when compared to the existing condition. In the case of visual assessment this also relates to how far the proposal is from the viewer."* (TfNSW 2020)

The magnitude of change considers the extent of change resulting from the proposal and the compatibility of these new elements with the surrounding landscape.

Magnitude of change will be determined by characteristics of the view, such as distance, landform, backdrop, intervening vegetation etc. There are also characteristics of the proposal which are: scale, form, colour etc. Changes to a view can result in an improvement or reduction in visual amenity.

A high magnitude of change occurs if the proposal contrasts strongly with the existing characteristics of the view. A low magnitude of change occurs if there is a high level of integration of form, line, shape, pattern, colour or texture values between the proposal and its visual setting.

Table 6-4 lists the categories used to describe the magnitude of change.

Assigning impact levels

A visual impact level has been determined for each view by combining the sensitivity and magnitude level according to the matrix presented in Table 6-5.

This matrix is generally based on the 'Visual sensitivity matrix' contained in the *Technical Supplement - Landscape and Visual Impact Assessment Large-Scale Solar Energy Guideline* (Table 8, p.28, NSW DPE, 2022).

TABLE 6-1 VIEWPOINT SENSITIVITY LEVELS

Viewpoint type	Very low viewpoint sensitivity	Low viewpoint sensitivity	Moderate viewpoint sensitivity	High viewpoint sensitivity
Transport / infrastructure	Local sealed and unsealed roads Passenger rail lines with daily daylight services State highways, freeways and classified main roads Walking tracks and navigable waterways	Tourist roads and scenic drives Walking tracks and navigable waterways	N/A	N/A
Social / cultural	Private recreation areas and sporting fields (defined as land zoned RE2)	Cemeteries, memorial parks	Tourist and visitor accommodation and places of worship (such as bed and breakfasts, motels, hotels) Tourist uses in tourist areas (land zoned SP3) Publicly accessible green and open spaces including picnic areas, parks, public recreation areas Town centres and central business districts	N/A

TABLE 6-2 SCENIC QUALITY LEVELS

Scenic quality level	Description
Low scenic quality	Landscape character includes features (landform, vegetation, waterbodies, social/cultural, human presence) which have scenic quality values of predominantly of low scenic quality (refer to Table 5-1). These landscapes have a high inherent capability to absorb changes from the proposal.
Moderate scenic quality	Landscape features (landform, vegetation, waterbodies, social/cultural, human presence) are predominantly of moderate scenic quality (refer to Table 5-1). Landscape features (landform, vegetation, waterbodies, social/cultural, human presence) are a mix of moderate sensitivity. These landscapes have a moderate inherent capability to absorb changes from the proposal.
High scenic quality	Landscape features (landform, vegetation, waterbodies, social/cultural, human presence) are predominantly of high scenic quality (refer to Table 5-1). These landscapes have a low inherent capability to absorb changes from the proposal.

TABLE 6-3 VISUAL SENSITIVITY MATRIX

	High scenic quality	Moderate scenic quality	Low scenic quality
High viewpoint sensitivity	High	High	Moderate
Moderate viewpoint sensitivity	High	Moderate	Moderate
Low viewpoint sensitivity	Moderate	Low	Low
Very low viewpoint sensitivity	Low	Very low	Very low

TABLE 6-4 MAGNITUDE OF CHANGE LEVELS

Magnitude level	Description
High	The project is visually dominant and / or contrasts substantially with the character of the view. It would result in a substantial change in the amenity of the view.
Moderate	The project is somewhat prominent and / or is not compatible with the character of the view. It would result in a noticeable change in the amenity of the view.
Low	The project is not visually prominent and / or is visually compatible with the character of the view. It would result in a slight change in the amenity of the view.
Negligible	The project is not visible, is not visually prominent in the view and / or is compatible with the character of the view. It would result in no perceived change in the amenity of the view.

TABLE 6-5 VISUAL IMPACT LEVELS

	High magnitude	Moderate magnitude	Low magnitude	Negligible
High sensitivity	High	Moderate	Moderate	Negligible
Moderate sensitivity	Moderate	Moderate	Low	Negligible
Low sensitivity	Moderate	Low	Low	Negligible
Very low sensitivity	Low	Low	Very low	Negligible

6.2.2. Assessment of representative public viewpoints

The following viewpoints from the public domain were selected to represent the views from nearby roads and dwellings:

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

The location of these views is shown in Figure 6-1. An assessment of visual impact has been summarised in the following pages.

