EnergyCo
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NSW GOVERNMENT

New England Renewable Energy Zone Network Infrastructure Project

Scoping Report

July 2024

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices, and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork:
Regeneration by Josie Rose

Cover Image:
Existing 330 kV single circuit transmission line, Armidale, NSW

Executive summary

Energy transition and Project need

Australia is moving towards net zero greenhouse gas emissions by 2050, with an accelerating transition of Australia's energy generation market to renewable energy. The importance of this transition is underscored by the Australian Government's target of 82% renewable electricity by 2030, aiming to deliver an additional 32 gigawatts (GW) of capacity by 2030 and fill expected reliability gaps as ageing coal fired generators retire.

NSW is at the forefront of this transition with legislated emissions reduction targets of 50% by 2030, 70% by 2035, and net zero by 2050. These targets are supported by the NSW Government's Electricity Infrastructure Roadmap (DPIE, 2020) (the Roadmap). The Roadmap legislation requires the equivalent annual generation of at least 12 GW of new renewable generation and at least 2 GW of storage by 2030.

The National Electricity Market (NEM) (managed by the Australian Energy Market Operator (AEMO)) is transitioning from a system dominated by a small number of large coal-fired generators located close to metropolitan centres to one of diverse renewable energy generation and storage located where the resource and environmental constraints permit.

AEMO's recently released 2024 Integrated System Plan (2024 ISP) highlights that ten large coal-fired power stations have closed since 2012, and projects that 90% of today's capacity will be closed by 2035, and all before 2040. Consequently, significant investment is required in the physical infrastructure of the NEM. The 2024 ISP identifies that the lowest-cost path to meet Federal and State government energy policies on emissions reductions is renewable energy, connected by transmission and distribution, firmed with storage and backed up by gas-powered generation (AEMO, 2024).

This includes around 10,000 kilometres of new transmission infrastructure, which is urgently needed to connect low-cost renewable energy developments to consumers across Australia.

The NSW Government is leading the development of Renewable Energy Zones (REZs) across NSW to deliver the required renewable energy generation and storage, supported by transmission infrastructure. The purpose of a REZ is to group new renewable energy power generation into locations where good renewable energy resources exist (e.g. wind and solar resources) and can be efficiently stored and transmitted across NSW. This requires the coordination of power generation, power storage and transmission infrastructure.

The REZs capitalise on economies of scale to deliver clean, affordable and reliable electricity for homes, businesses and industry in NSW. Five REZs have been declared in NSW.

About EnergyCo

The Energy Corporation of NSW (EnergyCo) is a NSW Government statutory authority established under the *Electricity Infrastructure Investment Act 2020* (NSW) (EII Act). EnergyCo is responsible for leading the delivery of the REZs as part of the Roadmap. The Roadmap sets out the NSW Government's vision to coordinate investment in electricity transmission, generation, storage and firming infrastructure and transform the NSW electricity system into one that is cheap, clean and reliable. As the Infrastructure Planner responsible for delivering the REZs, EnergyCo's role is to lead the development, coordination and delivery of the REZs in a way that benefits consumers, investors, and regional communities. EnergyCo's key functions are outlined below.

Infrastructure Planner for the REZs in NSW

- **Coordinate the technical design** of REZs in consultation with the Australian Energy Market Operator (AEMO), Transgrid program partners and generators
- Work with communities, industry and other stakeholders to **maintain community** support and **maximise benefits for regional communities**
- Coordinate **$24 billion** in private sector investment by 2035 and support around 6,000 construction and 2,000 ongoing operational jobs in the delivery of the New England REZ[1]
- Deliver at least **12 GW** of renewable energy and at least 2 GW of storage by 2030
- Lead the delivery of the state's first five REZs under the NSW Government's **Electricity Infrastructure Roadmap**
- Implement **network access schemes** for generators to connect to new network infrastructure in the REZs

REZ network infrastructure development

- Plan and recommend the required **network infrastructure projects** for the REZs
- **Seek planning approval** for the REZ network infrastructure under NSW and Commonwealth legislation
- **Consult with communities and key stakeholders** on the transmission project development process
- **Acquire the necessary property and easement interests** for the transmission lines, energy hubs and related infrastructure
- Run competitive tender processes to appoint **Network Operators** who will design, build, finance, operate and maintain the REZ network infrastructure

[1] Based on June 2024 estimate

Part of EnergyCo's role is to lead the development of REZ network infrastructure. As part of delivering that role, EnergyCo is proposing to develop the New England REZ network infrastructure that will connect the New England REZ to the NEM west of Singleton, NSW. This Scoping Report is in respect of this proposed new network infrastructure project.

The New England REZ Network Infrastructure Project would facilitate the development of the New England REZ (refer to Figure ES-1) and will deliver an intended network capacity of 6 GW by 2033, with an additional 2 GW capacity planned for the future, in line with the 8 GW intended capacity specified in the EII Act and REZ declaration. As the existing transmission network is not capable of transferring this amount of new electricity generation, new network infrastructure is essential to connect the new electricity generation and storage projects in the REZ to the NEM.

The Project

EnergyCo is seeking approval for the construction and operation of new high voltage electricity network infrastructure that is required to connect energy generation and storage projects within the

New England REZ to the existing electricity network (the Project). The Project has been identified as Critical State Significant Infrastructure (CSSI) by the NSW government.

The Project comprises the following key features:

- new transmission infrastructure including new dual 500 kilovolt (kV) transmission lines and associated infrastructure to connect the New England REZ to the NEM west of Singleton NSW; and new single
  500 kV and 330 kV lines to connect to the proposed energy hubs within the New England REZ
- four energy hubs to connect future energy generation and storage projects within the New England REZ to the new 500 kV transmission infrastructure and a northern connection to link the North Hub with the existing 330 kV transmission line
- ancillary development to support the Project, including:
  - establishment and/or upgrade of access tracks and public roads
  - upgrade and/or augmentation to existing electricity and utility infrastructure
  - installation and operation of communications infrastructure and facilities
  - other construction-related works and facilities, such as laydown and staging areas, earthwork material sites with crushing and screening plants, concrete batching plants, stringing sites, helicopter landing pads, site offices and workforce accommodation camps.

The key features of the Project are shown in Figure ES-2.

The Project as presented in this Scoping Report is to inform the provision of Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS) and will be subject to further engagement with the community and other stakeholders. Amendments and refinements to the Project design will continue throughout the planning approval process for the Project.

The South Hub and associated transmission line, and the transmission line connections from the energy hubs to future new generation and storage projects within the New England REZ form part of the CSSI declaration. However, these connections do not form part of the Project as outlined in this scoping report and are intended to be subject to later planning and approval processes.

Figure ES-1 New England Renewable Energy Zone

Source: www.energyco.nsw.gov.au

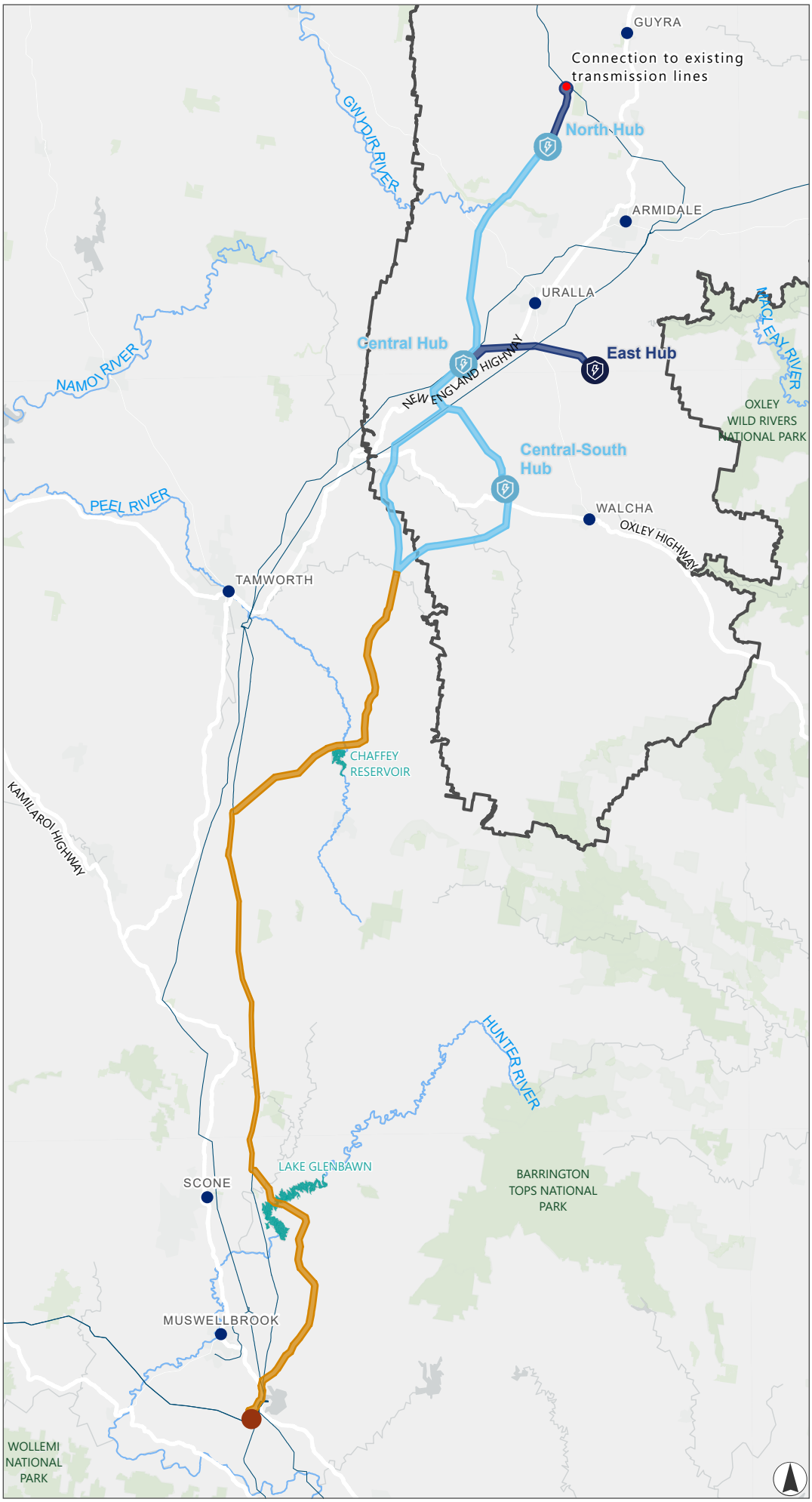


FIGURE ES-2

The Project

Legend

- Bayswater Power Station (existing)
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Dams
- Existing high voltage lines
- Major Roads

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

Planning and assessment process

The Project is Critical State Significant Infrastructure (CSSI) and will be assessed by the NSW Minister for Planning and Public Spaces under Division 5.2, Part 5 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).

The Project also requires consideration under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and a referral under this Act will be submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW (Commonwealth)) after the submission of this Scoping Report. Should the Project be determined to be a controlled action that requires approval under the EPBC Act, it is proposed to be assessed in accordance with the NSW Assessment Bilateral Agreement.

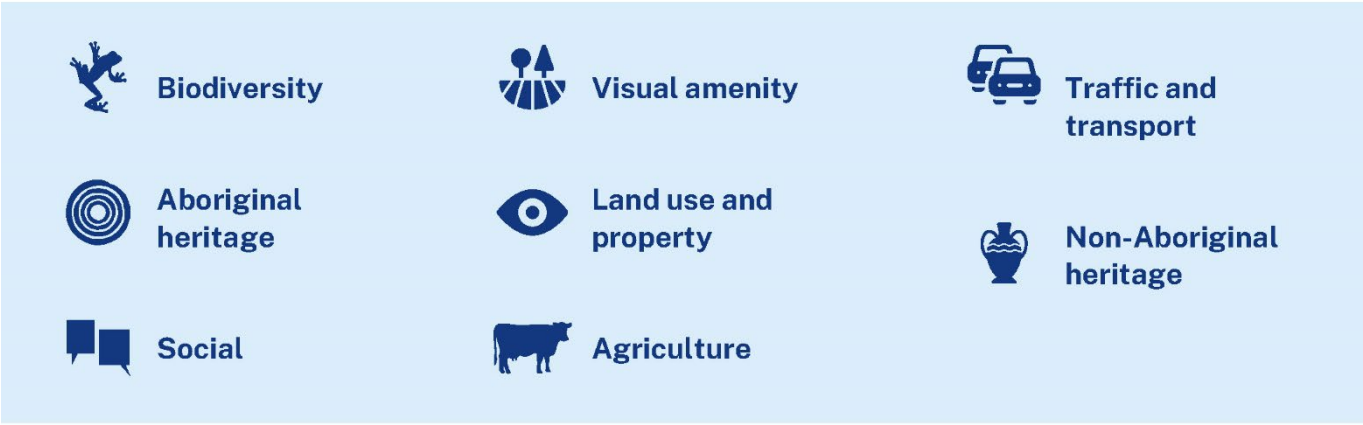
Purpose of this document

EnergyCo has prepared this Scoping Report to provide the community and government agencies with an outline of the Project and the proposed approach to the environmental and social assessment to be completed as part of the Environmental Impact Statement (EIS). The report is also intended to inform the preparation of the Secretary's Environmental Assessment Requirements (SEARs). The SEARs will be issued by the NSW Department of Planning, Housing and Infrastructure (DPHI) to guide the preparation of the EIS.

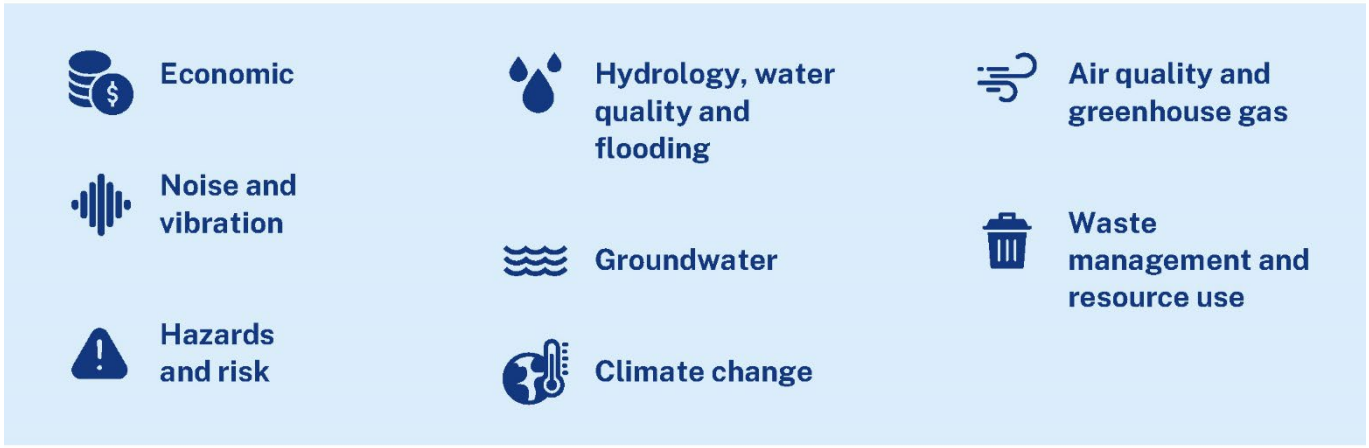
Key Environmental and Social Issues

EnergyCo values the input and feedback from the community, First Nations people and other stakeholders. EnergyCo is committed to ongoing open and inclusive engagement and consultation with these stakeholders and the wider community throughout the EIS.

The key issues identified for the Project, which will be subject to a detailed assessment in the EIS are:



Other matters that are expected to generate lower impacts and which will be subject to a standard assessment in the EIS include:



Next steps

EnergyCo will continue to refine the Project design, taking into consideration the findings from environmental and social assessments, as well as key issues raised during ongoing community and stakeholder engagement.

Following receipt of the SEARs, EnergyCo will prepare an EIS for the Project. The EIS will be developed in accordance with legislative requirements and DPHIs State Significant Infrastructure Guidelines (DPHI 2024a) (the Guidelines) and will include:

The EIS will be publicly exhibited by DPHI, providing all stakeholders (including the community, stakeholder organisations and government agencies) the opportunity to provide formal submissions regarding the Project. The EIS is expected to be exhibited in the second half of 2025.

Contents

FIGURES

TABLES

1 Introduction

The Energy Corporation of NSW (EnergyCo), a NSW Government statutory authority, is proposing to develop the New England Renewable Energy Zone (REZ) Network Infrastructure Project (the Project). The Project is the backbone of the New England REZ and a critical energy project for NSW, that will deliver affordable, clean and reliable electricity to consumers. The Project will unlock an intended network capacity of 6 gigawatts (GW) by 2033, with an additional 2 GW capacity planned for the future.

This Scoping Report provides an outline of the Project, why it is proposed, how EnergyCo will engage with stakeholders and how EnergyCo will complete the necessary environmental and social impact assessments for the Project.

The Project as presented in this Scoping Report is to inform the provision of Secretary's Environmental Assessment Requirements (SEARs) for the Environmental Impact Statement (EIS) and will be subject to further engagement with the community and other stakeholders. Amendments and refinements to the Project design will continue throughout the planning approval process for the Project.

1.1 Energy transition

As a result of technological changes in energy generation and a need to decarbonise the economy, NSW is entering a new phase of electricity generation.

The Australian Energy Market Operator's (AEMO) 2024 Integrated Systems Plan (2024 ISP) highlights that ten large coal-fired power stations have closed since 2012, and projects that 90% of today's capacity will be closed by 2035, and all before 2040. The existing coal-fired electricity generators currently provide around three quarters of NSW's electricity supply and two thirds of the firm capacity needed during summer heat waves. As existing coal-fired energy generators progressively close, new sources of energy need to be established to help NSW prosper, which includes developing new transmission infrastructure to connect these new sources to consumers. NSW and its regions are well positioned to be a leading player in sustainable energy generation technologies.

Providing reliable energy at the lowest possible cost and in places that work for regional and rural communities is a key priority of the NSW Government. Both AEMO's 2024 ISP and the CSIRO's GenCost Report (Gramham, Hayward and Foster 2024) identify renewable energy connected with transmission and distribution, firmed with storage and backed up by gas-powered generation as the lowest-cost way to supply electricity to homes and businesses as Australia transitions to a net zero economy.

1.2 Renewable Energy Zones

REZs are a place-based way to build and coordinate electricity assets, with a more holistic approach to the needs of the energy transition and the aspirations of regional communities. Importantly, they can greatly reduce the overall cost and disruption of the energy transition and deliver significant regional benefits.

In its 2018 Integrated Systems Plan (2018 ISP), AEMO identified the potential for REZs to provide for an effective, least-cost way to integrate new generation storage and transmission development as part of the energy transition (AEMO, 2018). AEMO assessed 34 potential REZs across the National Electricity Market (NEM), including a number in NSW. The assessment included consideration of a 'New England and Northern NSW Tablelands' REZ.

The NSW Government undertook a detailed state-wide geospatial mapping exercise in 2018, which identified the potential for ten REZs across the State, including three potential priority REZs (New England, Central West and South West). The potential REZ locations were identified based on energy resources, reduced environmental and planning constraints, proximity to existing transmission and distribution infrastructure and load centres, and alignment with the NSW Government's regional growth priorities, developed in consultation with regional communities (NSW Government, 2018).

All NSW regions have a part to play in this transformation to a more sustainable electricity generating future, including the New England region. Under the *Electricity Infrastructure Investment Act 2020* (EII Act), the NSW Government is leading the planning and coordination of five REZs across NSW, to deliver renewable energy generation and storage connected by new transmission infrastructure.

REZs will group new renewable energy generation into locations where it can be efficiently stored and transmitted across NSW, which will help deliver lower wholesale electricity costs and place downward pressure on customer bills through increased competition, while also supporting new local jobs and business opportunities during construction and operation.