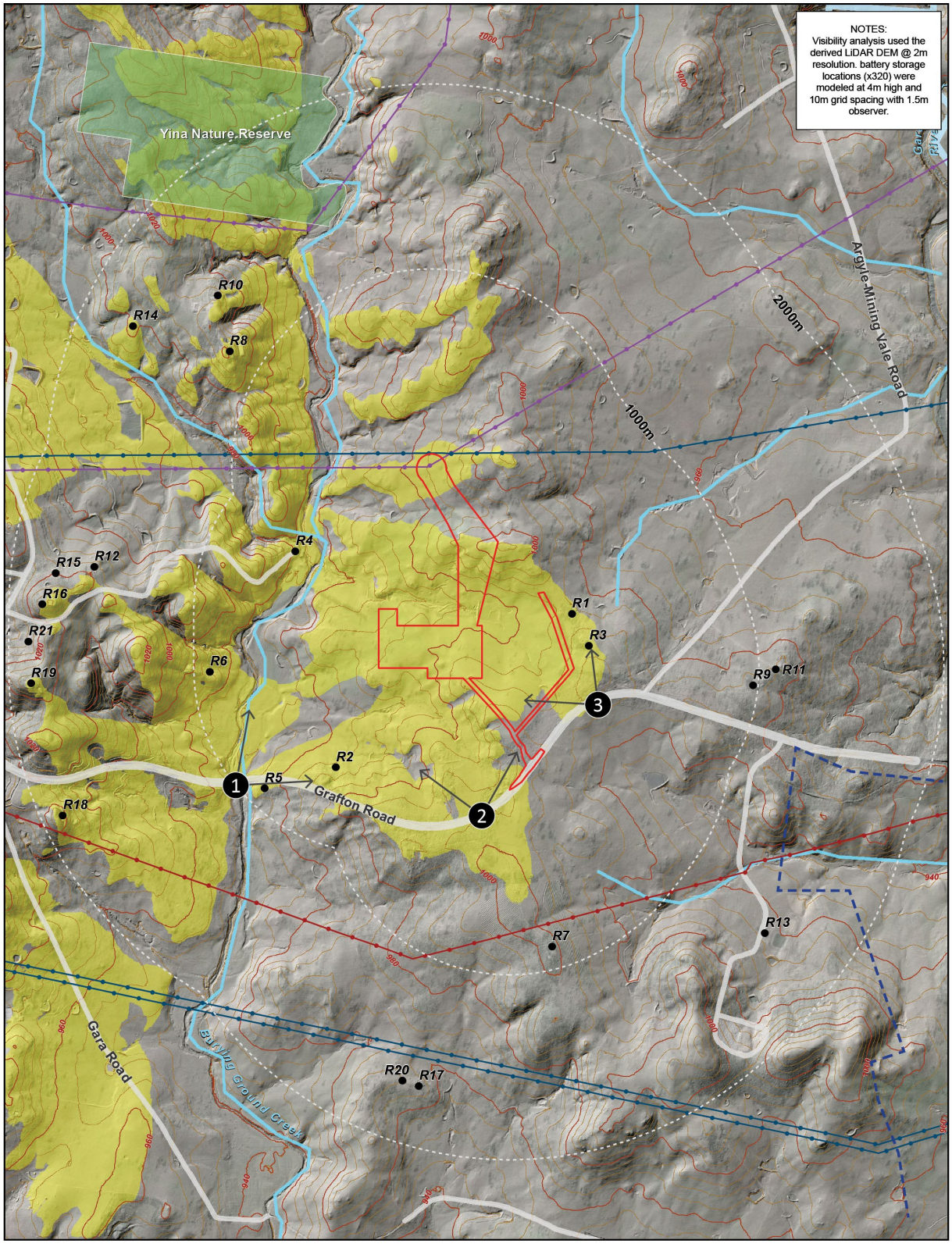


FIGURE 6-1 PLAN SHOWING VISUAL CATCHMENT OF THE PROPOSAL (USING TERRAIN ONLY) AND REPRESENTATIVE VIEWPOINTS

6.2.3. Viewpoint 1: View northeast from Waterfall Way / Grafton Road at Burying Ground Creek crossing

FIGURE 6-2 VIEWPOINT 1: VIEW NORTHEAST FROM WATERFALL WAY / GRAFTON ROAD – EXISTING VIEW (50MM FOCAL LENGTH)

FIGURE 6-3 VIEWPOINT 1: VIEW NORTHEAST FROM WATERFALL WAY / GRAFTON ROAD – PHOTOMONTAGE (50MM FOCAL LENGTH)

FIGURE 6-4 VIEWPOINT 1: VIEW NORTHEAST FROM WATERFALL WAY / GRAFTON ROAD – PROJECT POSITION HIGHLIGHTED (50MM FOCAL LENGTH)

FIGURE 6-5 VIEWPOINT 1: VIEW NORTHEAST FROM WATERFALL WAY / GRAFTON ROAD – PHOTOMONTAGE (50MM FOCAL LENGTH) WITH VEGETATION SHOWN (PROPOSED TREES MODELLED AT 5 METRES, AND SHRUBS AT 2 METRES HIGH)

TABLE 6-6 VIEWPOINT ASSESSMENT – VIEWPOINT 1: VIEW NORTHEAST FROM WATERFALL WAY / GRAFTON ROAD AT BURYING GROUND CREEK CROSSING

Existing view	Views across Burying Ground Creek valley to undulating pasture fields in the middle and background. Views from this section of Grafton Road are mostly open, with little vegetation along the road, allowing clear views to the surrounding fields. Scattered rural dwellings visible, surrounded and partly enclosed by garden vegetation. Groups of trees seen in background of view, within fields and along field boundaries.	
Visual sensitivity	**Moderate**	
Viewpoint type	Grafton Road identified as a tourist road or scenic drive, part of the 'Waterfall Way'.	Moderate
Scenic quality	View contains landscape character of predominantly moderate scenic quality comprising:	Moderate
Landform	*Gently undulating landform with low hills and broad shallow valleys.*	*Moderate*
Vegetation	*Vegetation mostly cleared for agricultural use with some vegetative stands and areas of woodland.*	*Moderate*
Waterbodies	*Waterbodies include creeks, gullies and farm dams.*	*Moderate*
Social / cultural	*Modified rural landscape; local and state heritage sites located over two kilometres away.*	*Low*
Human presence	*Dispersed dwellings and rural sheds, moderate scale and trafficked road.*	*Low*
Magnitude of change	**Low**	
without mitigation	• The proposal would be visible in the middle to background of this view, around 900 metres away, set back from Grafton Road, viewed against a backdrop of other trees to the north of the site. • The acoustic barrier would be located on the north eastern area of the site and not visible from this location • The intervening landform created by the project earthworks, would obstruct views to the BESS and lower portion of the transformer area. • There would be some tree removal within the site, which would not be noticeable at this distance as the trees on the fields to the southwest and west of the site will obstruct the view. • From this angle, the upper portion of the switching station and the connection infrastructure (one transmission tower) would be visible in the background of view, behind and rising above the intervening trees.	
Visual impact	**Low**	
Magnitude of change	**Negligible**	
with screening vegetation	• Planting would be installed along the southern and western boundary of the proposal. This vegetation would establish over time to further screen views of the acoustic barrier.	
Visual impact	**Negligible**	

6.2.4. Viewpoint 2: View north from Waterfall Way / Grafton Road

FIGURE 6-6 VIEWPOINT 2: VIEW NORTH FROM WATERFALL WAY / GRAFTON ROAD – EXISTING VIEW

TABLE 6-7 VIEWPOINT ASSESSMENT – VIEWPOINT 2: VIEW NORTH FROM WATERFALL WAY / GRAFTON ROAD

Existing view	View through mature trees and shrubs within the road reserve to undulating pasture fields in the middle and background. This view is partly enclosed by vegetation, allowing limited passing views from the road.	
Visual sensitivity	**Moderate**	
Viewpoint type	Grafton Road identified as a tourist road or scenic drive, part of the 'Waterfall Way'.	Moderate
Scenic quality	View contains landscape character of predominantly moderate scenic quality comprising:	Moderate
Landform	*Gently undulating landform with low hills and broad shallow valleys.*	*Moderate*
Vegetation	*Vegetation mostly cleared for agricultural use with some vegetative stands along field boundaries, scattered trees with fields and areas of native woodland within the road reserve of Grafton Road.*	*Moderate*
Waterbodies	*Waterbodies include farm dams and small gullies.*	*Low*
Social / cultural	*Modified rural landscape; local and state heritage sites located over two kilometres away.*	*Low*
Human presence	*Dispersed dwellings and rural sheds, moderate scale and trafficked road.*	*Low*

Magnitude of change	**Negligible**
without mitigation	• The proposal would be glimpsed, through mature trees and shrubs within the road reserve, in the middle to background of this view, around 700 metres away. • Trees within fields to the south of the site will be retained, partly blocking views to the proposal. • There would be some tree removal within the site, which would not be noticeable at this distance and due to intervening vegetation. • The acoustic barrier would be located on the north eastern area of the site and not visible in this view. • The intervening landform and landform created by the project earthworks would obstruct views to the lower portions of the BESS and transformer area.
Visual impact	**Negligible**
Magnitude of change	**Negligible**
with screening vegetation	• Planting would be installed along the southern boundary of the proposal would establish over time to further screen views of the BESS.
Visual impact	**Negligible**

6.2.5. Viewpoint 3: View northwest from Waterfall Way / Grafton Road

FIGURE 6-7 VIEWPOINT 3: VIEW NORTHWEST FROM WATERFALL WAY / GRAFTON ROAD – EXISTING VIEW

TABLE 6-8 VIEWPOINT ASSESSMENT – VIEWPOINT 3: VIEW NORTHWEST FROM WATERFALL WAY / GRAFTON ROAD

Existing view	View to gently undulating pasture fields in the middle and background. Rural dwellings and sheds along Argyle-mining Vale Road (R1 and R3) seen in middle ground of view, partly enclosed by surrounding garden vegetation and wind break planting along the neighbouring fence line. The vegetated hills along Middle Arm Road seen in background of view.	
Visual sensitivity	**Low**	
Viewpoint type	Grafton Road identified as a tourist road or scenic drive, part of the 'Waterfall Way'.	Moderate
Scenic quality	View contains landscape character of predominantly moderate scenic quality comprising:	Low
Landform	*Flat to gently undulating landform with low hills and broad shallow valleys.*	*Moderate*
Vegetation	*Vegetation mostly cleared for agricultural use with some vegetative stands along field boundaries and scattered trees with fields and within the road reserve of Grafton Road.*	*Low*
Waterbodies	*Waterbodies include farm dams and small gullies.*	*Low*
Social / cultural	*Modified rural landscape; local and state heritage sites located over two kilometres away.*	*Low*
Human presence	*Dispersed dwellings and rural sheds, moderate scale and trafficked road.*	*Low*
Magnitude of change	**Low**	
without mitigation	• The proposal would be seen in the middle ground of this view, around 500 metres away, set back from Grafton Road, occupying part of two fields. • There would be some tree removal within the site, which may be noticeable at this distance, although largely filtered by the mature trees and shrubs along the fence line of neighbouring fields. • From this angle, the eastern part of the proposal would be most prominent, including the switching station and connection infrastructure, with the BESS located in the background of view, on land falling to the northwest, away from this view. • The acoustic barrier (up to 3.15 metres tall) would be located on the northeastern side of the BESS and unlikely to be visible from this location.	
Visual impact	**Low**	
Magnitude of change	**Negligible**	
with screening vegetation	• Planting would be installed along the eastern and southern boundary of the proposal. This vegetation would establish over time to further screen views of the BESS and lower portions of the switching station and connection infrastructure.	
Visual impact	**Negligible**	

6.2.6. Summary of representative viewpoint assessment

There were no scenic or significant vistas identified near or within the visual catchment of the proposal. While Yina Nature Reserve is located in the visual catchment (refer to Figure 6-1), the reserve contains no visitor facilities and therefore offers no viewing opportunities from tracks or trails.

Due to the limited visibility of the project, there would only be views to the from Waterfall Way / Grafton Road. Three viewpoints have been identified along this scenic route and assessed for visual impact.

impacts identified in the viewpoint assessment are summarised in Table 6-9. This identifies low and negligible visual impacts during operation, due to the setback of the project, intervening vegetation, and the earthworks of the site, shielding the development from view.

The most prominent components of the project would be the single transmission tower required for the connection infrastructure, and the upper portion of the switching station. However, these elements are not prominent in views from Waterfall Way / Grafton Road and there would not cause a significant visual impact.

These low and negligible visual impacts would be experienced for a short duration from vehicles travelling at speed along the roadway.

6.2.7. Views during construction

During construction, works to install the BESS and connection infrastructure would be seen from locations where there is a view to the site. This would include large scale construction vehicles and machinery undertaking earthworks, tree clearing, establishment of site offices and laydown areas, construction of the access road and buildings, installation of the connection infrastructure, switching station, BESS enclosures, fencing and acoustic barrier. There would be cranes and other equipment rising above the proposal elements for their installation.

There would be tree clearing visible along Waterfall Way and at the upgraded intersection with the access road. Construction vehicles would also be seen using Waterfall Way / Grafton Road for deliveries and to access the site.

During this time the proposal would be slightly more prominent in views, and there is the potential for higher visual impacts temporarily during this time.

TABLE 6-9 SUMMARY OF ASSESSMENT OF REPRESENTATIVE VIEWPOINTS – PUBLIC DOMAIN

Viewpoint number and location	**Visual sensitivity**	**Magnitude** – no mitigation	**Visual impact**	**Magnitude** – with screening vegetation	**Visual impact**
Viewpoint 1: View northeast from Waterfall Way / Grafton Road at Burying Ground Creek crossing	Moderate	Low	**Low**	Negligible	**Negligible**
Viewpoint 2: View north from Waterfall Way / Grafton Road	Moderate	Negligible	**Negligible**	Negligible	**Negligible**
Viewpoint 3: View northwest from Waterfall Way / Grafton Road	Low	Low	**Low**	Negligible	**Negligible**

6.3. Views at night

6.3.1. Approach

The assessment of night-time impact has been carried out with a similar methodology to the daytime assessment. However, the assessment also draws upon the guidance contained within AS4282 *Control of the obtrusive effects of outdoor lighting* (2019) and the *Dark Sky Planning Guideline, Protecting the observing conditions at Siding Spring* (NSW DPE 2023).

AS4282 identifies environmental zones which are useful for categorising night-time landscape settings. This methodology uses these environmental zones to describe the existing night-time visual condition and assign a sensitivity to these settings.

6.3.1.1. Night-time visual sensitivity

The environmental zone (defined in AS4282) which best describes the existing night-time visual condition of the site has been selected. These zones are typical night-time settings and reflect the predominant light level of each landscape character area. Each environmental zone is assigned a level of sensitivity as described in Table 6-10.

6.3.1.2. Night-time magnitude of change

The magnitude of change that would be expected within each landscape character area at night is then identified. Table 6-11 lists the categories used to describe the visual magnitude of change at night.

TABLE 6-10 ENVIRONMENTAL ZONE SENSITIVITY – NIGHT-TIME

	Environmental Zones (AS4282:2019)	
Sensitivity level	Description	Examples
High	A0: Intrinsically dark	UNESCO Starlight Reserve IDA Dark Sky Parks Major optical observatories No road lighting – unless specifically required by the road controlling authority
High	A1: Dark	Relatively uninhabited rural areas No road lighting – unless specifically required by the road controlling authority
Moderate	A2: Low district brightness	Sparsely inhabited rural and semi-rural areas
Low	A3: Medium district brightness	Suburban areas in towns and cities
Very low	A4: High district brightness areas	Town and city centres and other commercial areas Residential areas abutting commercial areas

6.3.1.3. Assigning impact levels

An assessment of visual impact has been made by combining the visual sensitivity and magnitude of change levels for each representative viewpoint and assigning an impact level (refer to Table 6-5).