The NSW Government has formalised making the electricity system transition a strategic priority. REZs are the centrepiece of the Roadmap. The Roadmap's supporting legislation, the EII Act, identifies five REZs in the Central West, New England, South-West, Hunter-Central Coast and Illawarra regions. These REZs will become modern-day power stations and deliver an intended network capacity of 12 GW.

All five REZs have been formally declared and will support a reliable and affordable supply of electricity as coal-fired power stations retire over the next decade.

The key elements of a REZ are illustrated in Figure 1-1.

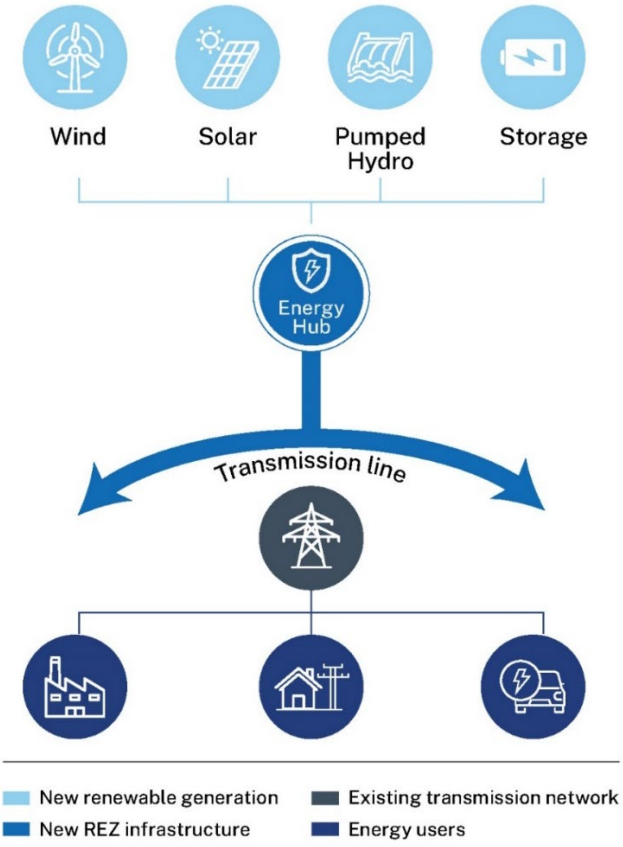


Figure 1-1 Elements of a REZ

1.3 New England Renewable Energy Zone

The New England REZ was formally declared on 17 December 2021 under the EII Act. It will deliver an intended network capacity of 8 GW, as required by the Act.

The New England REZ was declared following consultation and public exhibition in 2021. Feedback received from the public exhibition process was considered in the final declaration of the REZ. Minor adjustments were made to the geographical area in response to the balanced consideration of energy project proponent and community feedback, including to improve the delineation between areas captured within the REZ that are subject to potential future development and adjacent areas of National Park and World Heritage significance.

Centrally located between Sydney and Brisbane, the New England REZ covers an area of about 15,500 square kilometres (km^2) (refer to Figure 1-2), and will provide opportunities to increase NSW's energy resilience in future years. The New England REZ is situated on the lands of the Biripi, Dainggatti, Nganyaywana, Ngarabal, and Gumbainggir people, and includes the following seven Local Government Areas (LGAs):

- Tamworth Regional
- Walcha
- Uralla
- Armidale
- Glen Innes Severn
- Inverell
- Tenterfield.

As NSW's largest REZ (based on network capacity), the establishment of the New England REZ will allow the region to play a pivotal role in supporting energy system reliability and the delivery of affordable, clean electricity for homes and businesses. The journey towards more sustainable forms of energy generation will also bring with it significant jobs and investment for the region.

The New England region has a range of attributes that make it an ideal location for a REZ within NSW, including:

Some of the best natural energy resources in the country and some of NSW's finest potential sites for pumped-hydro facilities

Access to existing transmission lines that connect to the NSW east coast, Upper Hunter and Queensland

Strong generator interest for sustainable energy projects connecting to the transmission network

The ability to increase NSW's energy resilience

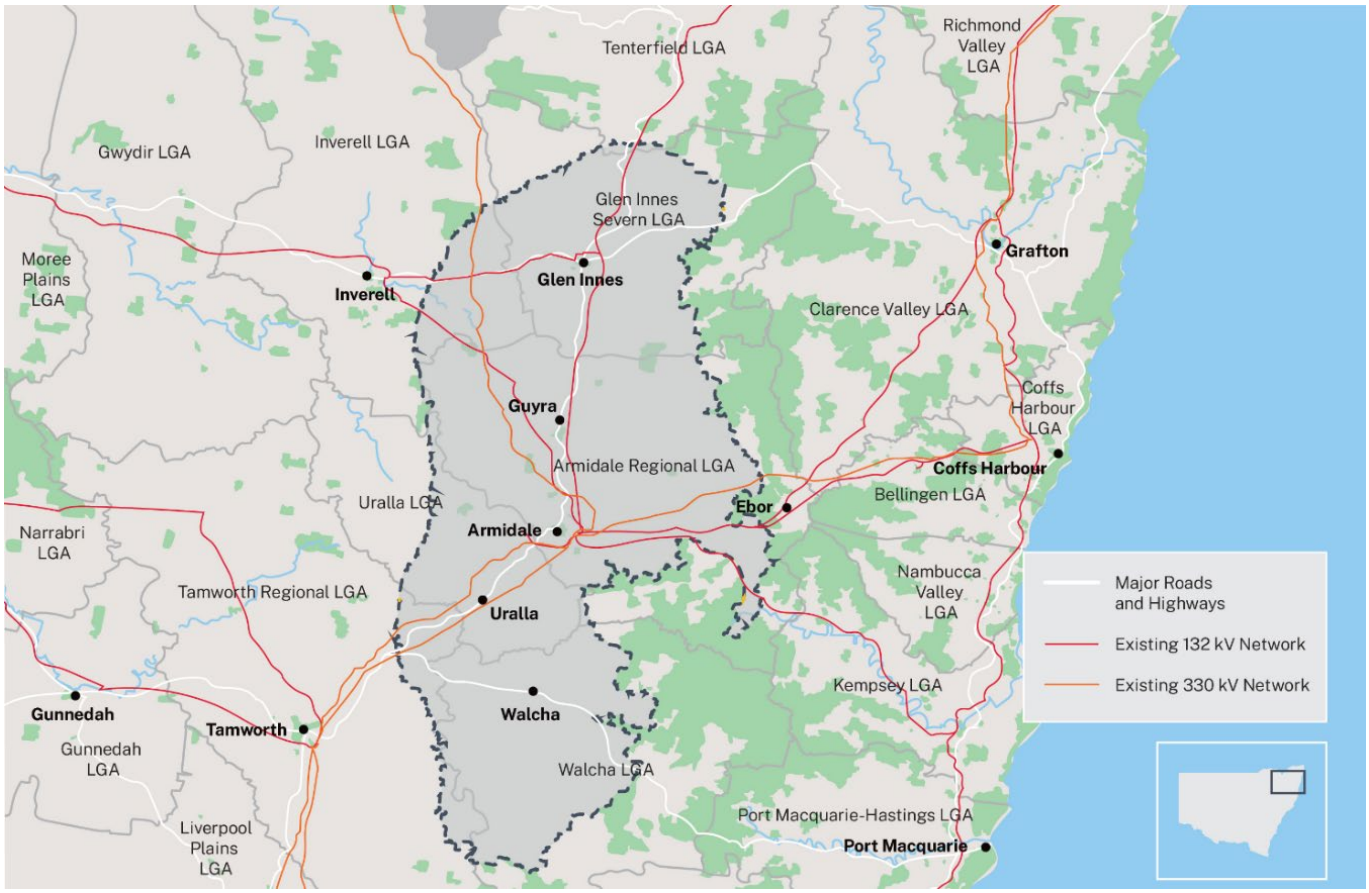


Figure 1-2 New England Renewable Energy Zone

Source: www.energyco.nsw.gov.au

1.4 Project overview

EnergyCo is seeking approval for the construction and operation of new high voltage electricity network infrastructure that is required to connect renewable energy generation and storage projects within the New England REZ to the existing electricity network to the west of Singleton adjacent Bayswater Power Station.

The Project is planned to be delivered in stages. Staging the Project enables EnergyCo to commit to unlocking a transfer capacity of 6 GW in the New England REZ over two stages, with Stage 1 to deliver 2.4 GW by 2031 and Stage 2 to deliver 3.6 GW by 2033. Additional capacity would be unlocked by 2043, however this will be subject to a separate planning approval. The Project would enable independent renewable energy developers within the New England REZ to connect to the new network infrastructure and distribute electricity to the NEM.

KEY PROJECT FEATURES

New transmission infrastructure including new dual 500 kilovolt (kV) transmission lines and associated infrastructure to connect the New England REZ to the NEM to the west of Singleton NSW; and new single 500 kV and 330 kV lines to connect to the proposed energy hubs within the New England REZ

Ancillary development to support the Project, including:

- Establishment and/or upgrade of access tracks and public roads
- Upgrade and/or augmentation to existing electricity and utility infrastructure
- Installation and operation of communications infrastructure and facilities

Four energy hubs to connect future energy generation and storage projects within the New England REZ to the new 500 kV transmission infrastructure and a northern connection to link the North Hub with the existing 330kV transmission line

Other construction-related works and facilities, such as laydown and staging areas, earthworks material sites with crushing and screening plants, concrete batching plants, stringing sites, helicopter landing pads, site offices and workforce accommodation camps.

Section 1.4.1 to Section 1.4.4 below provide an overview of the Project's location, objectives and background. A more detailed Project description is provided in Section 3 of this report.

1.4.1 Location of the Project

The Project is about 350 kilometres (km) in length, which includes the transmission corridor extending from the existing substation at Bayswater Power Station (referred to as 'Bayswater substation') in the Hunter region of NSW, connecting to four energy hubs within the New England REZ located in the Northern Tablelands region of NSW. The location of the Project is illustrated in Figure 1-3 and the regional context of the Project is described further in Section 2.3.

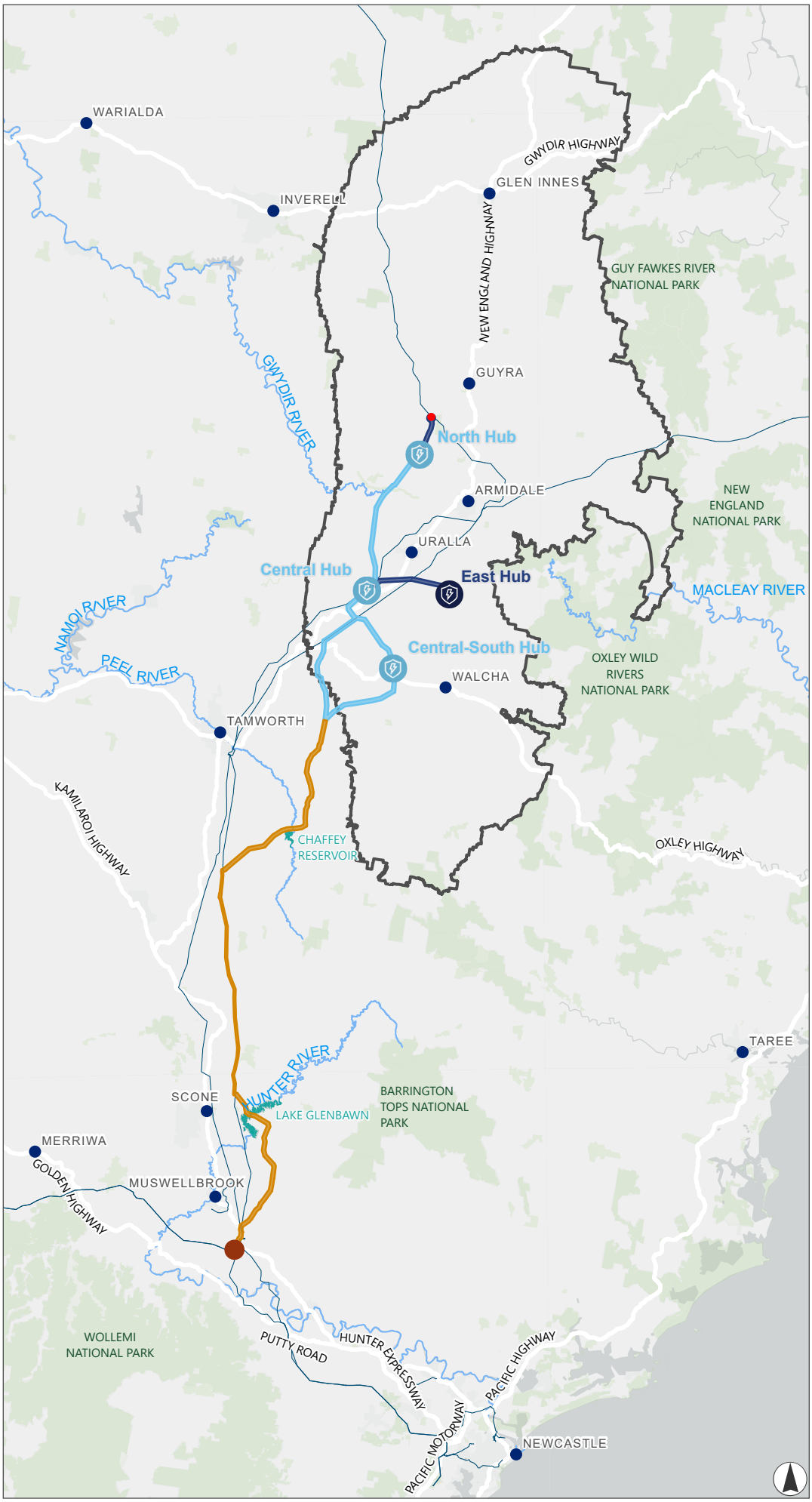


FIGURE 1-3

Location of the Project

Legend

- Bayswater Power Station (existing)
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Dams
- Existing high voltage lines
- Major Roads
- Watercourse

0 25 50

Kilometres

Scale 1:1,600,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

1.4.2 Project objectives

The Project supports the delivery of the New England REZ. EnergyCo has identified nine key objectives for the Project and the New England REZ as a whole, as detailed below.

ENERGYCO'S OBJECTIVES FOR THE NEW ENGLAND REZ

STRATEGIC

Emissions reduction

Support government emissions reduction targets and the transition of the National Electricity Market from traditional energy sources to lower emission renewable energy generation and storage.

Network resilience

Improve energy security and reliability by connecting new large scale renewable energy generation and storage projects to the National Electricity Market.

Value for money

Deliver the REZ in a way that protects the long-term financial interests of NSW energy consumers and helps improve the affordability of the energy supply through lower generation costs and increased competition.

Private investment

Encourage the development of viable grid-scale renewable energy projects in the REZ and reduce barriers to investment.

DELIVERY

Stakeholder coordination

Work collaboratively with generators, government and other stakeholders to coordinate the delivery of the REZ in a way that minimises impacts to local communities.

Community

Carry out meaningful engagement with landowners, communities and stakeholder groups, including First Nations communities.

Environment and land use

Protect natural and cultural resources through the planning and delivery of the REZ and minimise impacts to biodiversity, heritage, high value agricultural land and other sensitive land uses.

Jobs, skills and supply chain

Encourage local participation and deliver long-term benefits for regional communities through employment, training and supplier opportunities.

Safety

Protect the safety of workers and communities during construction and operation through a robust safety culture and policy framework.

1.4.3 Route selection process

EnergyCo recognises that any large scale network infrastructure project will result in both impacts and benefits and that careful selection of the route is critical in minimising these impacts. EnergyCo has implemented a robust, multi-disciplinary and multi-stage process for the identification and assessment of route options for the Project. The key steps in this process are summarised in Figure 1-4 and discussed further in Section 1.4.3.1 to Section 1.4.3.8.

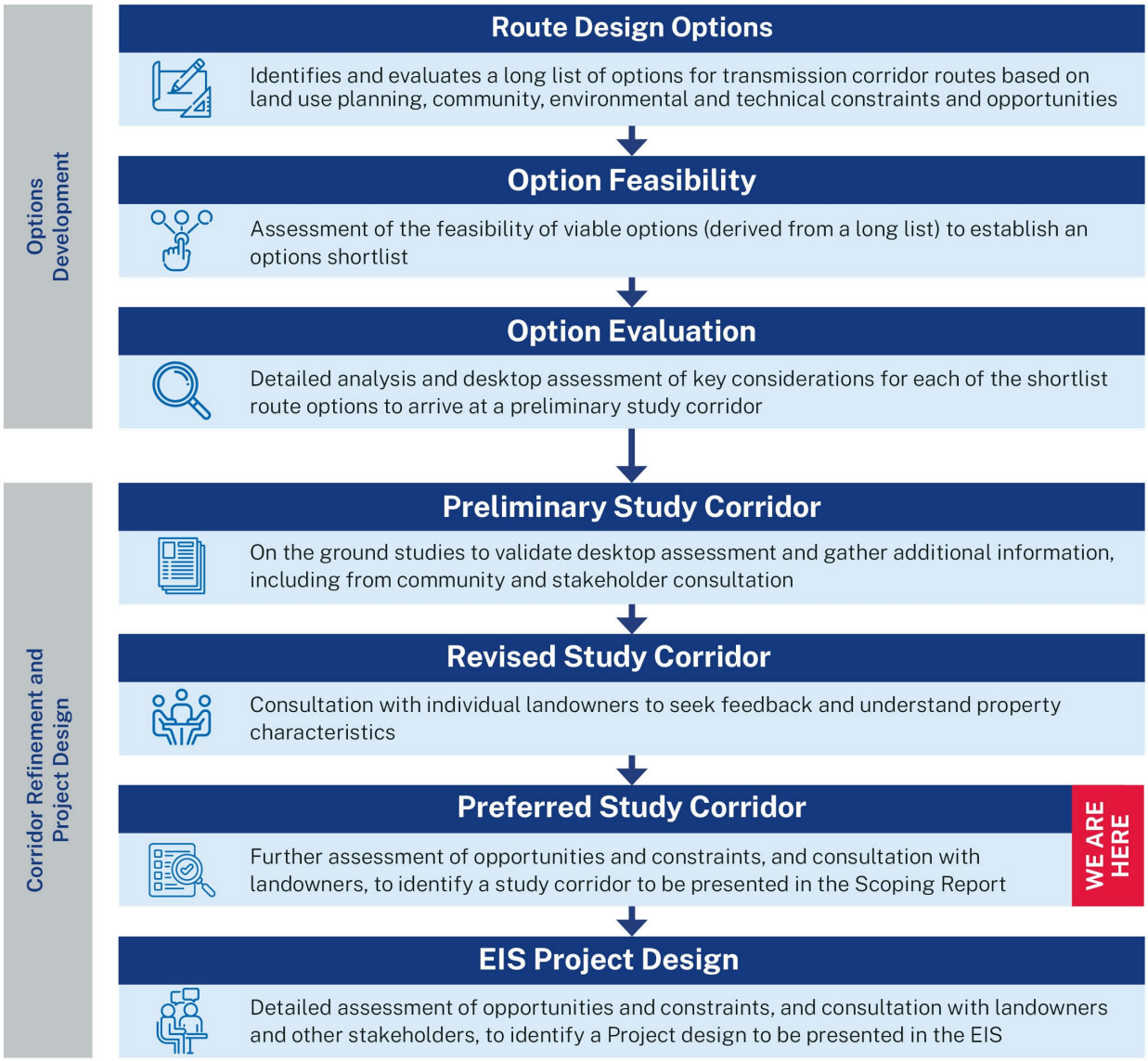


Figure 1-4 Route selection process

1.4.3.1 Route options framework

EnergyCo has developed a set of key planning pillars and corresponding planning principles to guide the route selection process. These pillars and principles, which align with the requirements of the EII Act, are presented in Table 1-1.

Table 1-1 Key planning pillars and related planning principles for route options selection

Planning pillar	Definition	Planning principles
People 	Positive benefits and negative impacts on people's wellbeing, amenity and quality of life	• minimise impacts on the visual amenity of residences and landscapes • minimise impacts on residential areas and rural residences • maximise opportunities to deliver community benefits.
Environment 	Impacts to natural and cultural environments	• minimise impacts on biodiversity values • minimise impacts on cultural heritage values • maximise the use of available industrial and mining land.
Economic 	The cost of the option and its impacts on key industries	• deliver energy infrastructure that is in the long-term financial interests of NSW energy consumers • minimise impacts on high value agricultural land, including Critical Industry Cluster (CIC) land and Biophysical Strategic Agricultural Land (BSAL) • maximise the use of suitable public land.
Strategic 	The consistency of the option with the Electricity Infrastructure Road Map (refer to Section 2.2.5)	• deliver energy infrastructure that meets the objectives and timing requirements of the Roadmap • maximise co-location with existing transmission infrastructure • maximise co-location with existing and proposed energy projects.
Technical 	The technical efficiency and reliability of the option in meeting electricity demand	• maintain energy security and reliability, ensuring resilience of the power system • optimise electricity infrastructure and power system development over the long term.

1.4.3.2 Route design options

The first step in the options identification and assessment process involved the development of a long list of potential options for the New England REZ transmission corridor. This process was informed by generator data collected through a Registration of Interest (ROI) process. The ROI

process enabled EnergyCo to identify key areas of generation and conceptual energy hub locations that would need to be linked to the transmission spine.

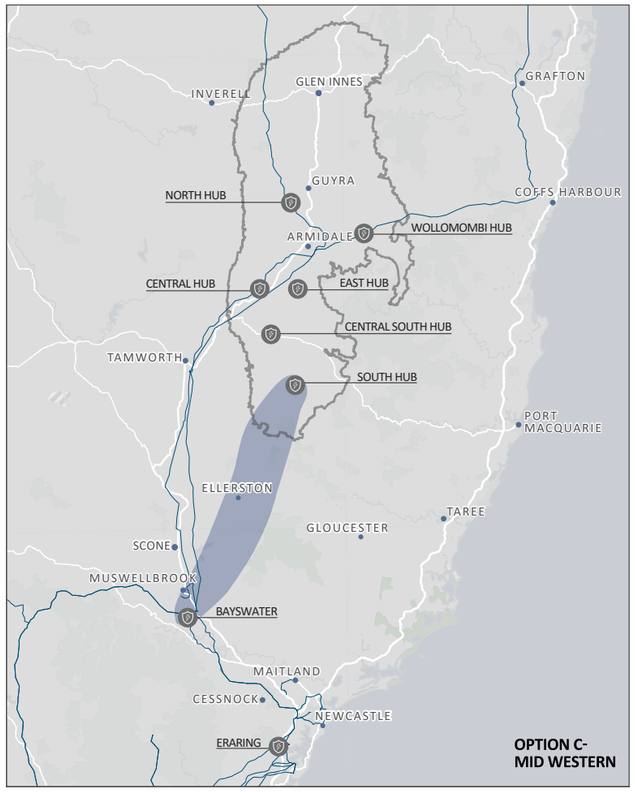
EnergyCo then refined the long list down to a shorter list for further assessment by applying the framework outlined in Section 1.4.3.1. The long list refinement process was also supported by initial power system analysis and targeted consultation with prospective generators with the aim of maximising generation capacity and economies of scale and minimising constraints on generation.

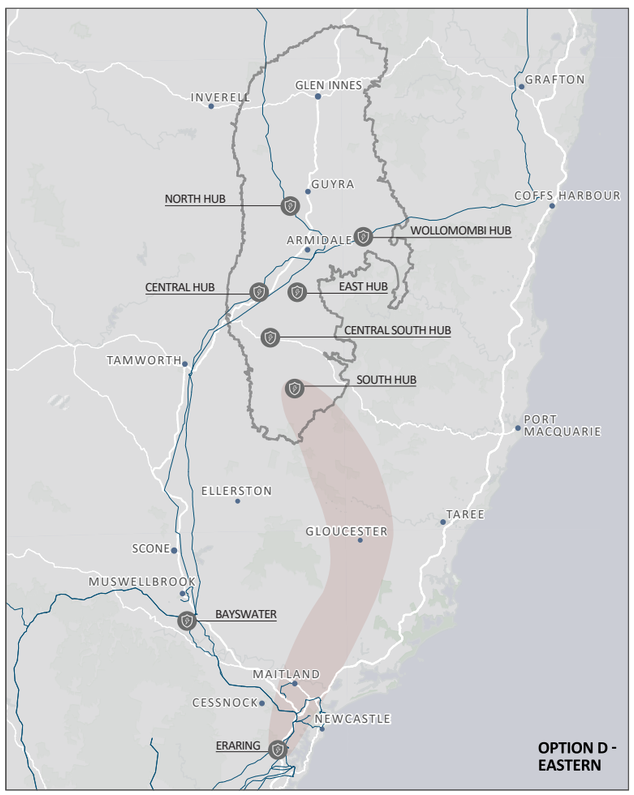
The long list process resulted in the identification of six potential routes (bulk corridors) to transfer electricity from the New England REZ to load centres in the south. These six bulk corridor options are described in Table 1-2 and are shown in Figure 1-5.

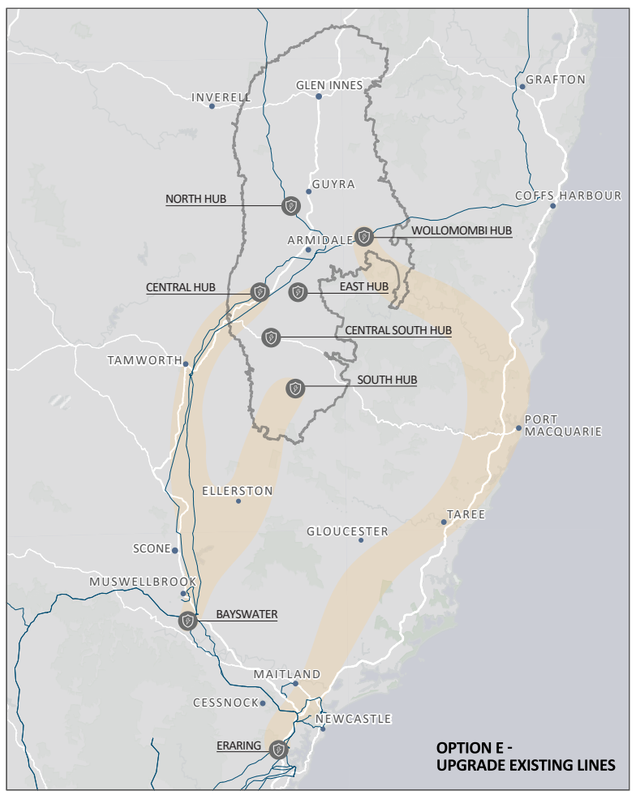
Six conceptual energy hub locations were also identified within the New England REZ. These conceptual locations are also shown in Table 1-2.

Table 1-2 Initial bulk corridor options

Initial Bulk Corridor Option	Description
Option A – Western (Central)	Construction of two new 500 kV transmission lines from the Central Hub to the existing 330 kV easement near Tamworth. From there, two new 500 kV transmission lines would extend south to Bayswater, running parallel with the existing 330 kV lines.
Option B – Western (South)	Construction of two new 500 kV transmission lines from the South Hub to the existing 330 kV easement near Tamworth. From there, two new 500 kV transmission lines would extend south to Bayswater, running parallel with the existing 330 kV lines.
Option C – Mid Western	Construction of two new 500 kV transmission lines extending south from the South Hub to Bayswater, passing to the west of the Barrington Tops National Park, via Ellerston. This route partially aligns with existing 132 kV transmission lines.
Option D – Eastern	Construction of two new 500 kV transmission lines extending from the South Hub to Eraring, via Gloucester.
Option E – Upgrade Existing Lines	Upgrading of three existing 330 kV transmission lines to 500 kV. These upgraded lines would extend east from the Wollomombi Hub to Kempsey and then south via Port Macquarie, Taree and Gloucester to Eraring; south from the South Hub to Bayswater, via Ellerston; and south from the Central Hub to Bayswater, via Tamworth.
Option F – Mid Western / Eastern Split	A hybrid of the Ellerston and Gloucester options (C and D above), involving the construction of a single 500 kV transmission line along both of these routes.







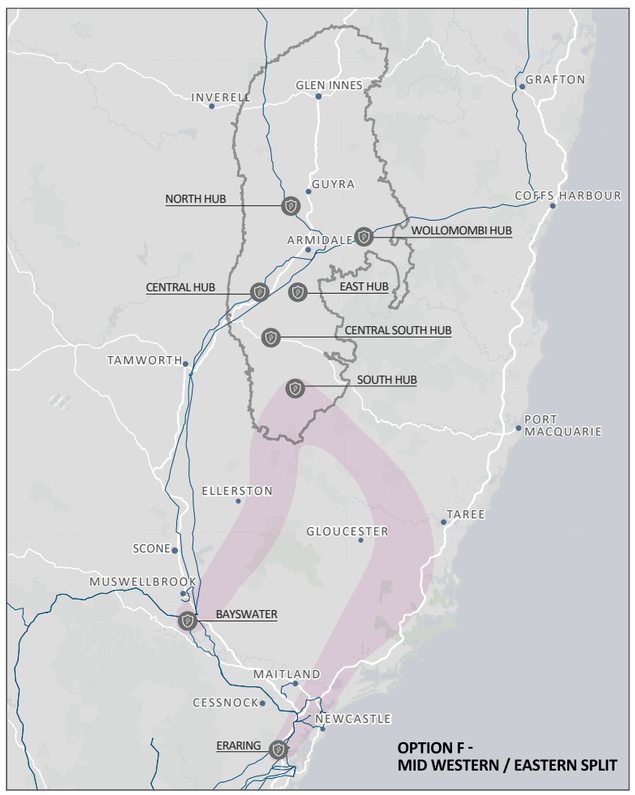


FIGURE 1-5

Initial Route Options

Legend

- Renewable Energy Zone
- Western Option
- Mid Western Option
- Eastern Option
- Upgrade Existing Lines Option
- Mid Western / Eastern Split Option
- Hub
- Town
- Existing high voltage lines

0 25 50

Kilometres

Scale 1:1,700,000 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

A high level assessment of each of the six bulk corridor options against the key planning pillars and principles was then undertaken. The key differentiators between the options based on this high level assessment are summarised in Table 1-3.

Table 1-3 Assessment of bulk corridor options against relevant planning pillars – key differentiators

Planning Pillar	Option A - Western (Central)	Option B - Western (South)	Option C - Mid Western	Option D - Eastern	Option E - Upgrade Existing Lines	Option F - Mid Western/Eastern Split
People 	Reduced impact to built up areas and rural dwellings compared to options D, E and F.	Reduced impact to built up areas and rural dwellings compared to options D, E and F.	Least impact to built up areas and rural dwellings of all options.	Significant impact to built up areas and rural dwellings.	Greatest impact to built up areas and rural dwellings of all options.	Significant impact to built up areas and rural dwellings.
Environment 	No impact to National Parks estate, old growth protected areas, important wetlands or important rainforest.	No impact to National Parks estate, old growth protected areas, important wetlands or important rainforest.	No impact to National Parks estate, old growth protected areas, important wetlands or important rainforest.	Impacts state conservation area and old growth protected area. Greater impact to mapped core Koala habitat, important wetlands and rainforest than options A, B and C.	Impacts Gondwana Rainforests of Australia World Heritage Area. Impacts National Parks estate and requires more native vegetation clearing than all other options due to line length.	Impacts state conservation area, old growth protected areas and has greater impacts to mapped core Koala habitat, important wetlands and rainforest than options A, B, C and D due to line length.
Economics 	Shorter line length than options D, E and F. Impacts critical industry cluster and cropping land.	Shorter line length than options D, E and F. Impacts critical industry cluster and cropping land.	Shorter length of line than Options D, E and F. Impacts critical industry cluster.	Greater line length than other options. No impacts to critical industry cluster or cropping land.	Longest line length of all options. Impacts critical industry cluster and cropping land.	Greater transmission line length than other options. Impacts critical industry cluster but no impacts to cropping land.

Planning Pillar	Option A - Western (Central)	Option B - Western (South)	Option C - Mid Western	Option D - Eastern	Option E - Upgrade Existing Lines	Option F - Mid Western/Eastern Split
Strategy 	Maximises co-location with existing transmission lines.	Maximises co-location with existing transmission lines.	Reduced opportunities to co-locate with existing transmission lines.	Reduced opportunities to co-locate with existing transmission lines.	Maximises co-location with existing transmission lines. Multiple routes provide increased network security.	Reduced opportunities for co-location, however multiple routes provide increased network security.
Technical 	Reduced slope and flooding constraints compared to options E and F.	Reduced slope and flooding constraints compared to options E and F.	Reduced slope and flooding constraints compared to options E and F.	Reduced slope and flooding constraints compared to options E and F.	Greatest significant slope and flooding constraints of all options.	Higher slope and flooding constraints due to increased line length.
Key:	*Option would result in a better outcome, relative to other options.*	*Option would result in a worse outcome, relative to other options.*				

1.4.3.3 Option feasibility

The next step in the process was an options feasibility assessment. Based on the findings of the high level assessment summarised in Section 1.4.3.2, Option E (Upgrade Existing Lines) and Option F (Mid-West/Eastern split) were excluded from further consideration at this time. The exclusion of Options E and F was driven by these options being significantly longer than the other options, interacting with a larger number of communities and not enabling sharing with other 500 kV lines (i.e. only providing for single rather than dual lines).

The four remaining bulk corridor options were then shortlisted for options feasibility assessment. This process built on the findings of the high level assessment and was supported by newly available information and desktop analysis including preliminary design, consideration of key land use planning, environmental and technical constraints and initial assessment of costs. Site visits were also undertaken to inform the assessment and a generator Expression of Interest (EOI) process was undertaken to confirm information on potential generation within the REZ.

Each of the four shortlisted bulk corridor options were assessed as likely to be feasible, however, Option D (Eastern) was considered to have the most significant environmental constraints (including impacts to National Parks and high value biodiversity), the most significant interactions with communities, and highest time and cost risk factors.

Additionally, the Wollomombi Hub was excluded from further consideration at this time based on limited generator interest. The remaining five energy hubs were retained for further evaluation.

1.4.3.4 Options evaluation

A detailed options evaluation was then undertaken to select a route option and energy hub model from the four shortlisted bulk corridor options and five energy hub locations remaining following the options feasibility process. At this stage in the process, Options A and B were combined into a single Western bulk corridor option, with flexibility to connect into the REZ via a range of energy hub connection sub-options. This resulted in three remaining bulk corridor options as shown in Figure 1-6.

To support a robust evaluation, a material body of information and analysis was developed regarding each option. While not an exhaustive list, key data inputs for the options evaluation are summarised below:

- environmental planning assessment involving desktop assessment against planning pillars and principles
- constructability, geotechnical, property and traffic assessment and comparative risk assessment through GIS analysis
- power systems analysis and updated generator EOI outcomes
- transmission lines assessment (including bushfire risk assessment and lightning risk)
- energy hubs assessment including design input via GIS analysis.

Building on the findings of the options feasibility assessment, two main bulk corridor route options, the Western (combining Options A and B) and Mid-Western (Option C) corridors were identified for detailed options evaluation. Based on the higher environmental and community impacts as well as the time and cost risks associated with the Eastern (Option D) corridor, this option was excluded at this time.

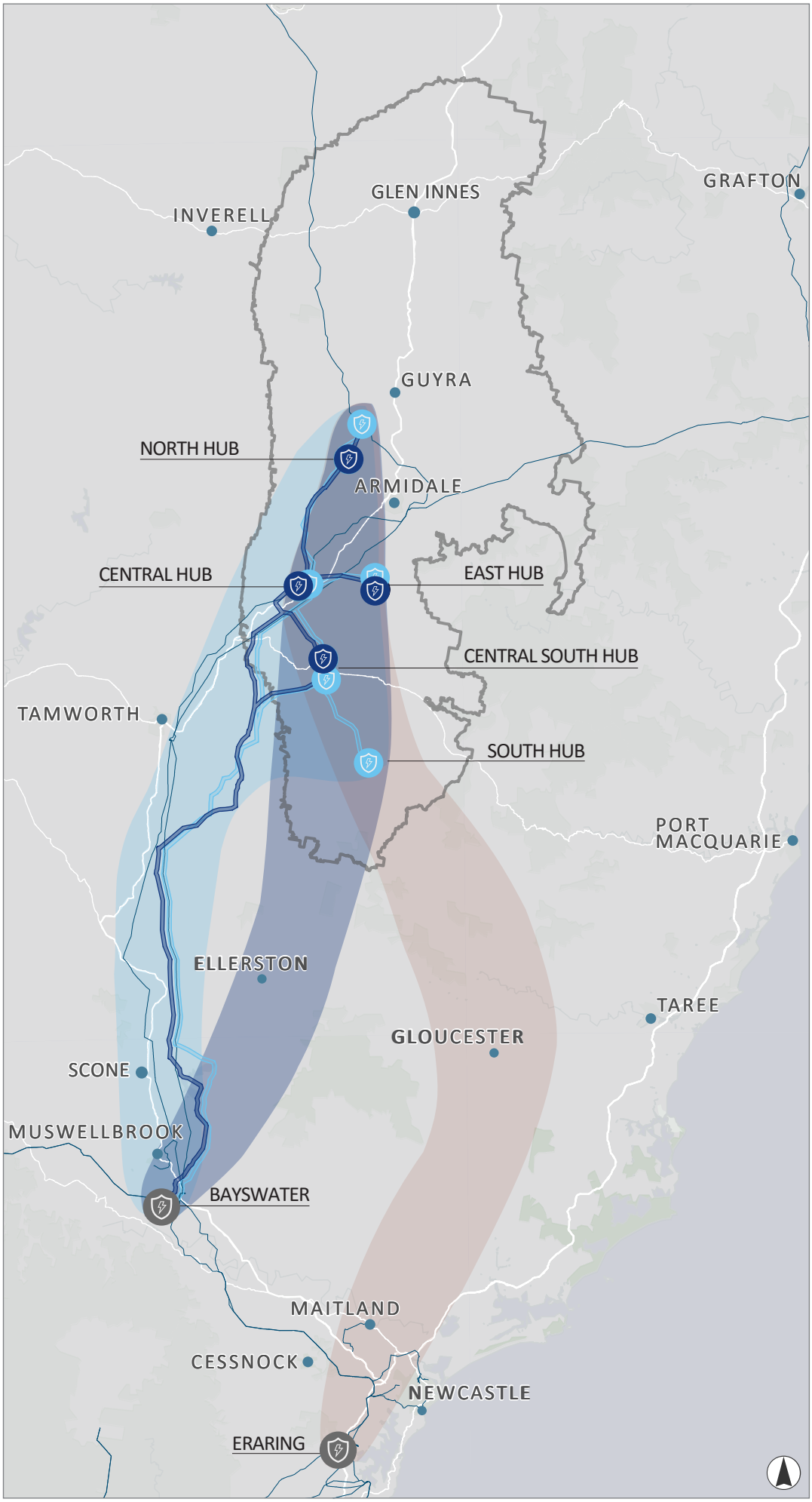


FIGURE 1-6

Corridor Refinement

Legend

- Renewable Energy Zone
- Preliminary study corridor
- Preliminary study hub
- Revised study corridor
- Revised study hub
- Western Option (Options A and B)
- Mid Western Option (Option C)
- Eastern Option (Option D)
- Hub
- Town
- Existing high voltage lines

0 25 50

Kilometres

Scale 1:1,700,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

A Multi-Criteria Analysis (MCA) was then undertaken for the two remaining bulk corridor options (Western and Mid-Western), with the key findings summarised in Table 1-4. Overall, the options evaluation determined that the Western bulk corridor performed better against the relevant planning pillars and MCA considerations than the Mid-Western bulk corridor.