TABLE 6-11 VISUAL MAGNITUDE OF CHANGE LEVELS – NIGHT-TIME

Magnitude of change	Description
High	Substantial change to the level of skyglow, glare or light spill expected, and / or The lighting of the proposal would transform the character of the surrounding setting at night, and / or The effect of lighting would be experienced over an extensive area and / or
Medium	Considerable change to the level of skyglow, glare or light spill and / or The lighting of the proposal would noticeably contrast with the surrounding landscape at night and / or The effect of lighting would be experienced across a large portion of the landscape.
Low	Alteration to the level of skyglow, glare or light spill would be expected, and / or The lighting of the proposal would not contrast substantially with the surrounding landscape at night, and or The effect of lighting would be experienced across a small portion of the landscape.
Very Low	Either the level of skyglow, glare and light spill is unchanged or if it is altered, the change is generally unlikely to be perceived by viewers or compatible with the existing or intended future use of the area.

6.3.2. Assessment of views at night

Sensitivity of views at night

At night the site and surrounding landscape has a relatively low level of lighting. There is some light emitted from the scattered rural residences and outbuildings which are widely spread around the study area.

There would be headlights from vehicles travelling along nearby roads such as Waterfall Way / Grafton Road. There would be a general sky glow above the township of Armidale where the density of residences increases. However, this would not noticeably influence the character of the site.

Overall, the site and surrounding landscape has low district brightness (A2) and has a moderate visual sensitivity at night (refer to Table 7 6).

Night-time visual impact during construction

Night construction works are not proposed for this proposal. There may, however, be infrequent after-hours deliveries or vehicles accessing the site in the early morning during winter which would introduce some vehicle headlights. There may also be some security lighting established during construction that would introduce some additional lighting to the site and surrounding area.

Overall, any lighting would be set back from surrounding dwellings and roads. There would be a **negligible** magnitude of change and a visual impact at night during construction.

Night-time visual impact during operation:

During operation there would be some minor security lighting provided within the fenced area. This may include lighting mounted outside the operations and maintenance building. This lighting would meet the requirements of *AS4282 Control of the obtrusive effects of outdoor lighting* and would not noticeably alter the prevailing light levels in the study area.

There would not be any direct light spill on private dwellings due to the large distance between the proposal and neighbouring dwellings. There would also be limited potential for additional sky glow and upward projected light with the implementation of cut off light fittings as would be expected for a design complying with the Australian Standards.

Overall, there would be a low magnitude of change to a landscape of moderate visual sensitivity, and a **low visual impact** at night during operation.

6.4. Impact on views from surrounding dwellings

This section identifies the impact on views from private dwellings in close proximity to the proposal.

There were no approved developments, lodged development applications or entitlements to dwelling on lots without existing houses identified within the one kilometre study area.

6.4.1. Approach

The assessment of views from private dwellings has been undertaken in the following steps:

- Identify potential dwellings within one kilometre of the proposal and confirm dwellings that would have a view to the proposal (refer to Figure 6-8 and Table 6-12).
- Identify visual sensitivity by combining:
    - viewpoint sensitivity (refer to Table 6-12), as described in the Technical Supplement (NSW DPE 2022) and
    - scenic quality (refer to Table 6-2)
    - to determine visual sensitivity (refer to Table 6-3).
- Describe the likely magnitude change to the view (refer to Table 6-4)
- Identify potential view impact (refer to Table 6-5)
- Describe any mitigation measures proposed to reduce any impacts.

Refer to Figure 6-8 for the location of dwellings.

Note, this assessment of private views has not applied the preliminary assessment tools contained in the Large-Scale Solar Energy Guideline, Technical Supplement - Landscape and Visual Impact Assessment (DPE 2022) as this applicable to the scale and unique visual characteristics of solar energy projects and is not suitable for the assessment of stand-alone BESS infrastructure.

TABLE 6-12 VIEWPOINT SENSITIVITY

Viewpoint type	Very low viewpoint sensitivity	Low viewpoint sensitivity	Moderate viewpoint sensitivity	High viewpoint sensitivity
Residential	No place of residence present	Secondary view from dwellings in rural areas (zoned RU1, RU2, RU3, RU4, and RU6), large lot residential areas (zoned R5) and in environmental or conservation areas (zoned C2, C3, and C4) Dwellings used for residential purposes located on land zoned IN1 and IN2.	Primary view from dwellings in rural areas (zoned RU1, RU2, RU3, RU4, and RU6), large lot residential areas (zoned R5) and in environmental or conservation areas (zoned C2, C3, and C4)	Dwellings in residential areas and rural villages (land zoned R1, R2, R3, R4 and RU5)

6.4.2. Assessment of views from dwellings

Dwellings within one kilometre of the proposal are shown on Figure 6-8. Beyond this, the proposal is unlikely to be prominent in views, and therefore unlikely to cause an impact on private views. The dwelling at 86 Woodlands Road, located to the northwest of the site (R4), is associated with the proposal and has not been assessed for visual impacts, refer to Figure 6-8.

6.4.2.1. Dwelling entitlements

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

A review of the LSC DA tracker for street addresses (by reference to NSW Six Maps data) within 2km of the site identified one (1) additional dwelling that is under construction (R21). This future dwelling has been added to the assessment. No other lots were identified with a potential dwelling entitlement by reference to minimum lot size requirements.

6.4.2.2. Confirm dwellings with a view to the project

Following the initial visual catchment analysis using the DEM (refer to Figure 6-1), further detailed visibility mapping was prepared, to incorporate the screening effect of existing vegetation (refer to Figure 6-8).

Dwellings located in this visual catchment, using the DSM (digital surface model), are shown in Figure 6-8 and listed in Table 6-13. Those dwellings within the visual catchment shown on Figure 6-1, using the DEM, have been further considered for potential visual impacts in the following private viewpoint assessment.

TABLE 6-13 PRELIMINARY ASSESSMENT OF DWELLINGS

No.	Address	Potential view *	Potential view with intervening vegetation **
R1	25 Argyle-mining Vale Road	Y	N
R2	951 Grafton Road, Metz	Y	Y
R3	7 Argyle-mining Vale Road	Y	N
R4	86 Woodlands Road, Armidale	Y	N
R5	45 Gara Road, Armidale	Y	N
R6	891 Grafton Road, Armidale	Y	Y

** Dwelling located in Digital Elevation Model (DEM) visual catchment – includes screening by landform only refer to* Figure 6-1.

*** Dwelling located in Digital Surface Model (DSM) visual catchment – includes screening by trees and buildings Refer to* Figure 6-8.