On this basis, the Western bulk corridor (Options A and B) was selected as the preferred route for further investigation. Additionally, the options evaluation process concluded that a design with five energy hubs would be carried forward for further consideration.

Table 1-4 Options evaluation summary

Planning pillar	West bulk corridor	Mid-west bulk corridor
People 	Closer to built up areas and more dwellings in proximity to the bulk corridor. However, visual sensitivity is likely to be lower where transmission lines can be co-located with existing infrastructure.	Avoids built up areas and impacts fewer dwellings. However, as the route mostly impacts undisturbed 'greenfield' land, visual sensitivity is likely to be higher.
Environment 	Reduced impacts to native vegetation as the bulk corridor is generally more disturbed with scattered patches of vegetation. Greater bushfire resilience.	Increased impacts to native vegetation (including intact remnant vegetation) and involves more watercourse crossings. Reduced bushfire resilience.
Economics 	Lower estimated cost and shorter construction period. Both routes result in impacts to agricultural land (including critical industry cluster) that require further verification and assessment.	Higher estimated cost and longer construction period. Both routes result in impacts to agricultural land (including critical industry cluster) that require further verification and assessment.
Strategy 	Consistent with the NSW Electricity Infrastructure Roadmap. Enables more cost effective and timely delivery and maximises opportunities for co-location of infrastructure.	Consistent with the NSW Electricity Infrastructure Roadmap. Increases cost and time risks and provides reduced opportunities for co-location of infrastructure.
Technical 	Improved constructability outcomes due to less rough terrain. The route is more accessible via state highways and regional roads and provides better access to emergency services and workforce accommodation.	Reduced constructability outcomes and access challenges due to the remoteness of the route and roughness of the terrain. Access would rely more heavily on the use of minor roads. Reduced access to emergency services and workforce accommodation.
Key:	*Option would result in a better outcome, relative to other options.*	*Option would result in a worse outcome, relative to other options.*

1.4.3.5 Preliminary Study Corridor

Based on the findings of the options evaluation, a 1 km wide Preliminary Study Corridor was identified, generally following the alignment of the Western bulk corridor with a greater buffer around the energy hub locations. The number of landowners affected by the Preliminary Study Corridor was around 320 landowners.

The Preliminary Study Corridor was then subject to community and generator engagement and additional technical studies, power systems modelling, modelling of costs and benefits and

refinement of the Project delivery strategy with the objective of clearly defining the Project scope and staging.

EnergyCo commenced landowner and community stakeholder engagement regarding the Preliminary Study Corridor in June 2023 seeking feedback and input on the Project and the route selected. The Preliminary Study Corridor is shown in Figure 1-7. The key benefits of the Preliminary Study Corridor are outlined below.

KEY BENEFITS OF PRELIMINARY STUDY CORRIDOR

- Opportunities to minimise interactions with towns/settlements and use topography to minimise visual impacts
- Greater opportunities to co-locate with existing transmission lines and generation infrastructure along selections of the route
- Reduced intersections with biophysical strategic agricultural land (BSAL) and critical industry cluster lands
- Significantly Improved constructability outcomes (i.e. less difficult terrain)
- Improved accessibility due to existing road networks and reduced program risk (eg for inclement weather)
- Fewer predicted impacts on listed threatened species and communities
- Greater ability to mitigate and manage bushfire risks
- Greater hub flexibility in terms of hub connection options
- Minimises interactions with protected areas and conservation areas
- Greater opportunity to utilise 330kV infrastructure and minimise the extent of 500kV infrastructure needed on the New England Plateau
- Lower costs and faster delivery timeframes - supporting delivery of energy affordability and reliability objectives
- Maximises opportunities to use Crown and public land where practicable

1.4.3.6 Revised Study Corridor

As an outcome of landholder and community engagement and further technical studies, sections of the Preliminary Study Corridor were revised to avoid and minimise impacts.

A Revised Study Corridor (1 km wide) was announced in March 2024. The number of landowners affected by the Revised Study Corridor was around 240 landowners.

This revised corridor, when compared to the Preliminary Study Corridor, resulted in:

- Better outcomes for communities and the environment
- About **80** fewer landholders in the study corridor
- A total reduction in transmission easements of **39** km
- More government land around the Dungowan and Glenbawn areas affected and avoiding smaller landholders where possible

The number of energy hubs was also reduced from five to four with the deferral of the South Hub, announced in January 2024. This decision reflects generator feedback about the timing and scale of generation planned to connect to the South Hub in time to meet immediate electrification targets for the New England REZ. The South Hub and associated transmission infrastructure will be assessed under a separate future approval, and it is not part of the Project.

The changes to the corridor are shown on Figure 1-7, which also outlines some of the key drivers and outcomes of the changes.

1.4.3.7 Preferred Study Corridor

Following the announcement of the Revised Study Corridor in March 2024, EnergyCo undertook further landowner and community consultation and has continued technical studies on the corridor.

The Revised Study Corridor largely forms the basis of the Preferred Study Corridor for the purposes of this Scoping Report, with some minor amendments. The Preferred Study Corridor is shown in Figure 1-8 with further detail available via EnergyCo's interactive map: EnergyCo's Interactive Map | Energy Corporation of NSW (caportal.com.au).

As with the Revised Study Corridor, the Preferred Study Corridor is generally 1 km wide along much of the length of the proposed transmission lines but incorporates some narrower sections where co-location of infrastructure is proposed (generally narrowed to 600 m). A 5 km diameter study area has been established around energy hubs.

The Preferred Study Corridor forms the basis for detailed environmental assessments and stakeholder engagement, and for obtaining the SEARs for the Project.

1.4.3.8 EIS Project Design

To this end, the Preferred Study Corridor will continue to be refined in response to stakeholder feedback and the findings of technical assessments including the environmental and social studies that will be completed as part of the EIS. Through this refinement process, an EIS Project Design will be developed and presented in the EIS.

The EIS Project Design will propose a narrower corridor for the transmission infrastructure, based on the easement and infrastructure construction requirements for the Project. Further information is provided in Section 3.2.

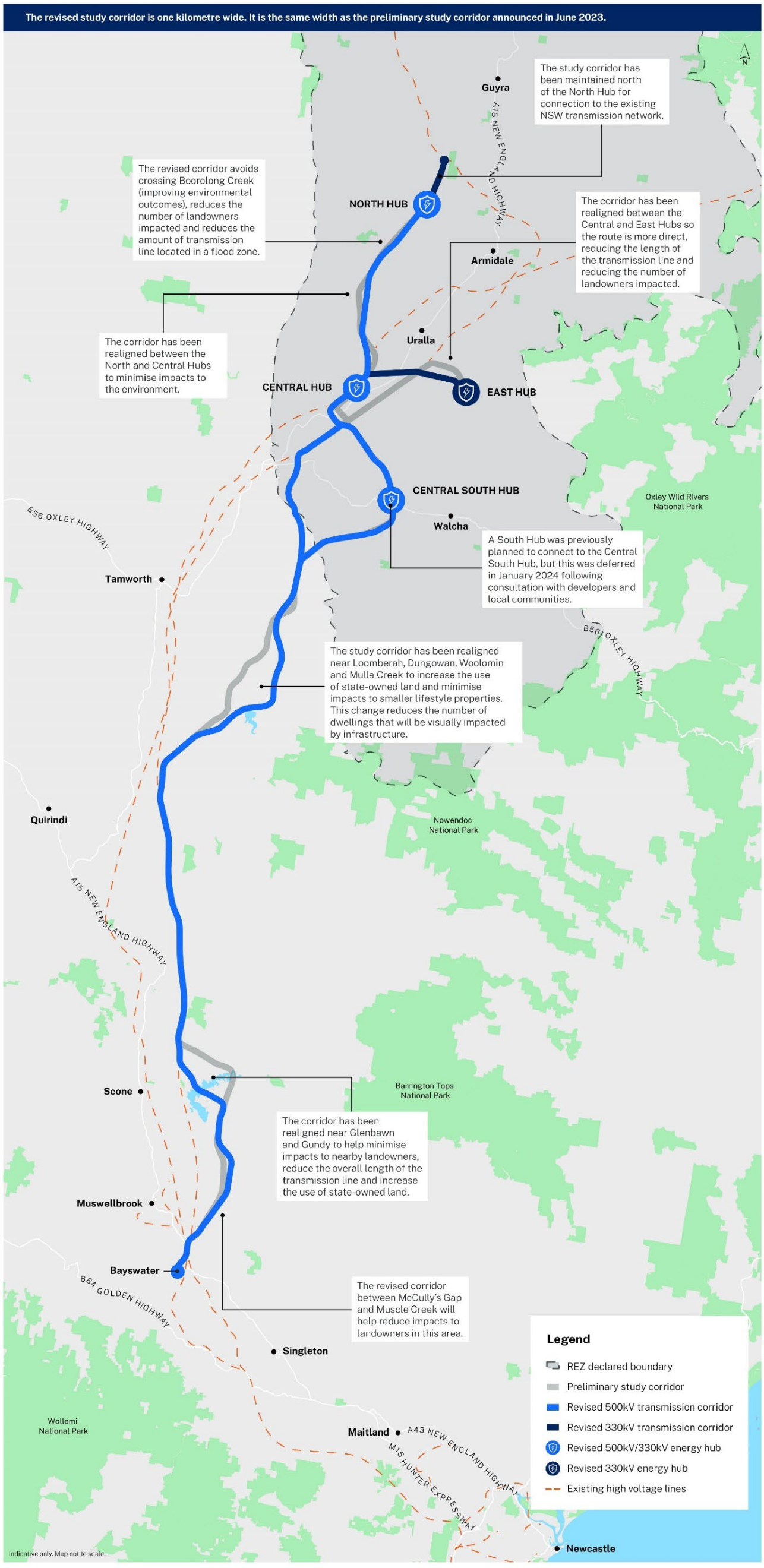


Figure 1-7 Key alignment changes from Preliminary to Revised Study Corridor

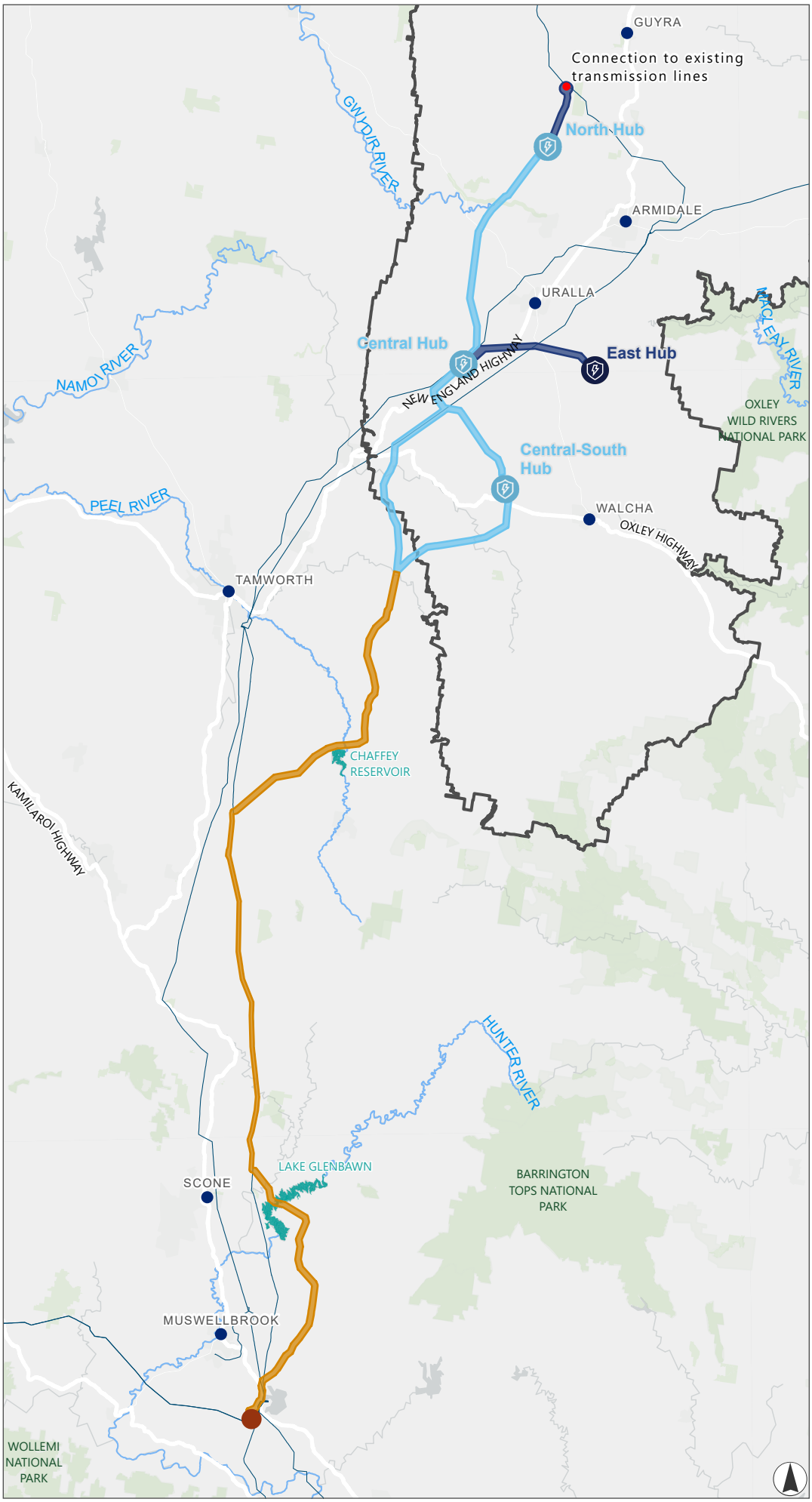


FIGURE 1-8

Preferred Study Corridor

Legend

- Bayswater Power Station (existing)
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Dams
- Existing high voltage lines
- Major Roads
- Watercourse

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

1.4.4 CSSI declaration

The Project was declared CSSI on 27 June 2024. The declaration, as per Schedule 5 of State Environmental Planning Policy (Planning Systems) 2021 states:

1. *Development for the purposes of the New England REZ Transmission project.*
2. *The New England REZ Transmission project is a program of works to construct and operate the high-voltage electricity transmission lines and associated infrastructure required to connect energy generation and storage projects within the New England REZ to the existing electricity network.*
3. *The New England REZ Transmission project includes the following —*

   (a) the construction and operation of new high-voltage electricity transmission lines between the existing electricity network near Bayswater Power Station to and within the New England REZ,

   (b) the construction and operation of new electricity substations, switching stations and associated infrastructure,

   (c) the construction and operation of new battery energy storage systems,

   (d) ancillary development including the following —

      (i) the carrying out of works to upgrade or augment existing electricity transmission lines and substation infrastructure,

      (ii) the upgrade, construction and operation of access tracks and roads,

      (iii) the installation and operation of communication infrastructure and facilities,

      (iv) the installation and operation of construction accommodation and utilities infrastructure,

      (v) the installation and operation of construction compounds, laydown areas, helicopter landing pads, temporary concrete batching plants and brake and winch sites.
4. *The development is to be carried out on land in the following local government areas —*

   (a) Armidale Regional,

   (b) Liverpool Plains,

   (c) Muswellbrook,

   (d) Singleton,

   (e) Tamworth Regional,

   (f) Upper Hunter Shire,

   (g) Uralla,

   (h) Walcha.
5. *In this section —*

development *does not include —*

(a) tests or investigations for the design or assessment of the New England REZ Transmission project, including the carrying out of the following —

(i) surveys,

(ii) sampling,

(iii) environmental investigations,

(iv) geotechnical borehole drilling,

(v) test drilling,

(vi) test excavations, or

(b) the construction of temporary access tracks or temporary site facilities to allow for the carrying out of tests or investigations described in paragraph (a), or

(c) minor works associated with existing electricity transmission infrastructure, or

(d) upgrading, relocating or widening of existing public roads that is —

(i) carried out on land in the New England REZ, and

(ii) subject to a determination under the Act, Division 5.1.

***New England REZ** means the New England Renewable Energy Zone under the Electricity Infrastructure Investment Act 2020.*

For the avoidance of any doubt, the Project subject to this Scoping Report and associated future EIS includes the Project components outlined in Table 1-5 and excludes the consideration of the following future applications:

- The South Hub and associated transmission line between the South Hub and Central South Hub (Stage 3). This portion of the internal New England REZ network infrastructure is deferred. Whilst it forms part of the CSSI declaration, it will be subject to separate future consideration and planning approval.
- Infrastructure required to facilitate connections from the hubs to electricity generation assets. Whilst these form part of the CSSI declaration, these are not part of the Project as described in this Scoping Report as they have not yet been designed and the generator projects requiring connection have not been confirmed.

Table 1-5 Project components included in the CSSI declaration

CSSI component	CSSI Declaration	The Project	Future Applications**
Transmission lines (Stage 1 and Stage 2)	✓	✓	
Transmission lines (Stage 3)	✓		✓
Energy hubs (Stage 1 and Stage 2)	✓	✓	
Energy hub (Stage 3)	✓		✓
Generator connections	✓		✓
Existing electricity infrastructure	✓	✓*	✓
Roads and tracks	✓	✓*	✓
Communications infrastructure	✓	✓*	✓
Temporary construction infrastructure, including accommodation, compounds, laydown areas, concrete batch plants	✓	✓*	✓

** Ancillary development required to facilitate the Project generally forms part of the EIS, unless clearly stated otherwise as being excluded and subject to a separate planning approval.*

*** Future applications may be progressed via amendment to the Project, or separate planning approval, either by EnergyCo or other proponent/s (for example Transport for NSW for road upgrades etc).*

1.5 Related development

A number of renewable energy generator and storage projects will occur within the New England REZ. These projects will be managed by independent developers and will be connected to the Project to distribute electricity to the wider network. The right of a project to access the new network infrastructure is subject to the Consumer Trustee's competitive tender process. Each project will also be subject to the NSW planning and approval process.

EnergyCo is responsible for joint planning and coordinating the connection of new generation and storage projects to the Project's network infrastructure.

EnergyCo is currently engaging with developers through an updated expression of interest process to better understand the status and types of projects currently being considered within the region, to allow EnergyCo to plan the New England REZ in a coordinated manner.

The development of renewable energy generation and storage projects in the New England REZ is the responsibility of independent private sector entities. EnergyCo's role as infrastructure planner is to develop the scope of network infrastructure and coordinate development between the Project and the generation and storage projects. This aims to ensure that infrastructure is fit for purpose, delivered in a timely and efficient manner, impacts and opportunities for coordination are identified early, and positive legacy outcomes for the community are considered as a whole.

The transmission line connections from energy hubs to new generation and storage projects forms part of the CSSI declaration (refer Section 1.4.4 and Table 1-5 above), however, these connections do not currently form part of the Project and will be subject of a later planning and approval process once the scope of such connections is confirmed.

An overview of the Project, its staging and related development is provided in Figure 1-9.

Other related work may include road and other service upgrades to facilitate better service provision within the region. Some of this work may be subject to assessments under Part 5 of the EP&A Act (e.g. assessment of road upgrade work by the relevant roads authority).

1.6 About EnergyCo

1.6.1 Delivery of renewable energy zones

EnergyCo, a NSW Government statutory authority established under the EII Act, is responsible for leading the delivery of the REZs as part of the Roadmap. The Roadmap sets out the NSW Government's vision to coordinate investment in electricity transmission, generation, storage and firming infrastructure and transform the NSW electricity system into one that is cheap, clean and reliable (refer to Section 2.2.5 for further information on the Roadmap).

EnergyCo's role in REZ delivery is established under the EII Act, the objectives of which are:

(a) to improve the affordability, reliability, security and sustainability of electricity supply, and

(b) to co-ordinate investment in new generation, storage, network and related infrastructure, and

(c) to encourage investment in new generation, storage, network and related infrastructure by reducing risk for investors, and

(d) to foster local community support for investment in new generation, storage, network and related infrastructure, and

(e) to support economic development and manufacturing, and

(f) to create employment, including employment for Aboriginal and Torres Strait Islander people, and

(g) to invest in education and training, and

(h) to promote local industry, manufacturing and jobs, and

(i) to promote export opportunities for generation, storage and network technology.

As the Infrastructure Planner responsible for delivering the REZs, EnergyCo's role is to lead the development, coordination and delivery of the REZs in a way that benefits consumers, investors, and regional communities.

EnergyCo's role includes the coordination of investment in electricity transmission, generation, storage and firming infrastructure across the REZs and the delivery of key transmission infrastructure (refer to Figure 1-10). This includes the delivery of the New England REZ Network Infrastructure Project (the subject of this Scoping Report) as one component of EnergyCo's responsibilities for the broader delivery of the REZs.

EnergyCo's key objectives for renewable energy in NSW are to:

- Maximise the opportunities created by the transformation of the NSW electricity system by co-ordinating investment in REZs across the state
- Channel investment in solar farms, wind farms and storage (such as batteries and pumped hydro) to places in NSW best suited to host it
- Generate profound economic opportunities as cheap renewable energy underpins new low carbon industries, such as green hydrogen, manufacturing and metals production
- Deliver clean, reliable and affordable energy to the households and businesses of NSW

The key EnergyCo community commitments in the development of the five REZs in NSW are to:

- Undertake meaningful engagement with communities, engaging closely with local councils, First Nations people and communities, landholders and many other stakeholder groups to ensure that projects are accepted in the communities that host them
- Ensure benefits of the REZs are shared with communities in a coordinated and thoughtful way, including ensuring local communities have an opportunity to participate in building the infrastructure that will support the REZs through local employment, education and training and other opportunities, including for First Nations people

EnergyCo and the NSW Government are taking an 'all of government' approach to delivery of the Roadmap, to ensure, amongst other things, a well-coordinated approach to mitigating cumulative impacts and amplifying benefits to local communities associated with the delivery of the REZs. This work will help inform EnergyCo's assessment and management of cumulative impacts for this Project.

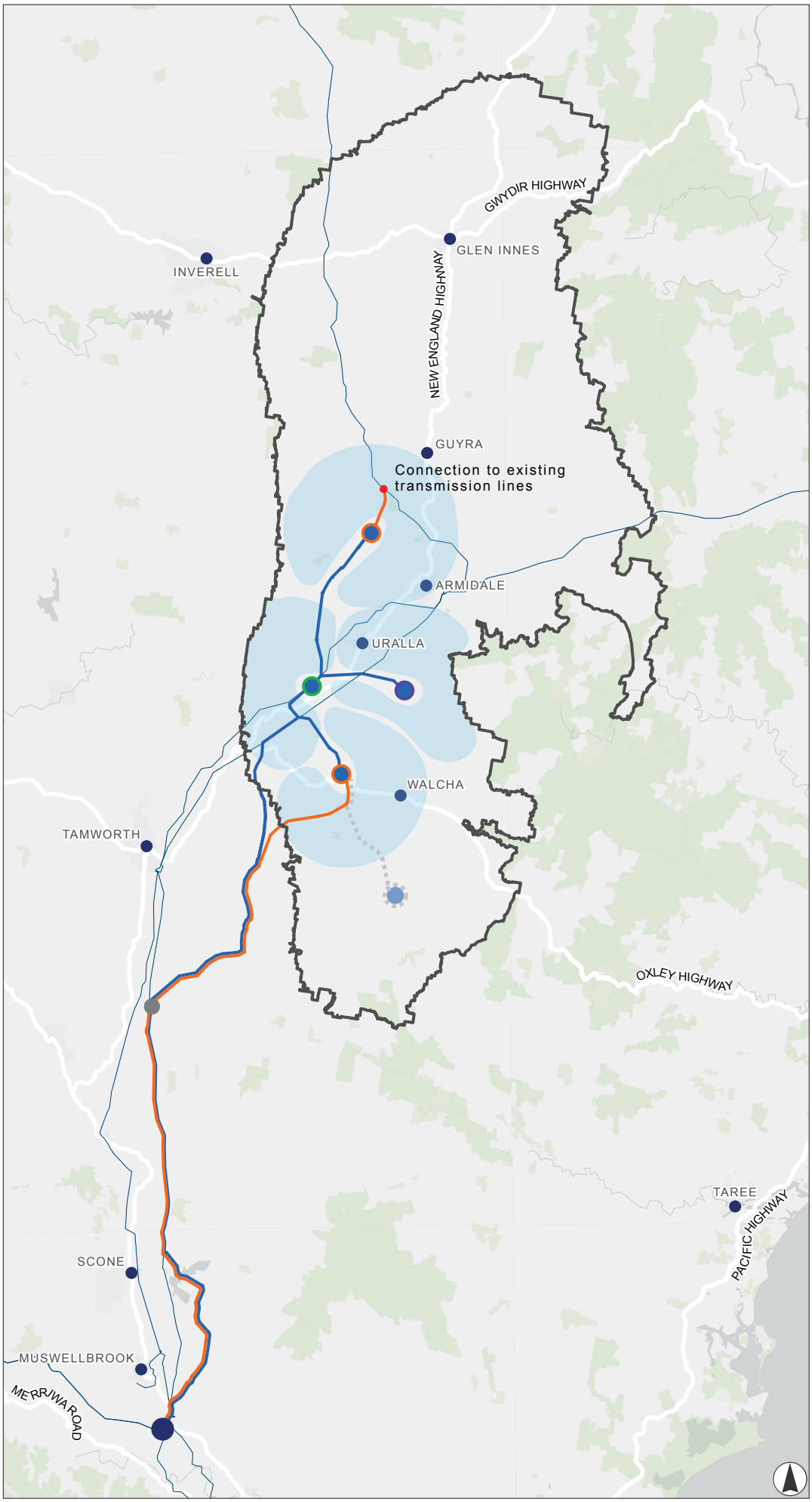


FIGURE 1-9

New England REZ Network Infrastructure Project and Related Development

Project Staging

- Stage 1 Energy Hub 500/330kV Substation
- Stage 1 Energy Hub 330kV Switching Station with Stage 2 expansion to 500/330kV Substation;
- Stage 1 Energy Hub - 330kV Switching Station
- Stage 3 Energy Hub (deferred) (possible future augmentation)
- Stage 1 Transmission Line
- Stage 2 Transmission Line
- Stage 3 Transmission Line (deferred) (possible future augmentation)
- Bayswater Substation
- Northern Connection
- 'Bridging' point
- Private Generation Projects and Connections to Energy Hubs (subject to separate planning approval)
- Town
- Renewable Energy Zone
- Existing high voltage lines

Note: Conceptual broad locations of potential generator projects and connections only.

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

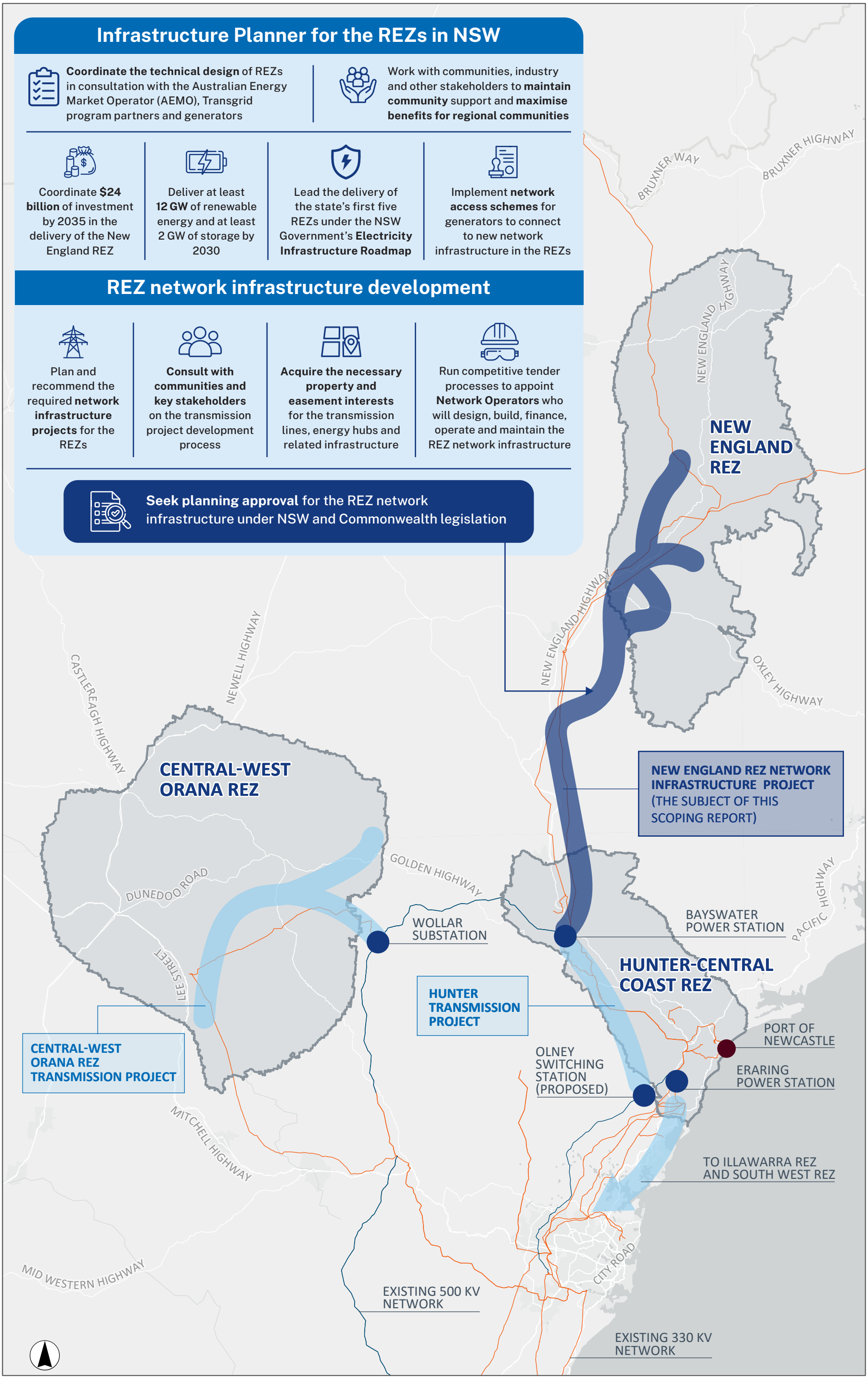


FIGURE 1-10

EnergyCo's role in coordinating REZ delivery

The priority issues and focus areas for REZ delivery are identified below.

PRIORITY ISSUES AND FOCUS AREAS FOR REZ DELIVERY

Opportunities for workers and businesses

EnergyCo is working with communities, industry and government on ways to coordinate local employment and business development opportunities in the REZs, focusing on:

- Employment and training
- Local procurement and supply chain
- First Nations participation

Roads and transport

EnergyCo is working collaboratively with developers and road authorities to prepare for increased vehicle movements on local, regional and State roads during construction of the REZs, focusing on:

- Oversized deliveries on the NSW state road network
- Local roads upgrades

Housing and accommodation

EnergyCo is working with local councils, industry and other NSW Government agencies to coordinate initiatives for housing and accommodation across the REZs, focusing on:

- Temporary housing accommodation
- Short-term accommodation
- Legacy housing opportunities

Community services and infrastructure

With health, education and other community services already experiencing high demand in regional communities, EnergyCo is working with key partners to address the additional resourcing and infrastructure required within REZ communities, focusing on:

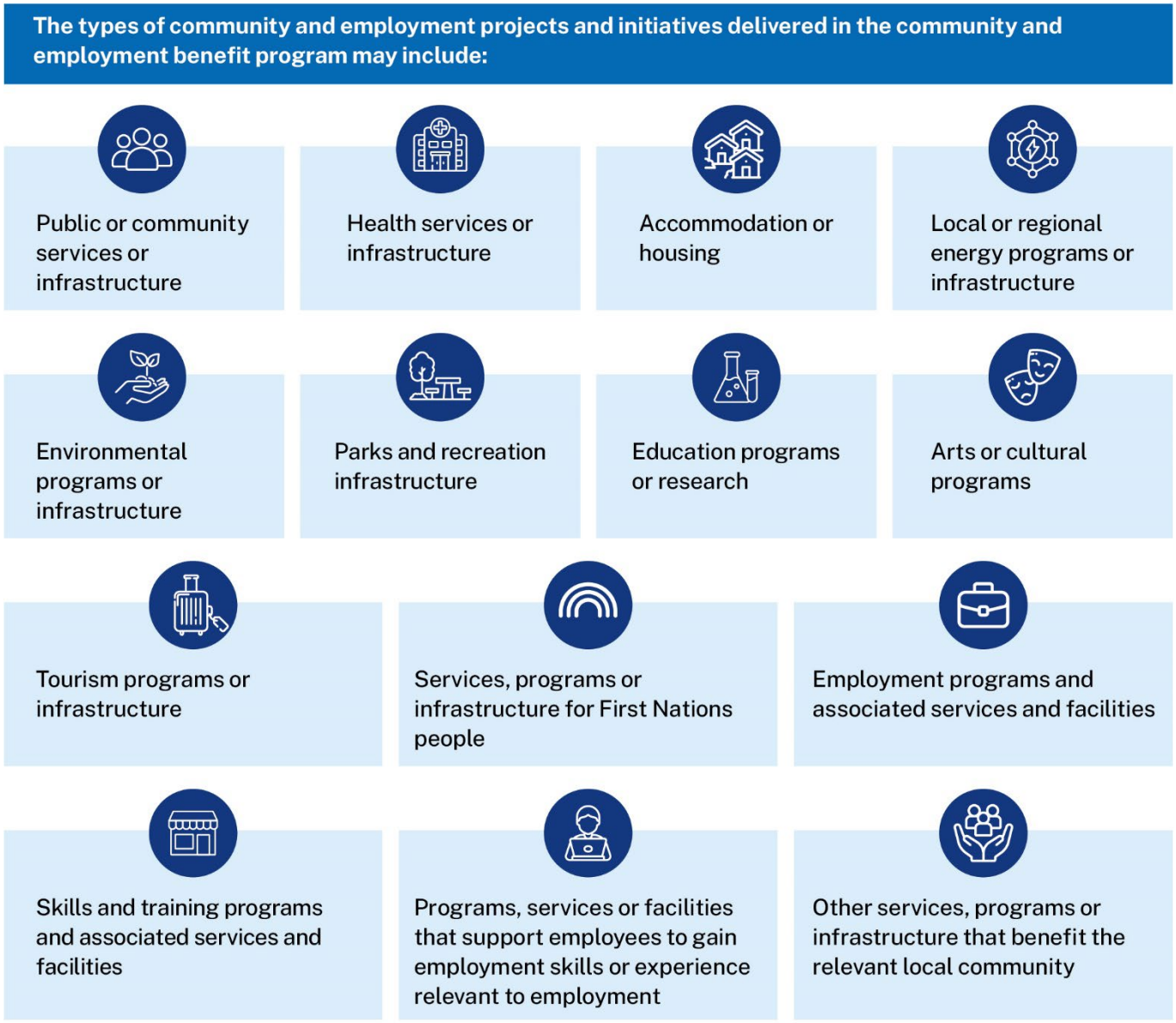
- Healthcare
- Education
- Emergency services
- Recreation and community facilities

Mobile and internet connectivity

EnergyCo recognises mobile and internet connectivity is an existing concern in regional communities. The construction of renewable energy infrastructure provides an opportunity to help improve telecommunication coverage in the REZs. EnergyCo is working with the NSW Telco Authority regarding opportunities to improve mobile and internet connectivity in the REZs.

EnergyCo is working closely with communities, industry, regional stakeholders and government partners including the relevant local councils to coordinate the delivery of community benefits and ensure they are targeted to the unique needs and priorities of locals.

EnergyCo is developing a community and employment benefit program to ensure regional communities receive long-term benefits from the energy transition, as discussed below.



EnergyCo is committed to working with local communities, councils, First Nations organisations and other key stakeholders to help shape the community benefit initiatives to be delivered.

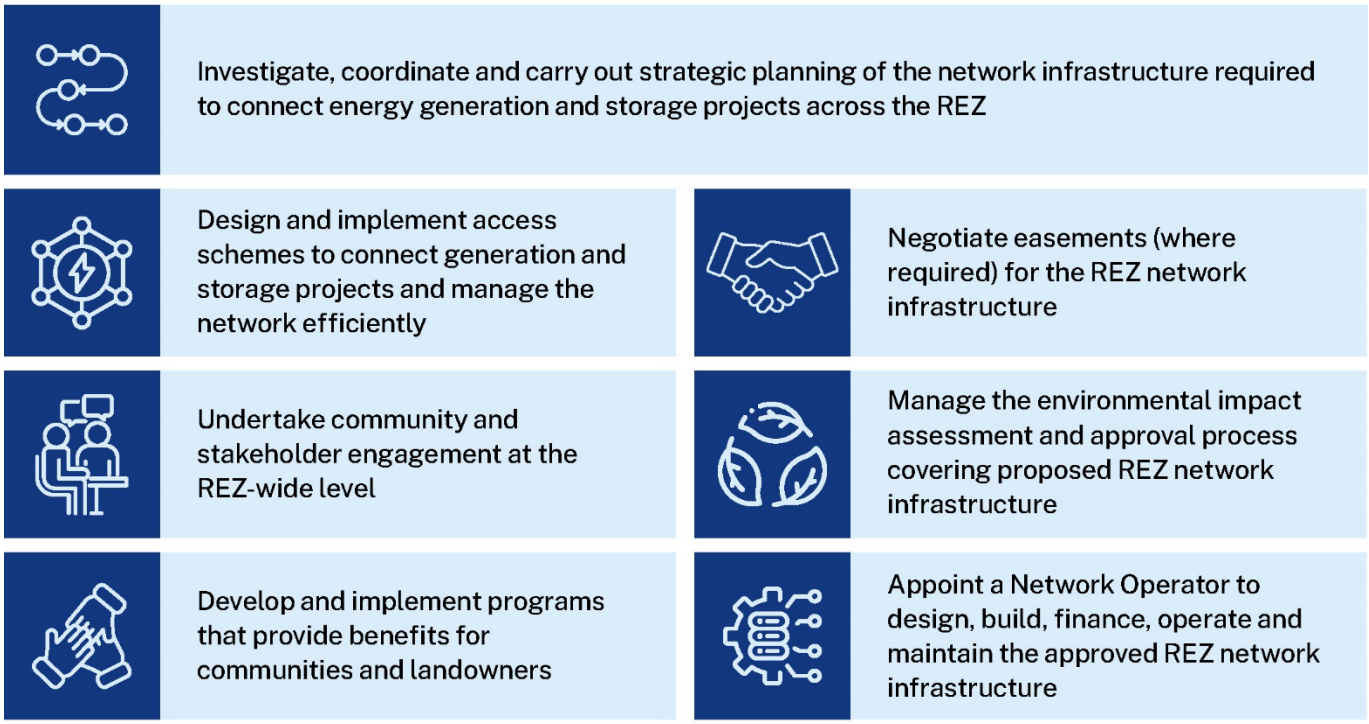
1.6.2 Delivery of New England REZ

EnergyCo's key responsibilities when delivering the New England REZ are shown in the graphic below.

Specific to the New England REZ, EnergyCo is coordinating REZ wide studies that seek to maximise outcomes for regional communities whilst also addressing potential cumulative impacts of the REZ and the Project. These studies will consider priority issues for REZ delivery and will include lessons learnt from other projects such as EnergyCo's Central West Orana Transmission Project, and the outcomes of engagement with councils and other key stakeholders.

Further information on the New England REZ coordination studies and their role in addressing cumulative impacts is provided in Section 2.4.