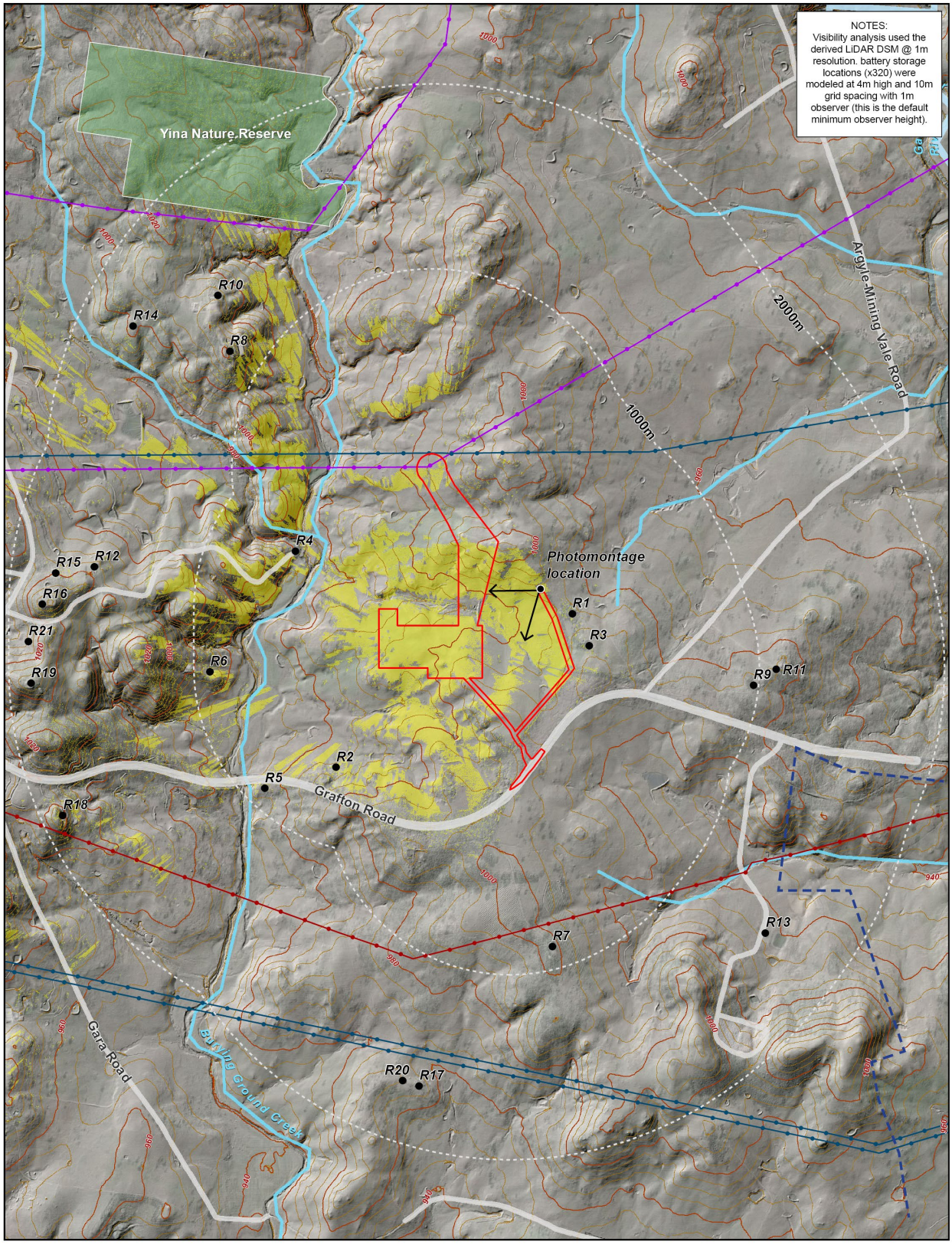


FIGURE 6-8 PLAN SHOWING VISUAL CATCHMENT OF THE PROPOSAL (USING DSM) AND DWELLING LOCATIONS

6.4.2.3. Private view assessment

The visibility mapping was verified onsite, and each dwelling has been reviewed to confirm if there is the potential for a view to the proposal.

Figure 6-10 shows photos of dwellings nearest to the site, and existing intervening vegetation between the dwellings and site, which would provide screening and filtered views to the proposal.

For dwellings with little a potential view to the proposal, due to little intervening vegetation (i.e. R2, R4, R5 and R6), individual DSM visual catchments were created to confirm if there is theoretically any view to the project. These individual visual catchments are shown in Figure 6-9.

A detailed assessment of those dwellings within the visual catchment is contained in Table 6-15 and a summary of this analysis is shown in Table 6-14.

This assessment identifies negligible and low visual impacts from surrounding dwellings for the project without mitigation, reducing to negligible visual impacts for all surrounding dwellings with the proposed screening vegetation.

TABLE 6-14 SUMMARY OF ASSESSMENT OF VIEWS FROM THE PRIVATE DWELLINGS

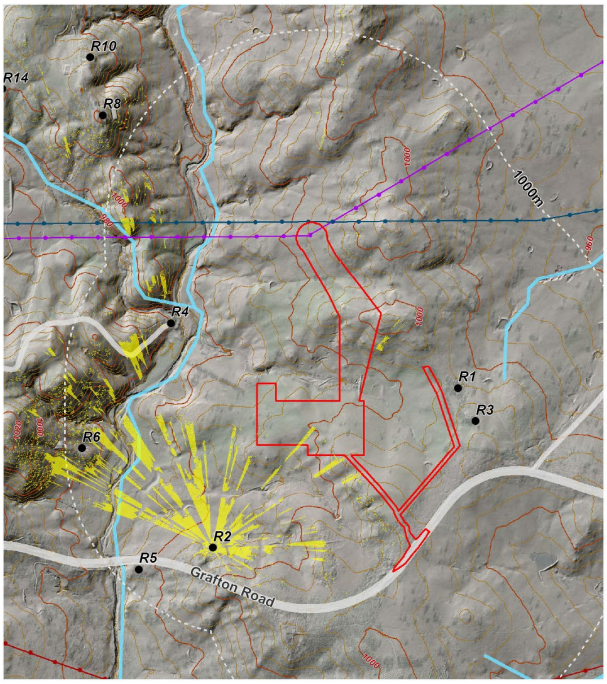
Dwelling location / location		**Viewpoint sensitivity**	**Magnitude of change** (no mitigation)	**Visual impact**	**Magnitude of change** (with screening vegetation)	**Visual impact**
R1	25 Argyle-mining Vale Road, Metz	Low	Negligible	Negligible	Negligible	Negligible
R2	951 Grafton Road, Metz	Moderate	Low	Low	Negligible	Negligible
R3	7 Argyle-mining Vale Road, Metz	Low	Negligible	Negligible	Negligible	Negligible
R4	86 Woodlands Road, Armidale (associated dwelling)	Low	Negligible	Negligible	Negligible	Negligible
R5	45 Gara Road, Armidale	Moderate	Negligible	Negligible	Negligible	Negligible
R6	891 Grafton Road, Armidale	Moderate	Low	Low	Negligible	Negligible

TABLE 6-15 DETAILED ASSESSMENT OF VIEWS FROM THE PRIVATE DWELLINGS

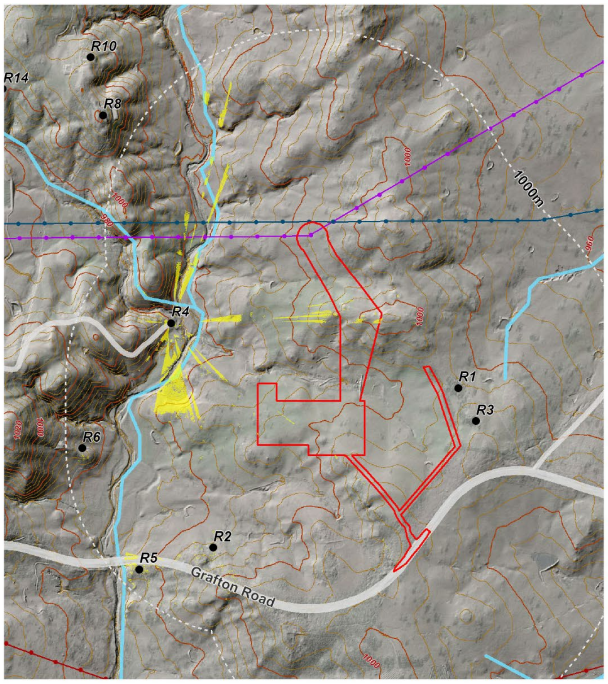
Dwelling location / location		Distance to infrastructure	Viewpoint sensitivity	Scenic Quality	Visual sensitivity level	Magnitude of change (no mitigation)	Visual impact	Magnitude of change (with screening vegetation)	Visual impact
R1	25 Argyle-mining Vale Road, Metz	670m	**Low** Secondary view from dwelling in RU1 zone. View over rear garden.	**Moderate** Gently undulating landform with open pasture fields and scattered trees, groups of trees along field boundaries forming wind breaks, presence of houses and farm structures.	**Low**	**Negligible** The proposal will not be visible due to existing intervening garden and windbreak vegetation located to the west of the dwelling. Refer to Figure 6-10, showing intervening vegetation around dwelling R1. Figure 6-11, Figure 6-12, and Figure 6-13 show the project in an unobstructed view from the field to the north of the dwelling.	**Negligible**	**Negligible** There would be additional screening vegetation along perimeter of the site boundary, adjacent to the existing wind break vegetation west of the dwellings. This vegetation would provide additional screening to views from locations on the approach to this dwelling.	**Negligible**
R2	951 Grafton Road, Metz	610m	**Moderate** Potential primary north-easterly view from dwelling in RU1 zone.	**Moderate** Gently undulating landform alongside Burying Ground Creek, with open pasture fields and scattered trees, groups of trees along field boundaries, and presence of houses and farm structures to the west.	**Moderate**	**Low** The proposal may be glimpsed through existing garden vegetation and trees on intervening fields north of the dwelling. Views would include the upper portion of the switching station and new connection infrastructure in the background. Refer to Figure 6-9 and Figure 6-10, showing visual catchment and intervening vegetation around dwelling R2.	**Low**	**Negligible** There would be screening vegetation along the southern and western boundary of the proposal, which would screen any distant glimpses to the lower portions of the BESS infrastructure and switching station over time.	**Negligible**

Dwelling location / location		Distance to infrastructure	Viewpoint sensitivity	Scenic Quality	Visual sensitivity level	Magnitude of change (no mitigation)	Visual impact	Magnitude of change (with screening vegetation)	Visual impact
R3	7 Argyle-mining Vale Road, Metz	750m	**Low** Secondary south westerly view from dwelling in RU1 zone. View over rear garden.	**Moderate** Gently undulating landform with open pasture fields and scattered trees, groups of trees along field boundaries forming wind breaks, presence of houses and farm structures.	**Low**	**Negligible** The proposal may be glimpsed through existing vegetation in the garden and the windbreak to the west of the dwelling. Refer to Figure 6-10, showing intervening vegetation around dwelling R3.	**Negligible**	**Negligible** There would be further screening vegetation along the site boundary, adjacent to the existing wind break vegetation west of the dwelling. This vegetation would provide additional screening to views from locations on the approach to this dwelling.	**Negligible**
R4	86 Woodlands Road, Armidale (associated dwelling)	620m	**Low** Potential secondary south easterly view from dwelling in RU1 zone.	**Moderate** Low-lying gently undulating landform alongside Burying Ground Creek, with open pasture fields and scattered trees, groups of trees along field boundaries, and presence of houses and farm structures to the south and southeast.	**Low** *(note, this is an associated dwelling)*	**Negligible** Views to the proposal would be mostly blocked by intervening landform, vegetation and shed structures to the rear of this dwelling. Refer to Figure 6-9 and Figure 6-10, showing visual catchment and intervening vegetation around dwelling R4.	**Negligible**	**Negligible** Screening vegetation along the northern and western boundary of the proposal would provide further intervening vegetation.	**Negligible**
R5	45 Gara Road, Armidale	920m	**Moderate** Primary view north-east from dwelling in RU1 zone.	**Moderate** Low-lying gently undulating landform alongside Burying Ground Creek, with open pasture fields and scattered trees, groups of trees along field boundaries, and presence of houses and farm	**Moderate**	**Negligible** Views to the proposal would be mostly blocked by intervening modified landform and existing trees within fields to the northeast of this dwelling. Refer to Figure 6-9 and Figure 6-10, showing visual catchment	**Negligible**	**Negligible** Screening vegetation along the southern and western boundary of the proposal would provide further intervening vegetation.	**Negligible**

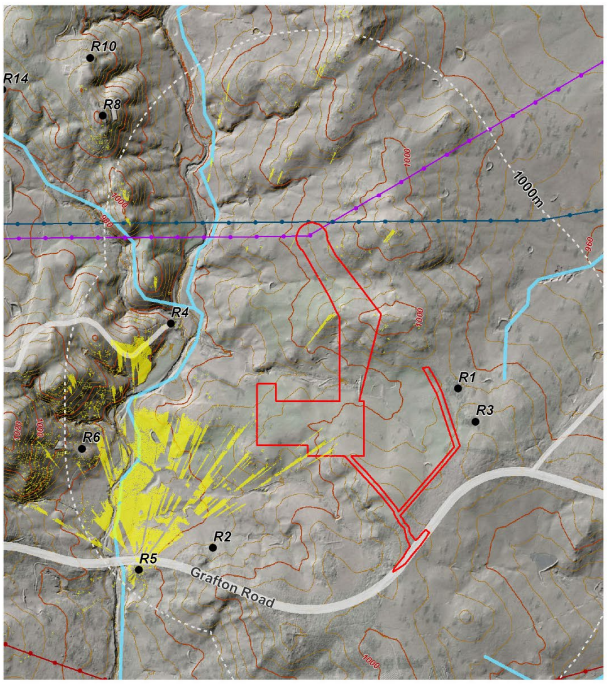
Dwelling location / location		Distance to infrastructure	Viewpoint sensitivity	Scenic Quality	Visual sensitivity level	Magnitude of change (no mitigation)	Visual impact	Magnitude of change (with screening vegetation)	Visual impact
				structures to the north and northeast. View across Waterfall way / Grafton Road.		and intervening vegetation around dwelling R5.			
R6	891 Grafton Road, Armidale	960m	**Moderate** Potential primary north easterly view from dwelling in RU1 zone.	**Moderate** View across gently undulating landform alongside Burying Ground Creek, with open pasture fields and scattered trees, groups of trees along field boundaries, and presence of houses.	**Moderate**	**Low** The proposal would be glimpsed through existing garden vegetation and trees within fields east of the dwellings. Views may include the BESS infrastructure glimpsed through existing trees, and the upper portion of the switching station. An additional transmission tower would be visible in the background of view. Refer to Figure 6-9, Figure 6-10, Figure 6-14 and Figure 6-15, showing visual catchment and intervening vegetation around dwelling R6.	**Low**	**Negligible** Screening vegetation along the western boundary of the proposal will further reduce the visibility of the proposal.	**Negligible**