The New England REZ Network Infrastructure Project (the subject of this Scoping Report) seeks to deliver the New England REZ network infrastructure to support the overall delivery of the New England REZ.



1.6.3 Project Proponent details

In leading the development of New England REZ network infrastructure, EnergyCo proposes to develop the New England REZ Network Infrastructure Project, as outlined in Section 3. As the proponent for the Project, EnergyCo's details are summarised in Table 1-6.

Table 1-6 Proponent details

Requirement	Details
Name	Energy Corporation of NSW
ABN	13 495 767 706
Postal Address	GPO Box 5469, Sydney NSW 2001

1.7 Purpose of the report

The Project was officially declared CSSI by the Minister for Planning and Public Spaces on 27 June 2024, in accordance with section 5.13 of the EP&A Act.

Under the provisions of section 5.17(1) of the EP&A Act, an EIS is required to accompany the CSSI application for the Project. The EIS must be prepared in accordance with the SEARs for the Project which are provided by the Secretary of DPHI. The planning and approval process for the Project is discussed in more detail in Section 4 of this report.

This Scoping Report has been prepared to identify the key environmental, cultural and social matters of relevance to the Project to inform the Project's SEARs.

Overall, the purpose of the Scoping Report is to:

- Describe the Project using information available at the time of preparing the Scoping Report
- Include a description of Project alternatives with consideration of the EnergyCo and Project-specific objectives
- Provide an overview of the stakeholder engagement undertaken to date, as well as planned future engagement to be carried out during the preparation of the EIS
- Inform the Project's SEARs by identifying the key matters requiring further assessment in the EIS and to outline the proposed approach to assessing each of these matters

This Scoping Report has been prepared following the State Significant Infrastructure Guidelines – Preparing a Scoping Report (SSI Scoping Report Guidelines) (DPE, 2022a).

1.7.1 Structure of the report

In accordance with the structure presented in the SSI Scoping Report Guidelines, this Scoping Report includes the following sections.

Section 1 (Introduction)

Introduces the Project and the NSW REZs, EnergyCo's objectives and responsibilities for delivering the Project, and provides an outline of the structure of the document.

Section 2 (Strategic context)

Outlines the strategic context for the Project, including the justification and benefits of the project, a summary of the regional context for the Project and an overview of the environmental, cultural and social setting, including cumulative impact considerations.

Section 3 (The Project)

Contains a description of the Project, including key features of the Project, the proposed construction and operation schedule, and an overview of alternatives considered.

Section 4 (Statutory context)

Summarises the relevant Commonwealth and NSW statutory requirements applicable to the approval process for the Project.

Section 5 (Community engagement)

Summarises the community and stakeholder engagement plan for the Project, the engagement undertaken to date, a summary of the key community views based on this engagement, as well as proposed engagement to be undertaken during the EIS phase.

Section 6 (Proposed assessment of impacts)

Contains an analysis of the environmental, cultural and social matters relevant to the Project and the assessments proposed to be undertaken as part of the EIS.

Section 7 (Conclusion)

Summarises the Project and the key environmental, cultural and social matters requiring further assessment.

Section 8 (References)

Provides a list of references for the Scoping Report.

Appendices

Includes all appending documents to support the Scoping Report.

2 Strategic context

2.1 Justification for the Project

Australia is moving towards net zero greenhouse gas emissions by 2050, with an accelerating transition of Australia's energy generation market to renewable energy. Energy supply in NSW is transitioning from a system dominated by a small number of large capacity coal-fired generators located close to metropolitan centres to one of diverse renewable energy generation and storage located where the renewable resource and environmental constraints permit.

The development of REZs is a key component of the NSW government's strategy to deliver affordable, reliable, and clean electricity for homes and businesses in NSW. New transmission infrastructure is required to connect the REZs to the existing transmission network and is critical to achieving the energy security, cost and sustainability objectives of the Commonwealth and NSW governments.

The following sections outline the strategic context in which the Project exists, demonstrating the critical need for a new network infrastructure project connecting the New England REZ to the existing electricity network. The NSW government has confirmed this critical need by determining that the Project is CSSI.

2.1.1 Nation-wide transition to renewable energy

Australia's energy system is undergoing its greatest transformation since the 1950s, driven by economic, engineering and environmental factors. By 2050, Australia's energy system will transform into one that provides cleaner and more reliable energy sources.

In September 2022, the Australian Government implemented the *Climate Change Act 2022* (CC Act), which sets out legislated commitments for achieving nation-wide greenhouse gas emissions reduction targets. These targets include:

a. reducing Australia's net greenhouse gas emissions to 43% below 2005 levels by 2030

b. reducing Australia's net greenhouse gas emissions to zero by 2050.

To achieve net-zero greenhouse gas emissions by 2050, the Australian Government developed the Long-Term Emissions Reduction Plan (CoA, 2021), which details the proposed strategies to invest in low emissions technologies across the country, including renewable energy infrastructure.

The rapid pace and scale of developing renewable energy infrastructure is creating technical challenges for Australia's existing electricity supply systems (CoA, 2021). It is essential to develop renewable energy transmission networks that can support the growth of renewable energy infrastructure across Australia and ensure that Australia's electricity supply is secure, reliable and affordable.

The 2024 ISP identifies that the energy transition is well underway. This Plan provides an optimal development path to support Australia's complex and rapid energy transformation towards net zero emissions, including guidance on the significant investment needed in the physical infrastructure of the NEM.

Amongst other aspects, the 2024 ISP identifies that investment is needed to install around 10,000 km of new transmission infrastructure to connect low-cost renewable energy developments to consumers across Australia. The Project is identified in the 2024 ISP as an 'actionable NSW project' for delivery in 2031 to 2033, which is a project that optimises benefits for consumers and which should be progressed as urgently as possible.

2.1.2 NSW transition to renewable energy

Consistent with the national target, the NSW Government's objective is to achieve net zero emissions by 2050. To achieve this, the NSW Government has released:

- the *Climate Change (Net Zero Future) Act 2023*, which sets out a clear path to deliver net zero by 2050
- the EII Act, which enables the State's 20 year plan to transform our electricity system under the Roadmap) (DPIE, 2020)
- the Infrastructure Investment Objectives Report (IIO Report) (AEMO, 2023) which describes the plan for meeting the future electricity needs of NSW
- the NSW Network Infrastructure Strategy (NIS) (EnergyCo, 2023) which identifies the network infrastructure required to modernise NSW's energy system over the next 20 years.

The Roadmap sets out the NSW Government's vision to coordinate investment in electricity transmission, generation, storage and firming infrastructure across the State and transform the existing electricity system into one that is affordable, clean and reliable. At the time this new infrastructure was expected to support 6,300 construction jobs and 2,800 ongoing operational jobs in 2030 (mostly in regional NSW), as a result of attracting an estimated $32 billion in private sector investment. Updated estimates in June 2024 indicate that delivery of the New England REZ will attract more than $24 billion by 2035, supporting over 6,000 construction jobs and 2,000 ongoing operational jobs.

In 2020, the Australian Government entered a bilateral energy and emissions reduction agreement with NSW. This agreement includes a $2 billion investment to collaborate on achieving several goals, including:

Increase gas and electricity supply in NSW by encouraging investment

Improve grid security by supporting transmission interconnection and network access

Support emissions reduction projects that deliver genuine abatement

A key focus of this agreement is investment in the establishment of the NSW REZs. By connecting multiple renewable energy projects and electricity storage, these REZs are planned to capitalise on economies of scale to deliver affordable, reliable, and clean electricity for homes and businesses in NSW.

The NSW Government expects REZs will deliver multiple benefits to NSW, including:

Energy bill savings from reduced wholesale electricity costs

Emissions reduction from a cleaner energy sector

Reliable energy from significant amounts of new energy supply

Host community benefits through strategic planning and best practice engagement and formalised benefit sharing arrangements

The Project is essential for the establishment of the New England REZ and will support meeting the NSW Government's objectives under the Roadmap and the NIS.

2.1.3 Energy security in NSW

Ten large coal-fired power stations have closed since 2012, and the 2024 ISP projects that 90% of today's capacity will be closed by 2035, and all before 2040. The Roadmap includes strategies to replace retiring coal-fired energy generators with new network infrastructure to deliver a minimum of 12 GW of renewable electricity generation and 2 GW of storage by 2030 (DPIE, 2020). The NSW Government's Net Zero Plan Stage 1: 2020–2030 (DPIE, 2020) identifies the Central-West, New England and South-West REZs in particular as playing a critical role in replacing retiring coal-fired energy generators in NSW over the next two decades (DPE, 2020).

The speed and scale of NSW's transition from coal-fired energy to renewable energy is identified in the NIS, as illustrated in Figure 2-1, which shows that 8.3 GW of capacity from ageing coal-fired energy generators needs to be replaced by 2040 (EnergyCo, 2023).

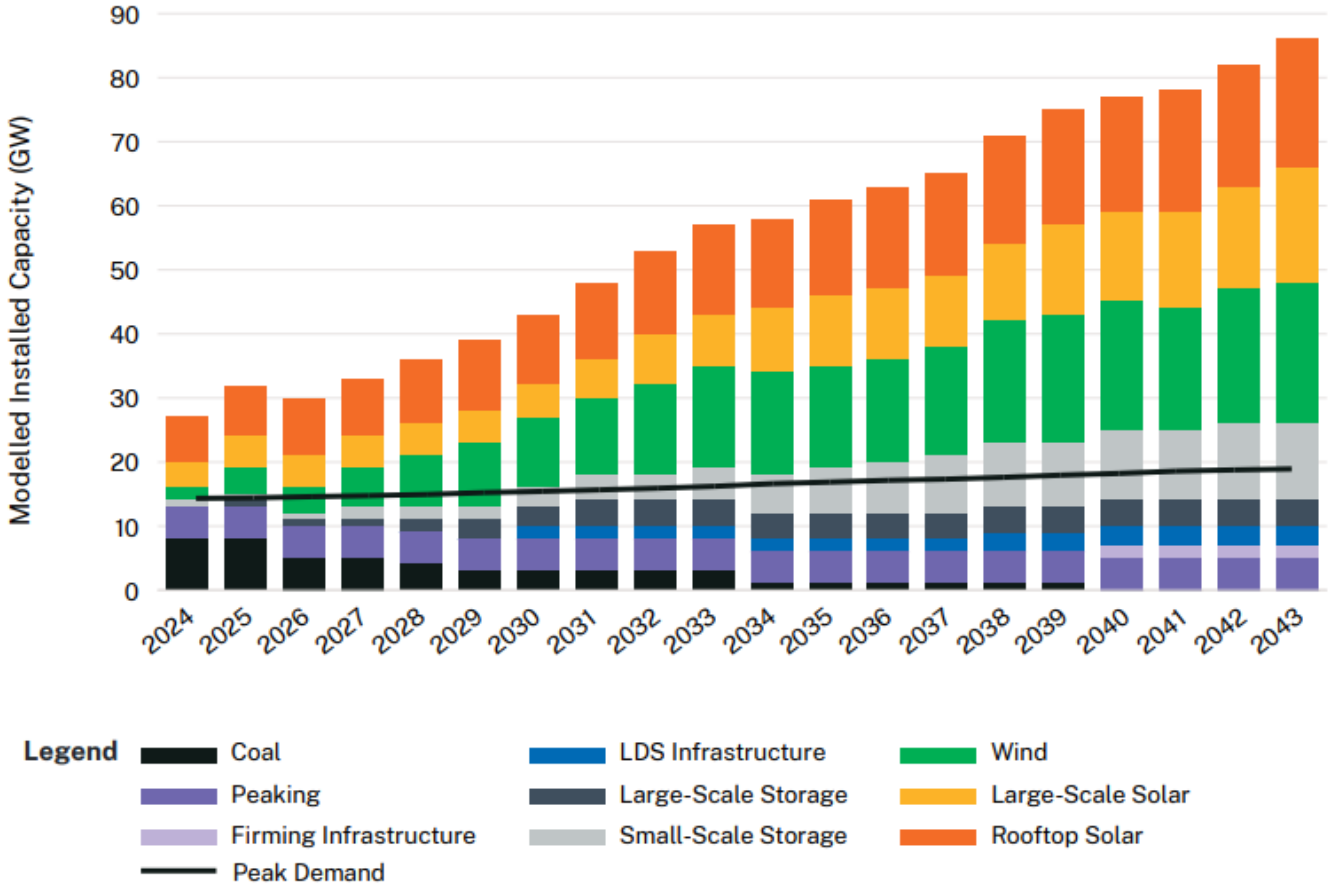


Figure 2-1 Forecast expansion of new NSW generation, storage and firming capacity (EnergyCo, 2023)

New transmission infrastructure is needed to connect low-cost renewable energy infrastructure to consumers. The NIS describes the strategy for the practical coordination of NSW network infrastructure to connect new generation, firming and storage in NSW's five REZs and proposes network infrastructure options with a total transfer capacity of 14 GW be delivered as soon as practicable over the next decade (EnergyCo, 2023).

To manage any future risks to energy security, the NSW Government has set an Energy Security Target to ensure the State takes appropriate action to maintain a reliable electricity supply over the medium to long term. Due to the closure of coal-fired energy generators across NSW, AEMO (2023) forecasted that the Energy Security Target will be breached in 2025–2026 onwards. These breaches can be resolved with the anticipated development of new generation, storage and transmission projects over the next 10 years (AEMO, 2023). Therefore, to address these potential target breaches, new energy generation infrastructure and storage capacity is needed in NSW to ensure energy security for the State. The New England REZ Network Infrastructure Project is a key part of the additional infrastructure required to address the NSW Energy Security Target. The temporary two year extension of the closure of Eraring Power Station announced by the NSW Government in May 2024 will support the security of electricity supply until the new expected closure date of August 2027, and provide additional time to deliver renewable energy storage and network infrastructure projects required to replace the power station.

2.1.4 Construction timeframe for renewable energy infrastructure

The renewable energy infrastructure required to replace coal-fired power stations has a long construction lead time. For example, major high voltage transmission line projects can take between 5 and 13 years to develop and build. Because of this it is essential EnergyCo acts now to ensure new renewable energy generation, transmission and storage projects are operational as existing power stations progressively close. Without a viable high voltage transmission network, it will be impossible to distribute energy to all homes and businesses across NSW.

2.1.5 Benefits of the New England REZ

The Project will facilitate the realisation of the benefits of the New England REZ. The New England REZ will:

- Support the NSW government's strategy to deliver affordable, reliable and clean electricity for homes and businesses in NSW
- Facilitate more than $24 billion in private sector investment by 2035, supporting over 6,000 construction jobs and 2,000 ongoing operational jobs[1]
- Provide for 8 GW of new transmission network capacity in the New England region
- Provide up to $660 million for landholders in lease payments[2]
- Support the Commonwealth and NSW governments' energy security, cost and sustainability objectives, including reducing greenhouse gas emissions associated with energy generation and supporting NSW and Australia on the path to achieving net zero emissions

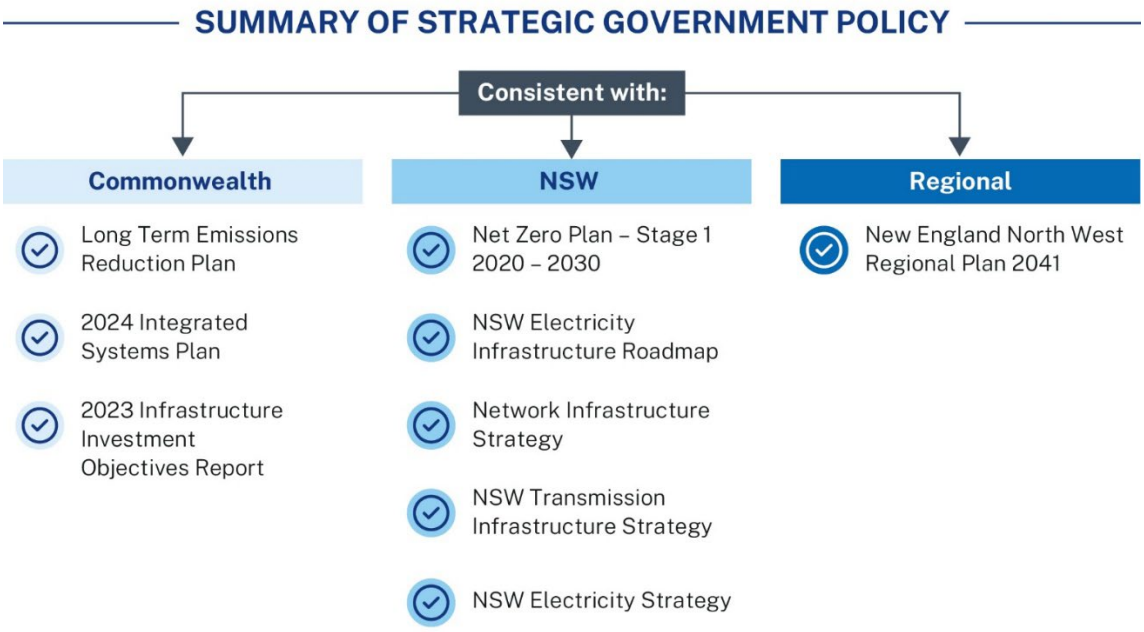
[1] Based on updated estimates, June 2024
[2] NSW Department of Planning, Industry and Environment (DPIE) (2020) NSW Electricity Infrastructure Roadmap

Transmission infrastructure to connect the New England REZ to the existing network is identified as 'Deliver Now' in the NIS, recognising the importance of this infrastructure in the security and affordability of energy in NSW. It is therefore essential that the Project progresses in a timely manner to deliver the required transmission capacity for the REZ.

EnergyCo has also committed to develop a Community Benefits Scheme which is planned to invest millions into the New England economy over the next 20 years. The scheme will provide funding for communities through access fees, which are paid by energy generation and storage developers who connect to new REZ network infrastructure. The scheme will provide for investment in community projects as well as employment related activities such as job creation and training. A minimum of $1,700/MW/year is expected to be directed to community projects, and another $600/MW/year towards employment related activities, such as job creation and training. This is expected to generate about $13.8 million per year in community benefit at 6 GW transmission capacity.

2.2 Strategic context

To guide the transition to renewable energy, the Australian and NSW governments have developed a detailed policy framework for achieving net-zero emissions by 2050 through renewable energy generation. The sections below provide an overview of relevant policies and plans and summarises how the Project aligns with the key objectives within these documents.



2.2.1 Long-Term Emissions Reduction Plan (Commonwealth)

The Long Term Emissions Reduction Plan (CoA, 2020) is a whole-of-economy plan that aims to achieve net-zero emissions across Australia by 2050, based on coordinated actions across four areas:

The Project would construct new network infrastructure enabling the development of the New England REZ. This includes enabling the connection of new renewable energy infrastructure projects to the existing transmission network and supporting the transition to low emission electricity generation. The REZ also provides the opportunity for regional industries and communities to benefit from the economic opportunities associated with the transition to renewable energy.

The Project is considered to be consistent with the priorities of the Long-Term Emissions Reduction Plan.

2.2.2 2024 Integrated Systems Plan (Commonwealth)

The 2024 ISP (AEMO, 2024) is an actionable roadmap for eastern Australia's power system to optimise consumer benefits through a transition of the energy market.

The 2024 ISP highlights that ten large coal-fired power stations have closed since 2012, and projects that 90% of today's capacity will be closed by 2035, and all before 2040. Consequently, significant investment is required in the physical infrastructure of the NEM. The 2024 ISP identifies that the lowest-cost path to meet Federal and State government energy policies on emissions reductions is renewable energy, connected by transmission and distribution, firmed with storage and backed up by gas-powered generation (AEMO, 2024).

The 2024 ISP identifies around 10,000 km of new transmission is needed to connect new generation and storage opportunities and deliver renewable energy to consumers through the NEM.