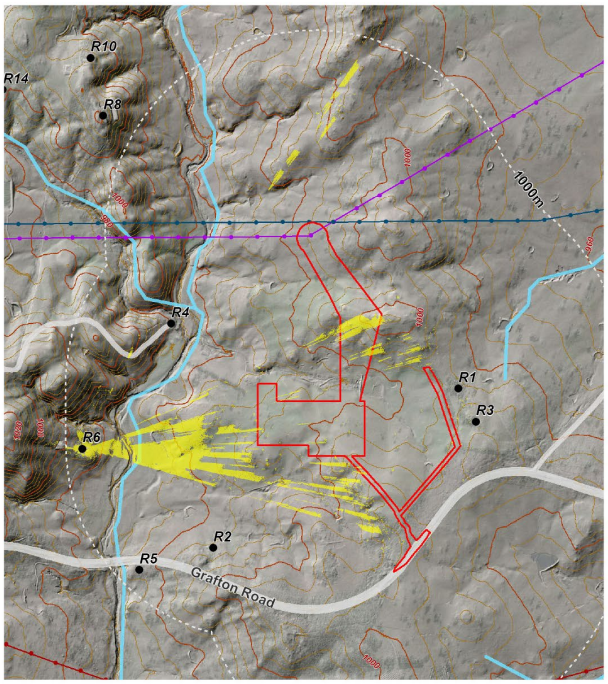
Viewshed from R2



Viewshed from R4



Viewshed from R5



Viewshed from R6

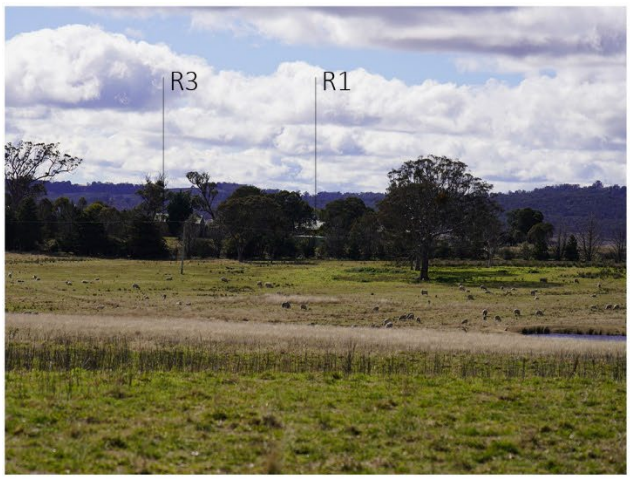
Key:

Site

Dwellings

Viewshed (Visible area, based on terrain and vegetation)

FIGURE 6-9 PLANS SHOWING VISUAL CATCHMENT OF DWELLINGS R2, R4, R5 AND R6



View east from site to R1 and R3

View southwest from site to R2

View north from site to R4

View east from Waterfall Way to R5

View east from site to R6

View east from site to R18

FIGURE 6-10 PHOTOS SHOWING SURROUNDING DWELLINGS SHOWING INTERVENING VEGETATION

FIGURE 6-11 VIEW FROM FIELD OVER FENCE BETWEEN THE R1 PROPERTY AND THE PROJECT, EXISTING VIEW (50MM FOCAL LENGTH) (REFER TO FIGURE 6-8 FOR VIEW LOCATION)

FIGURE 6-12 VIEW FROM FENCE LINE WITH R1, PHOTOMONTAGE (50MM FOCAL LENGTH) WITH NO PLANTING SHOWN

FIGURE 6-13 VIEW FROM FENCE LINE WITH R1, PHOTOMONTAGE (50MM FOCAL LENGTH) WITH SCREENING VEGETATION SURROUNDING THE BESS SHOWN (TREES AT 5M AND SHRUBS AT 2M TALL)((NOTE: THIS VIEW WOULD BE OBSTRUCTED BY PROPOSED SCREENING VEGETATION ALONG THE PROPERTY BOUNDARY)

FIGURE 6-14 3D MODELLED VIEW FROM R6, EXISTING (50MM FOCAL LENGTH, WITH POINT CLOUD IDENTIFYING SURFACE OF LANDFORM AND TREES)

FIGURE 6-15 VIEW FROM R6, PHOTOMONTAGE (50MM FOCAL LENGTH, WITH POINT CLOUD IDENTIFYING SURFACE OF LANDFORM AND TREES) WITH SCREENING VEGETATION (TREES AT 5M AND SHRUBS AT 2M TALL)

7. Cumulative impacts

The following cumulative impact assessment was prepared in accordance with the Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022). The following assessment considers the impacts of the proposal together with other nearby development proposals of a similar nature and scale.

Projects with the potential for cumulative impacts with Gara BESS proposal were identified through a review of publicly available information and environmental impact assessments from the following databases in October 2024, including DPE's Major Projects register and Sydney District and Regional Planning Panels.

The following projects have been considered in the cumulative impact assessment:

- Oxley Solar Farm and BESS
- Armidale BESS
- Eathorpe BESS
- Metz Solar Farm
- Armidale East BESS
- Petersons Solar Farm
- Stringybark Solar Farm
- Olive Grove Solar Farm.

The Oven Mountain Pumped Hydro Energy Storage (~50 km SE), Doughboy Wind Farm (~40km NE) and the New England Solar Farm (~17.5 km W) were excluded from this cumulative impact assessment on the basis of distance.

TABLE 7-1 CUMULATIVE IMPACT ASSESSMENT

Project	Current status	Description	Distance / Interface	Cumulative impacts
Oxley Solar Farm and BESS	Approved, not yet constructed.	The project includes solar panel arrays, substation, BESS, operations and maintenance buildings within a development footprint of around 268 hectares, extending south of Waterfall Way / Grafton Road on a linear site.	Located around 2.5 kilometres southeast of the site	The majority of the site would be set back around two kilometres south of Waterfall Way/ Grafton Road, and around 3.5 kilometres to the southeast of the proposal. Due to the large distance between the projects, intervening landform and vegetation (refer to Figure 6-8), these projects would not be viewed together, nor have a noticeable effect on views sequentially from Waterfall Way. As such, there would not be a cumulative landscape character or visual impact due to these projects.
Armidale BESS	Response to submissions and preparation of the Amendment Report.	The project is located beside (east of) the existing Armidale substation and includes a BESS, substation, operations and maintenance building, and connection infrastructure within a development footprint of around 2.3 hectares.	Located around 4 kilometres west of the proposal.	Due to the large distance between the projects, these projects would not be viewed together, nor sequentially. As such, there would not be a cumulative landscape character or visual impact due to these projects.