The Project is identified in the 2024 ISP as an 'actionable NSW project' for delivery in 2031 to 2033, which is a project that optimises benefits for consumers and which should be progressed as urgently as possible. The Project is identified as an actionable project in the ISP and is therefore considered to be consistent with this plan.

2.2.3 2023 Infrastructure Investment Objectives Report (Commonwealth)

The 2023 IIOR (AEMO, 2023) sets out the NSW Consumer Trustee's 20-year Development Pathway for the construction of electricity infrastructure in NSW to achieve the infrastructure investment objectives included in the EII Act in a practically feasible way.

The Development Pathway seeks to support the entry of new generation and storage infrastructure as soon as practicable, having regard to supply chain constraints and opportunities, and independent of the timing of coal plant withdrawals. This approach ensures that sufficient energy is available in NSW in advance of any unexpectedly early coal plant withdrawal that may occur, and also allows for construction to be brought forward if such a withdrawal were to occur.

The Development Pathway prioritises generation construction that aligns with the development of REZ network infrastructure for the Central-West Orana and New England REZs. The purpose of this is to maximise the utilisation of REZ network infrastructure as soon as it is available.

The Project is consistent with the Development Pathway prescribed in the report as it would provide the network infrastructure to connect renewable energy generation projects from the New England REZ, providing for the availability of at least 6 GW of energy to the NEM.

2.2.4 Net Zero Plan – Stage 1: 2020–2030 (NSW)

The Net Zero Plan Stage 1: 2020–2030 (DPE, 2020) sets out how the NSW Government will deliver on the objectives to achieve net zero emissions by 2050 by creating new jobs, cutting household costs and attracting investment over the next decade.

There are four priority areas for action:

The Project is aligned with this plan, as it would provide a key piece of strategic transmission infrastructure that would enable the uptake of proven emissions reduction technologies that grow the economy, create new jobs and reduce the cost of living.

2.2.5 NSW Electricity Infrastructure Roadmap (NSW)

The Roadmap (DPIE, 2020) provides a coordinated framework for the delivery of new transmission, generation, storage and firming infrastructure to support low carbon renewable energy and the replacement of coal fired power station capacity scheduled to close in the next two decades.

The Roadmap notes the State has committed an initial 12 GW of new transmission capacity and 2 GW of storage capacity by 2030. The key to the transition of the energy sector is the five REZs, including the New England REZ. The REZs will need to be supported by new transmission infrastructure to transfer the expected energy generation efficiently to the major load centres of the Sydney–Wollongong–Newcastle–Hunter Valley area.

The Project is aligned with the Roadmap as it would provide regional investment in lower-cost, new energy infrastructure to connect the New England REZ to the NEM. The Project would contribute to the Roadmap goal of 12 GW of new transmission capacity by providing 6 GW of transmission capacity in the New England REZ by 2033, with potential for additional capacity in the future which would be subject to separate planning approval.

2.2.6 Network Infrastructure Strategy (NSW)

The NIS (EnergyCo, 2023) is a strategy for the practical coordination of NSW network infrastructure to connect new generation, firming and storage in NSW's five REZs, and otherwise to assist NSW to meet the EII Act objectives. The Strategy proposes options that add between 14 GW and 24 GW of network capacity over the next 20 years, including 6 GW in the New England REZ to be delivered now, with additional capacity to be planned for in the future. The NIS indicates that the 6 MW network capacity should progress as quickly as possible for delivery by 2033 at the latest.

As the Project would unlock at least 6 GW of network capacity by 2033 in the New England REZ, it is considered to meet the 'deliver now' objectives in the NIS.

2.2.7 NSW Transmission Infrastructure Strategy (NSW)

The NSW Transmission Infrastructure Strategy (DPE, 2018) identifies the NSW Government's plan to unlock private sector investment through priority transmission infrastructure projects, which can deliver least-cost energy to customers through to 2040 and beyond. The Strategy aims to increase NSW's energy capacity by prioritising Energy Zones in the Central-West, South-West and New England regions of NSW, which will become a driving force to deliver affordable energy into the future.

The Project would enable the connection of multiple renewable energy projects in the New England REZ to the NEM, providing certainty to private sectors investors and cost savings to energy consumers. The Project is consistent with the aims of the NSW Transmission Infrastructure Strategy.

2.2.8 NSW Electricity Strategy (NSW)

The NSW Electricity Strategy (DPE, 2019) outlines a plan for a reliable, affordable and sustainable electricity system for NSW. It identifies the need to connect new generation projects to the existing transmission network to meet NSW's future energy needs, making it critical to efficiently develop transmission to these new generation projects.

The Project would assist in delivering on this commitment and provide regional investment in lower-cost, new energy infrastructure to connect the New England REZ to the NEM.

2.2.9 New England North West Regional Plan 2041 (NSW)

The New England North West Regional Plan 2041 (DPE, 2022b) sets the strategic land use planning framework for the region, including employment areas, town centres, housing and related infrastructure to the natural environment and future hazards such as climate change. The Regional Plan provides an overarching framework to guide subsequent and more detailed land use plans, development proposals and infrastructure funding decisions. Objective 9 of the Regional Plan includes a strategic and integrated approach to leading renewable energy technology and investment in the New England REZ.

In addition to meeting Objective 9 through enabling the connection of new renewable energy infrastructure projects in the New England REZ to the existing transmission network, the Project would also contribute to Objective 8 (Adapt to climate change and natural hazards and increase climate resilience) through unlocking network capacity for low emissions technology and contributing to the State's objective to reach net-zero by 2050.

2.3 Regional context

2.3.1 Community and built environment

The Project is located within the New England and Hunter regions of NSW, with the key connection infrastructure for the New England REZ located in the New England region. Armidale and Tamworth town centres are the major service hubs for the New England region, hosting important educational, airport and health facilities that service the broader area, as well as residential populations outside the town centres.

The New England and Hunter regions are situated within a predominately agricultural landscape used for cropping, animal production and grazing land. The major towns of Tenterfield, Glen Innes, Inverell, Guyra, Armidale, Uralla and Walcha all support productive rural communities that predominantly produce beef, sheep and wool. Significant smaller industries within the New England region include forestry, apples and stone fruit, potatoes, glasshouse tomatoes, dairy farms, alpacas and cool climate wineries, while the Hunter region is well known for its coal mining, thoroughbred horse industry and vineyards (LLS, undated).

The protection of regionally significant agricultural land from incompatible land uses is identified as a regional strategic goal for the New England and Hunter regions, as reflected in Objective 2 of the New England North West Regional Plan 2041 (DPE, 2022b) and Objective 9 of the Hunter Regional Plan 2041 (DPE, 2022c). Parts of these regions have also been identified as Biophysical Strategic Agricultural Land (BSAL) and Critical Industry Cluster – Equine, including areas in and around Scone in the Hunter region (DPE, 2022c).

BSAL is land with high quality soil and water resources capable of sustaining high levels of productivity, which have been mapped by the NSW Government to provide increased protection from mining and petroleum development.

The Preferred Study Corridor intersects seven LGAs, including LGAs outside the New England REZ. These LGAs include:

- Muswellbrook Shire
- Upper Hunter Shire
- Liverpool Plains Shire
- Tamworth Regional
- Walcha Shire
- Uralla Shire
- Armidale Regional.

The LGAs intersecting and surrounding the Project are shown on Figure 2-2.

Key regional land use is illustrated in Figure 2-3 and includes energy generation and coal mining across the southern portion of the Preferred Study Corridor, agriculture and beef farming across the majority of the Preferred Study Corridor in the New England REZ, and key education and service hubs of Armidale and Tamworth.

Land tenure in the Preferred Study Corridor is predominantly freehold, with areas of NSW Government land at Lake Glenbawn and Chaffey Dam, and Crown land, including road reserves, rail corridors, and travelling stock reserves.

2.3.2 Natural environment

The Project transverses across a diverse landscape across its length, with varying land use, topography and vegetation communities. Large sections of the Preferred Study Corridor have been historically cleared for agricultural land uses, reducing the biodiversity values in these sections, however, other sections contain remnant native vegetation and associated fauna habitats.

The Preferred Study Corridor intersects four Interim Biogeographic Regionalisation for Australia (IBRA) regions: New England Tablelands, Nandewar, Sydney Basin and NSW North Coast (refer Figure 2-4).

The New England Tablelands Bioregion is home to a diversity of plant communities and fauna species. Approximately 70 species of Eucalyptus occur in this bioregion, about a third of which are endemic or near endemic to the bioregion. The New England Tableland Bioregion, together with the Nandewar Bioregion, supports a significant proportion of the NSW population of the critically endangered regent honeyeater (*Xanthomyza phrygia*) (NPWS, 2003).

The Nandewar Bioregion is characterised by box woodlands that occur on clay or loam soils, typically at low to mid elevation in agriculturally productive areas (NPWS, 2003), with the dominant vegetation communities being white box (*Eucalyptus albens*), yellow box (*Eucalyptus melliodora*), Blakely's red gum (*Eucalyptus blakelyi*) and grey box (*Eucalyptus mollucana*). Within steeper sloping areas with decreasing soil fertility, the box woodlands are replaced by ironbark and cypress pine communities in woodlands and open forests, which characterise much of the less productive agricultural areas of Nandewar. The Nandewar Bioregion supports many plant species of conservation significance (including *Macrozamia* and *Homoranthus* genera), with 467 vertebrate fauna species known to occur in the bioregion, including birds, frogs, reptiles, arboreal mammals and bats (NPWS, 2003).

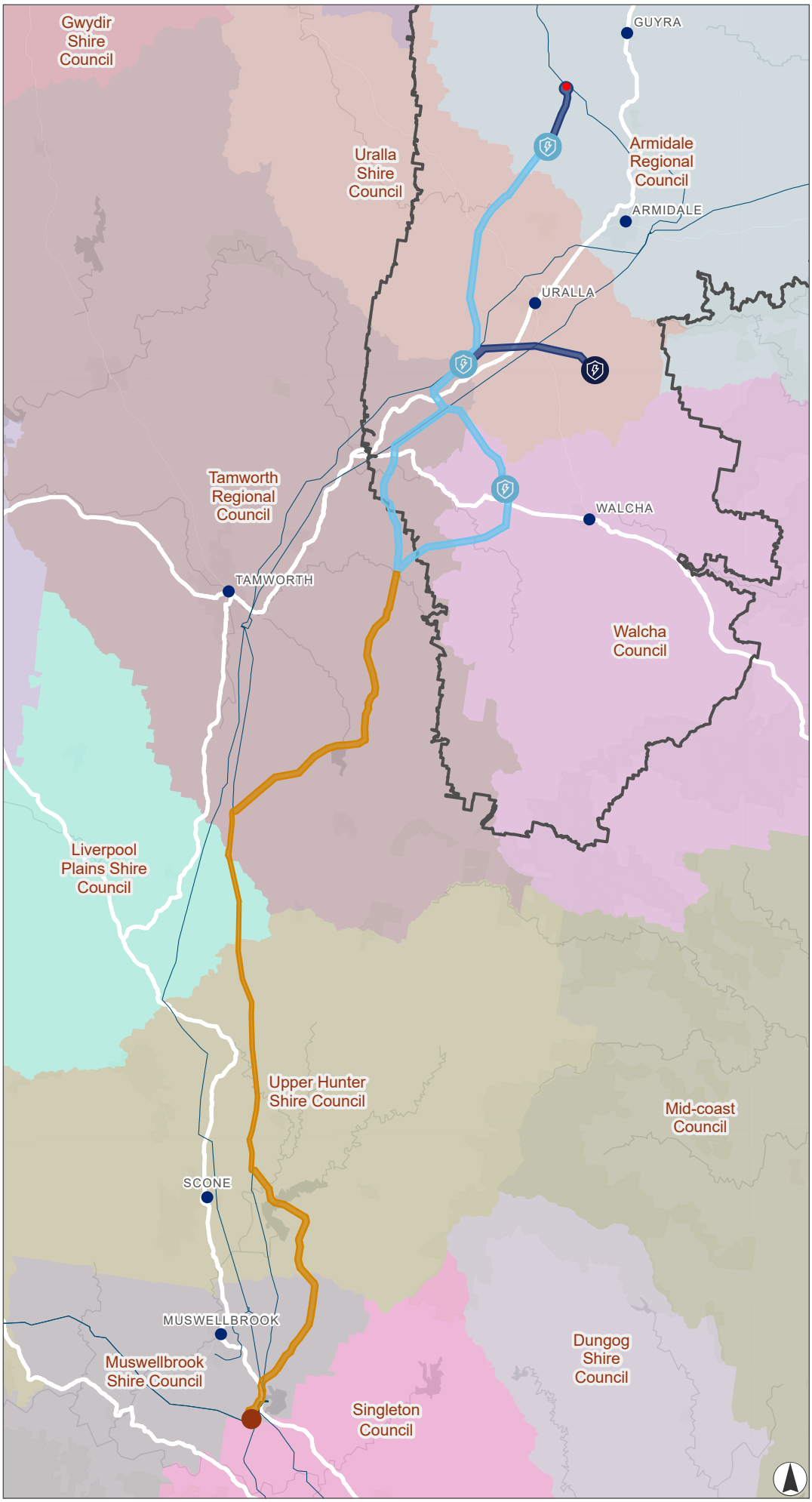


FIGURE 2-2

Local government areas within proximity to the Project

Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

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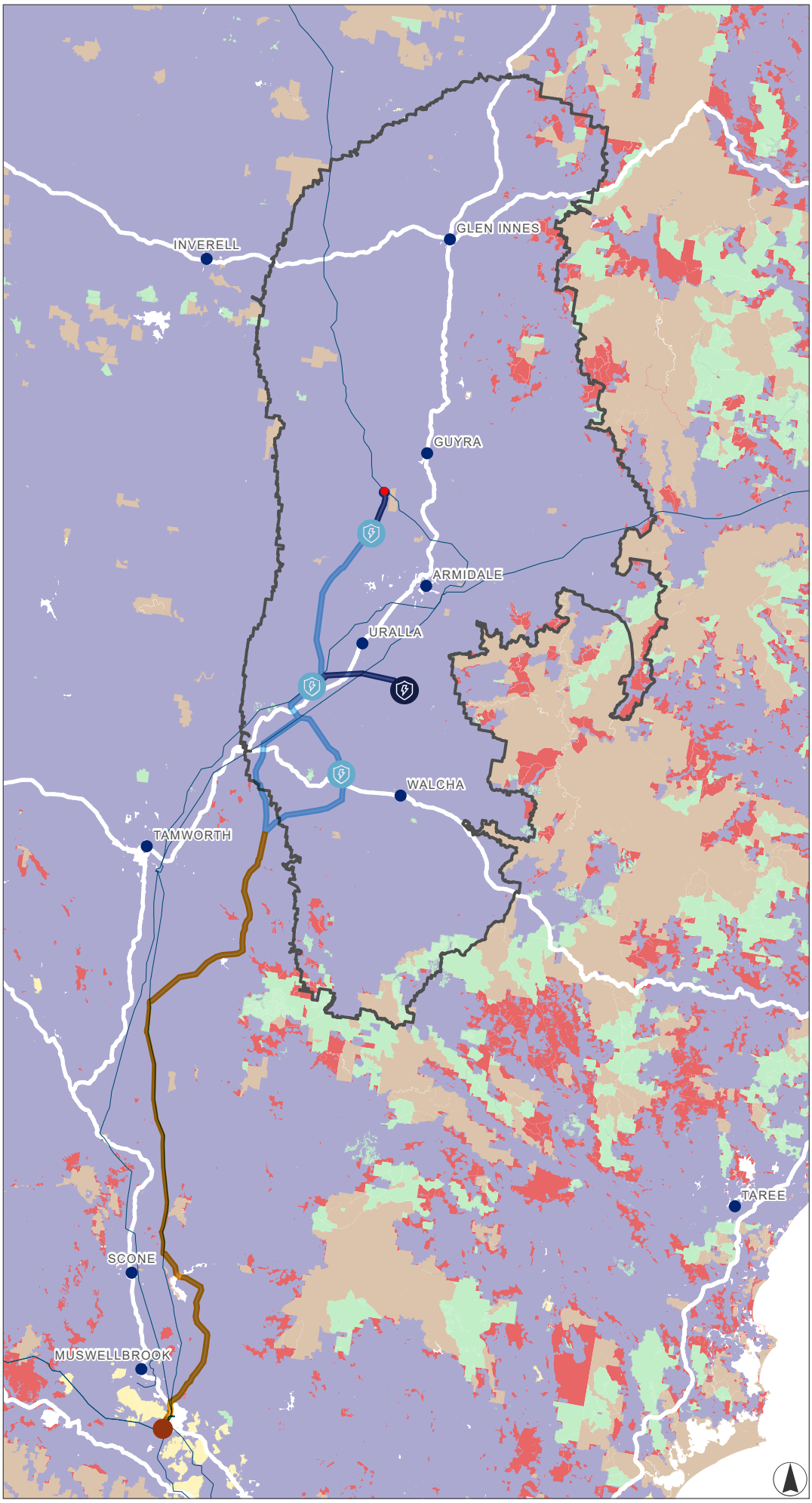


FIGURE 2-3

Regional land use across the Project

Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines

NSW Landuse 2017 v1.5

- Conservation
- Minimal Use
- Forestry
- Agriculture, Horticulture, and Grazing
- Mining
- Major Roads

0 25 50

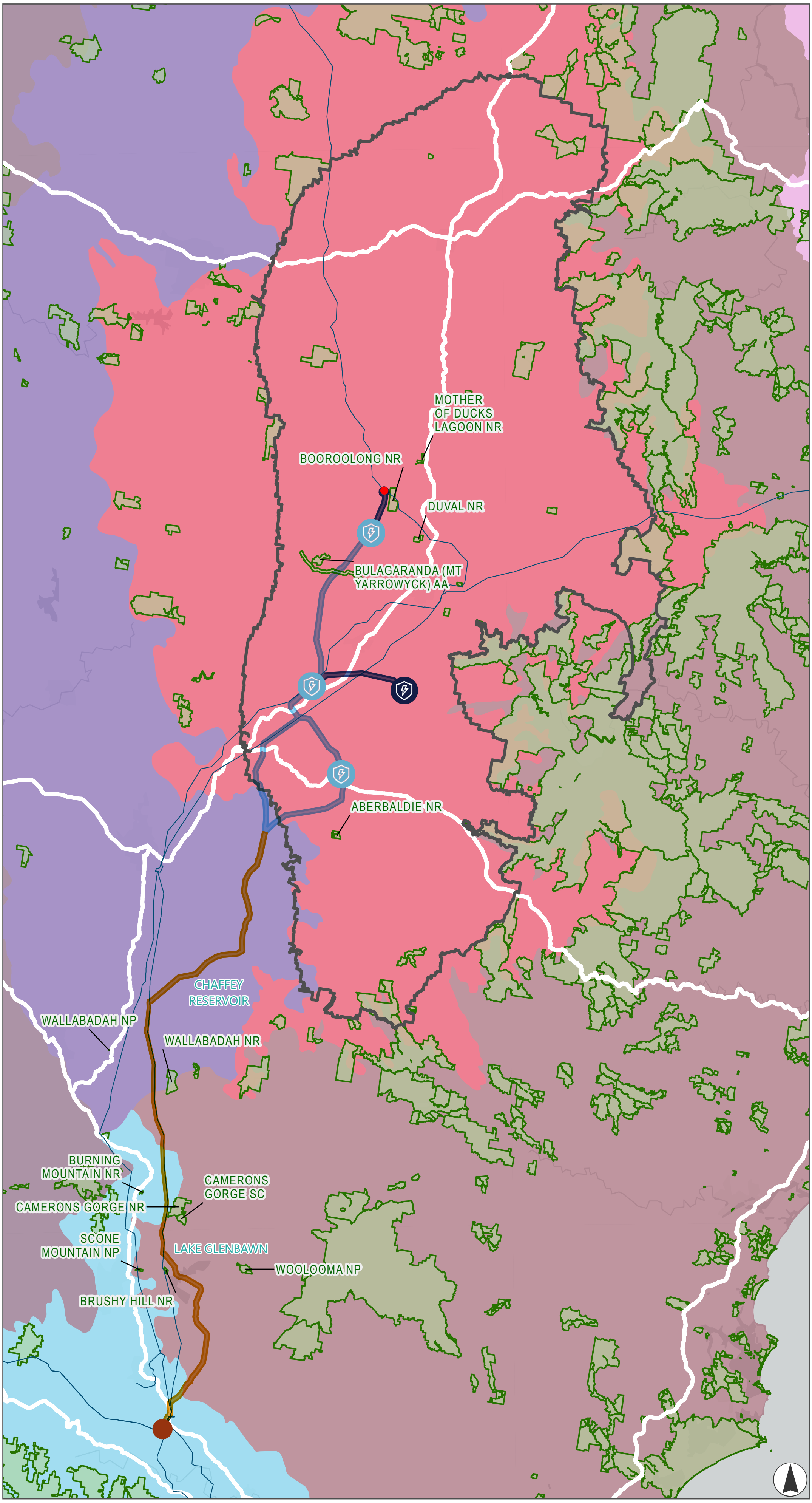
Kilometres

Scale 1:1,421,008 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 2-4

IBRA bioregions and key natural features



Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Renewable Energy Zone
- NPWS Protected Area
- Dams
- Major Roads
- Existing high voltage lines

IBRA Region

- Brigalow Belt South
- NSW North Coast
- Nandewar
- New England Tablelands
- South Eastern Queensland
- Sydney Basin
- Water Catchment Boundaries

0 25 50
Kilometres

Scale 1:1,421,008 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

The Sydney Basin Bioregion is one of the most species diverse in Australia (NPWS, 2003). This is a result of the variety of rock types, topography and climates in the bioregion. Important vegetation communities include yellow box – ironbark woodlands in the northern escarpments of the bioregion, with the Project traversing this part of the bioregion. These woodlands are thought to provide important habitat for species such as the regent honeyeater (*Xanthomyza phrygia*). There are also a range of threatened communities and species that occur on the broad landscape along the floor of the Hunter Valley, with the southern end of the Project traversing this landscape.