Project	Current status	Description	Distance / Interface	Cumulative impacts
Eathorpe BESS	EIS in preparation.	This project would be located beside (south of) the existing Armidale substation and includes a BESS, operations and maintenance building and connection infrastructure within a development footprint of around 3.6 hectares.	Located around 4.5 kilometres west of the proposal.	Due to the large distance between the projects, these projects would not be viewed together, nor sequentially. As such, there would not be a cumulative landscape character or visual impact due to these projects.
Metz Solar Farm	Built / in operation.	This project includes solar panel arrays and inverter stations within a development footprint of around 500 hectares, extending north of Waterfall Way / Grafton Road.	Located around 7.5 kilometres northeast of the proposal.	Due to the large distance between the projects, these projects would not be viewed together, nor sequentially from Waterfall Way. As such, there would not be a cumulative landscape character or visual impact due to these projects.
Armidale East BESS	EIS in preparation.	The project would be located beside the existing Metz Solar Farm and includes a BESS and connection infrastructure within a development footprint of around 22 hectares.	Located around nine kilometres northeast of the site	Due to the large distance between the projects, these projects would not be viewed together, nor sequentially. As such, there would not be a cumulative landscape character or visual impact due to these projects.
Peterson's Solar Farm (5MW)	Constructed and operational.	The project includes solar panel arrays and inverter stations within a development footprint of around 13.7 hectares.	Located around 7 kilometres southwest of the proposal.	Due to the large distance between the projects, these projects would not be viewed together, nor sequentially. As such, there would not be a cumulative landscape character or visual impact due to these projects.
Stringybark Solar Farm (29.9MW)	Approved, not yet constructed.	The project includes solar panel arrays and inverter stations within a development footprint of around 91 hectares, extending south of Waterfall Way / Grafton Road.	Located around 3 kilometres south of the proposal.	The proposed solar farm would be set back from Waterfall Way / Grafton Road and located south of Oxley Solar Farm and BESS. Due to the large distance between the projects, intervening landform and vegetation (refer to Figure 6-8), these projects would not be viewed together, nor have a noticeable effect on views sequentially from Waterfall Way. As such, there would not be a cumulative landscape character or visual impact due to these projects.

Project	Current status	Description	Distance / Interface	Cumulative impacts
Olive Grove Solar Farm	Approved, not yet constructed	The project includes solar panel arrays and inverter stations within a development footprint of around 104 hectares.	Located around 1.6 kilometres south of the proposal.	The Olive Grove Solar Farm will be located to the south of Waterfall Way / Grafton Road in the vicinity of the Gara BESS project site. This Solar Farm will be located adjacent to, and potentially visible from Waterfall Way / Grafton Road in an area where there is also the potential for a glimpsed view of the Gara BESS proposal. The Council Assessment Report for the Olive Grove Solar Farm states that … *The majority of views toward the Project are highly screened by a combination of topography and existing vegetation. Nearby views are limited to a short section of Grafton Road and at the Argyle Mining Vale Road intersection, which are located to the north of the Proposal.* (DA-17-2020, Council Assessment Report, p56). It is unlikely that this project would be seen together with the Gara BESS in any view, due to the limited visual influence of both projects and separation of these projects by the vegetation along Waterfall Way / Grafton Road. There is, however, the potential for these projects to be seen sequentially when travelling along Grafton Road. As the visibility of the Gara BESS project from Grafton Road / Waterfall Way is limited, there is unlikely to be an adverse cumulative effect on visual amenity or landscape character due to these projects. The Council Assessment Report for the Olive Grove Solar Farm says in relation to views from private dwellings within one kilometre of the solar farm … '*Based on the findings of the Landscape and Visual Impact Assessment, it was concluded that the Proposal would not be visible from any of these nearby residential dwellings.'* (DA-17-2020, Council Assessment Report, p57) Therefore there is no potential for a cumulative visual impact from this project together with the Gara BESS.

Project	Current status	Description	Distance / Interface	Cumulative impacts
Armidale Regional Landfill	Approved and operational	Landfill facility that is designed to accept up to 15,000 tonnes of general solid waste per year and will operate for the next 50 years.	Located around 2.5 kilometres south east of the proposal.	The landfill is set back from Waterfall Way / Grafton Road and located south and away from the Gara BESS site. Due to the distance between the projects, intervening landform and vegetation (refer to Figure 6-8), these projects would not be viewed together, nor have a noticeable effect on views sequentially from Waterfall Way. As such, there would not be a cumulative landscape character or visual impact due to these projects.

8. Mitigation

8.1. How potential impacts have been avoided and/or minimised

The potential for landscape character and visual impacts have been avoided and minimised in the following ways:

- The proposal has been located in an area that is close to existing electricity transmission infrastructure.
- The site is in a location with few dwellings and set back from those surrounding dwellings.
- The natural undulating landform provides shielding of the proposal from surrounding areas. The earthworks necessary to create a platform for the development would provide further shielding from areas to the southeast, south and southwest, as the BESS infrastructure would be located lower than the cutting.
- The proposal has been located to avoid landscape features such as the existing creek valleys and minimise the removal of native vegetation.
- The acoustic barrier, buildings and BESS containers will be of a colour that blends with the local landscape (a shade of green for example) to reduce the prominence of these structures from surrounding areas.
- Screen planting is proposed along the outer sides of the perimeter fence and include species that reflect the local character (refer to **Attachment A** Landscape Concept Plan). This screening vegetation reduces the visibility and visual impacts of the project from surrounding areas, integrates the project into the landscape setting and enhances the local landscape character.

8.2. Proposed additional mitigation measures

The following mitigation measures should be considered to further reduce the potential visual impacts identified in this assessment (refer to Table 8-1).

TABLE 8-1 MITIGATION MEASURES

ID	Mitigation measure
LV1	Lighting during construction and operation would be designed and operated in accordance with AS4282-2019 Control of the obtrusive effects of outdoor lighting.
LV2	Minimise the removal of mature native vegetation in the vicinity of the construction footprint, including at the track intersection with Waterfall Way / Grafton Road, where possible.

9. References

Armidale Dumaresq Development Control Plan 2012, Revision date 29 October 2020

Armidale Regional Council Local Strategic Planning Statement, Armidale Regional Council, 2020

Armidale Regional Local Environmental Plan 2012, Armidale Regional Council 2012

New England North West Regional Plan 2041, NSW Department of Planning and Environment, 2023