The North Coast Bioregion includes soils derived from basalts and granites which support dry sclerophyll forests (*Eucalyptus* sp. dominated communities), with pockets of dry rainforest. Dominant canopy species include Grey Box (*Eucalyptus moluccana*), Blakley's red gum (*Eucalyptus blakeyli*) and Narrow leaved Ironbark (*Eucalyptus crebra*) (NPWS, 2003). There are a range of threatened communities and species that occur within this bioregion, with portions of the bulk corridor traversing the south west portion of this bioregion.

With the extensive agricultural land use history of the land surrounding the Preferred Study Corridor, combined with other land use developments including townships and infrastructure (roads, dams, transmission lines etc.), a mosaic of different vegetation patterns exist from cleared grazing lands to heavily vegetated slopes and escarpment areas fringing the tablelands plateau.

The scenic and cultural landscapes of New England and Hunter regions contribute to the identity and culture of the regions. Within the New England region, there are several conservation reserves and native vegetation areas including the Oxley Wild Rivers National Park (that includes the World Heritage-listed Gondwana rainforest) which is located to the east of the Preferred Study Corridor and is home to important landscapes, plants and animals and is one of the largest tourism attractions of the region (DPE, 2022b).

The following State Reserves have been identified in proximity to the Project (within a 10 km radius) (refer Figure 2-4):

- Camerons Gorge Aboriginal Area
- Bulagaranda (Mt Yarrowyck) Nature Reserve
- Wallabadah Nature Reserve
- Duval Nature Reserve
- Wallabadah CCA Zone 1 National Park
- Booroolong Nature Reserve
- Aberbaldie Nature Reserve
- Scone Mountain National Park
- Woolooma National Park
- Brushy Hill Nature Reserve
- Burning Mountain Nature Reserve
- Mother Of Ducks Lagoon Nature Reserve.

The New England region is primarily situated within the Murray-Darling Basin and includes significant portions of the Border Rivers-Gwydir, Namoi and Northern Rivers catchment areas (DPI, 2012a). The freshwater environment of the Namoi catchment area is particularly notable for its extensive range of aquatic habitats including floodplains, wetlands, streams and rivers (DPI, 2012a). The main west-flowing river systems are the Namoi, Gwydir and Macintyre rivers and also contains the upper reaches of many coastal river systems, including the Clarence, Macleay and Manning (DPI, 2012a). Whilst the Preferred Study Corridor has been designed to cross major river systems, several named and unnamed watercourses intersect the Preferred Study Corridor in various locations, including Lake Glenbawn near Gundy.

The Project passes through a wide variety of terrains, starting on the broad floor of the Hunter Valley near Muswellbrook and traversing through the landscape up to the New England tablelands plateau. Topographic heights along the Preferred Study Corridor range between 128 m elevation near Muswellbrook in the south and gradually increasing to 1270 m elevation near Dumaresq in the north.

2.3.3 Key risk and hazards

Existing and known key risks and hazards for the Project primarily includes bushfire risk, as the majority of the Preferred Study Corridor is located within Category 1 and Category 3 bushfire prone land. Bushfire risk is discussed further in Section 6.1.10.

There are also some areas of flood prone land associated with drainage systems intersected by the Preferred Study Corridor, with risk associated with flooding to be considered in a flood assessment as discussed in Section 6.1.12.

Additionally, biosecurity risks will be an important management focus during construction and operation of the Project due to the movement of vehicles and equipment between locations along the Preferred Study Corridor. Biosecurity risks are discussed in Section 6.1.7.

The Preferred Study Corridor is not located within any Mine Subsidence Districts, however Muswellbrook and Patrick Plains Mine Subsidence Districts are located approximately 1.7 km west and 1.6 km east of the Preferred Study Corridor, respectively.

2.4 Cumulative impact considerations

2.4.1 REZ Cumulative impact considerations

A key component of environmental impact assessment is the consideration of cumulative impacts and identification of measures that can maximise positive benefits and minimise negative cumulative impacts. This is a particularly important consideration for the Project of this scale and recognising the linkages between the Project and the New England REZ.

In recognition of the importance of building the region's capacity, EnergyCo has begun a series of targeted studies relating to potential opportunities and constraints associated with the anticipated future development across the REZ, including the Project. These studies will assist EnergyCo in coordinating tailored management strategies to realise the potential benefits and opportunities, along with mitigating the potential cumulative impacts of development in the REZ. EnergyCo will work closely with communities, industry, regional stakeholders and government partners including the relevant local councils in developing these studies. The scopes of these studies have taken into account the learnings from other similar projects including from EnergyCo's Central West Orana REZ Transmission Project.

The key potential cumulative impact studies to be undertaken by EnergyCo include:

Social infrastructure

To understand the demand for community services such as utilities, housing, education, healthcare and emergency services and community facilities to support the anticipated population increase

Water and wastewater security

To understand the current capacity of these services and likely peak demands during development in the REZ and identify the management and security strategies to ensure an adequate supply of water and treatment of wastewater

Training and skills

To determine local employment needs and opportunities to support the growth of skills in the region

Local supply chain

To understand the local supply chain prospects and likely demands on natural resources, plant and equipment, professional services and trades and other ancillary services

Housing and accommodation

To understand housing and accommodation profiles, and identify potential opportunities to help meet the demands generated by temporary population increase associated with an influx of construction workforce

Telecommunications

To understand the availability and coverage of mobile and internet services, and identify potential initiatives to improve the infrastructure to provide increased connectivity for communities

Traffic and transportation

To identify the transport infrastructure upgrades to safely and efficiently accommodate the projected traffic and transportation demands

Waste and circular economy

To review the capacity of regional waste and recycling facilities and investigate opportunities for enhanced resource integration, reduce waste generation and meet anticipated demands for waste management and recovery associated with infrastructure development across the region

These studies will facilitate the coordinated delivery of longer term enduring community benefits and ensure they are targeted to the unique needs and priorities of the regional communities within which the Project is located.

2.4.2 Project cumulative impact considerations

In addition to the REZ coordination studies being completed by EnergyCo (refer Section 2.4.1), the potential cumulative impacts of the Project will be assessed in accordance with the requirements of the Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022d), which sets clear expectations and requirements for assessing project-level cumulative impacts related to SSD projects. The EIS will consider other relevant construction, infrastructure, industrial and employment generating projects within the locality.

There are a number of renewable energy projects within, and in the vicinity of, the New England REZ, which are at varying stages of the environmental impact assessment and approval process. It is anticipated that there will likely be additional renewable energy projects proposed in the REZ that are not publicly known at the time of preparing this Scoping Report and potentially other major projects that also require consideration. Outside the New England REZ, there are several existing and proposed projects in the vicinity of the Preferred Study Corridor, which are summarised in Section 6.1.17.

Potential cumulative impacts will be assessed as part of the EIS for the Project in accordance with the Cumulative Impact Assessment Guidelines. Further discussion regarding the approach to assessing cumulative impacts as part of the EIS is included in Section 6.1.17.

2.5 Negotiated agreements and easement acquisition processes

EnergyCo's responsibilities include the negotiation of easements for transmission line infrastructure. An easement is a legal 'right of way' and allows for ongoing access and maintenance of the proposed transmission lines and associated infrastructure, to ensure safe and reliable operation.

EnergyCo's objective is to reach an agreement with affected landowners for the grant of a temporary construction easement and permanent transmission easement together with access rights (as required), to enable the construction and operation of the required permanent infrastructure. This is known as acquisition by agreement and involves EnergyCo (or relevant party) paying the owner for the establishment of the easement. If agreement cannot be reached, compulsory acquisition may occur in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* (refer to Section 4.1.2).

Private landholders hosting new high voltage transmission projects critical to the energy transformation and future of the electricity grid will also be provided additional compensation in accordance with EnergyCo's Strategic Benefits Payment Scheme. Annual payment will commence, indexed to inflation over 20 years to eligible private landholders once the Project is energised (i.e. operational).

Potential impacts to land and property are discussed further in Section 6.1.6.

3 The Project

3.1 Project summary

The main components of the Project are summarised in Table 3-1 and shown on Figure 3-1. Details of these components are preliminary only at this stage, and will be subject to further design and siting considerations as part of the EIS.

Table 3-1 Main components of the Project

Component	Description
Summary 	EnergyCo is seeking approval for the construction and operation of new high voltage electricity transmission infrastructure that is required to connect energy generation and storage projects within the New England REZ to the existing electricity network.
Transmission Lines 	The Project includes: • about 220 km dual 500 kV transmission lines from Bayswater Power Station Substation to the New England REZ, with the dual lines running parallel for about 180 km • about 100 km 500 kV transmission lines within the REZ between energy hubs • about 40 km 330 kV transmission lines within the REZ between energy hubs and to existing transmission lines including a northern connection to link the North Hub with the existing 330 kV transmission line • augmentation of existing transmission lines and utility infrastructure required for construction of the Project • typical easement widths: 60 m for 330 kV lines, 70 m for 500 kV lines, 140 m for dual 500 kV lines • communication infrastructure. The transmission towers will typically be between 45 m and 75 m high. On average towers are currently expected to be spaced about 450 m apart, however, this can vary greatly depending on terrain and range from 70 m to over 700 m.
Energy Hubs 	Three 500 kV energy hubs and one 330 kV energy hub to connect generators to the bulk transmission lines and associated communication infrastructure at each hub: • North Hub, located about 16 km north west of Armidale. • Central Hub, located about 8 km west of Kentucky. • Central-South Hub, located about 13 km west of Walcha. • East Hub, located about 13 km south east of Uralla.

Component	Description
Construction facilities 	Facilities would include: • construction compounds • stringing sites • earthwork material sites with crushing and screening plants • laydown areas • Project offices • worker accommodation • concrete batching plants • helipad and helicopter support facilities.
Construction timing 	Construction would take around 6 years and would be completed in two stages. Stage 1 is expected to be operational in 2031 and Stage 2 in 2033. Construction would occur concurrently at a number of locations along the alignment and at each hub. Work would generally be carried out during standard construction hours: • 7am to 6pm, Monday to Friday • 8am to 1pm on Saturday • No work on Sundays or public holidays. Construction hours may extend across a seven day work week between 7am and 7pm. Workforce accommodation camps would be operational 24 hours a day, seven days a week.
Road upgrades 	Road upgrades would include establishment and upgrade of access tracks and upgrade of public roads.
Employment 	Around 1,250 construction jobs would be created (based on early analysis).

3.2 Preferred Study Corridor

The 'Preferred Study Corridor' identified in this report includes a variable buffer around the proposed 500 kV and 330 kV transmission line alignments, as well as the energy hubs. This buffer is generally 1 km wide along the length of the proposed transmission lines, but incorporates some narrower sections where co-location of infrastructure is proposed. A wider buffer has been established around energy hubs (5 km diameter). This Preferred Study Corridor has been identified for preliminary assessment and consultation purposes only.

The Preferred Study Corridor will continue to be refined in response to stakeholder feedback and the findings of technical assessments completed as part of the EIS. Through this refinement process an EIS Project Design Corridor will be developed and presented in the EIS. Indicatively, this corridor will be around 250 m wide (larger at energy hub locations) and is estimated to be around 11,000 hectares (ha) in total. The easements and hubs will be located within the EIS Project Design Corridor, however, the actual footprint required for the easements and energy hub infrastructure will be substantially smaller, as discussed in Section 3.3.1.

The location and extent of ground disturbance required within the Project corridor will be determined following further Project design development and environmental impact assessment. Opportunities to limit the extent of clearing within and near the transmission line easements will be considered as part of the ongoing Project design process.

3.3 Key components of the Project

3.3.1 Transmission lines and towers

High voltage transmission lines will transfer renewable energy from the New England REZ (and potentially areas outside the REZ) to the existing electricity network. The backbone of the new network is planned to operate at 500 kV. This is currently the highest voltage used on the NSW network and minimises the required number of circuits and lines. All transmission lines for the Project would be double circuit lines[1].

The Project is about 350 km in length, and the total length of transmission lines to be constructed is about 560 km including dual lines. The transmission lines include two 500 kV transmission lines and associated infrastructure from the New England REZ, connecting to the existing network at Bayswater substation, and 330 kV and 500 kV lines to connect to energy hubs within the New England REZ, as illustrated in Figure 3-1. These transmission lines will be constructed on a staged basis as detailed in Section 3.4.

[1] A single circuit transmission line has three sets of conductors, while a double circuit transmission line has two independent circuits on the same structure with each circuit made up of three sets of conductors.

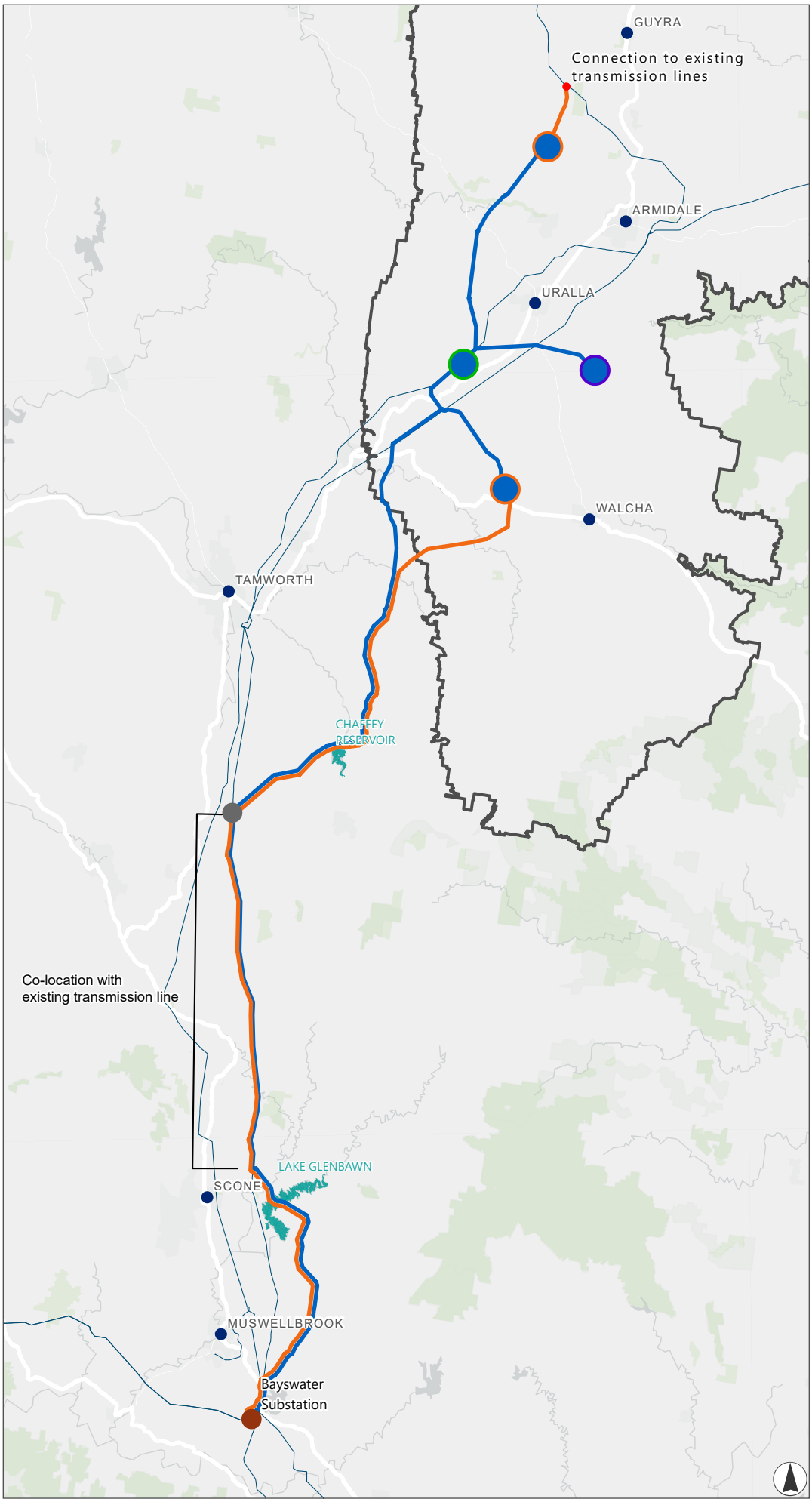


FIGURE 3-1

Project overview and indicative staging

Legend

- Stage 1 Energy Hub 500/330kV Substation
- Stage 1 Energy Hub 330kV Switching Station with Stage 2 expansion to 500/330kV Substation
- Stage 1 Energy Hub - 330kV Switching Station
- Bridging Point
- Bayswater Substation
- Northern Connection
- Stage 1 Transmission Line
- Stage 2 Transmission Line
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Dams
- Existing high voltage lines
- Major Roads

**Bayswater substation does not form part of the Project and is being delivered under a separate planning approval

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

The final route of the transmission lines will be determined during the EIS phase for the Project, taking into account further stakeholder feedback and the outcomes of environmental, social and cultural studies.

The transmission towers will typically be between 45 and 75 m high. On average towers are currently expected to be spaced about 450 m apart, however, this can vary greatly depending on terrain and range between 70 m to over 700 m. The transmission lines require a minimum ground clearance of 9 m for 500 kV lines and 8 m for 330 kV lines, however this will be designed based on site conditions. The design would allow farming and other activities to take place safely beneath the lines (with certain restriction as outlined in Section 6.1.6) and would meet electric and magnetic field design requirements. Figure 3-2 shows indicative heights and easements for the transmission line towers. The transmission lines and towers will be located within easements that are typically 60 m and 70 m wide, with wider easements up to 80 m wide to accommodate longer spans between towers.

Whilst all transmission lines for the Project would be double circuit lines, transmission lines which connect to renewable energy generation projects (wind, solar, pumped hydro and storage) will generally be 330 kV lines and either single or double circuit. As discussed in Section 1.5, generator connections are subject to separate planning approval.

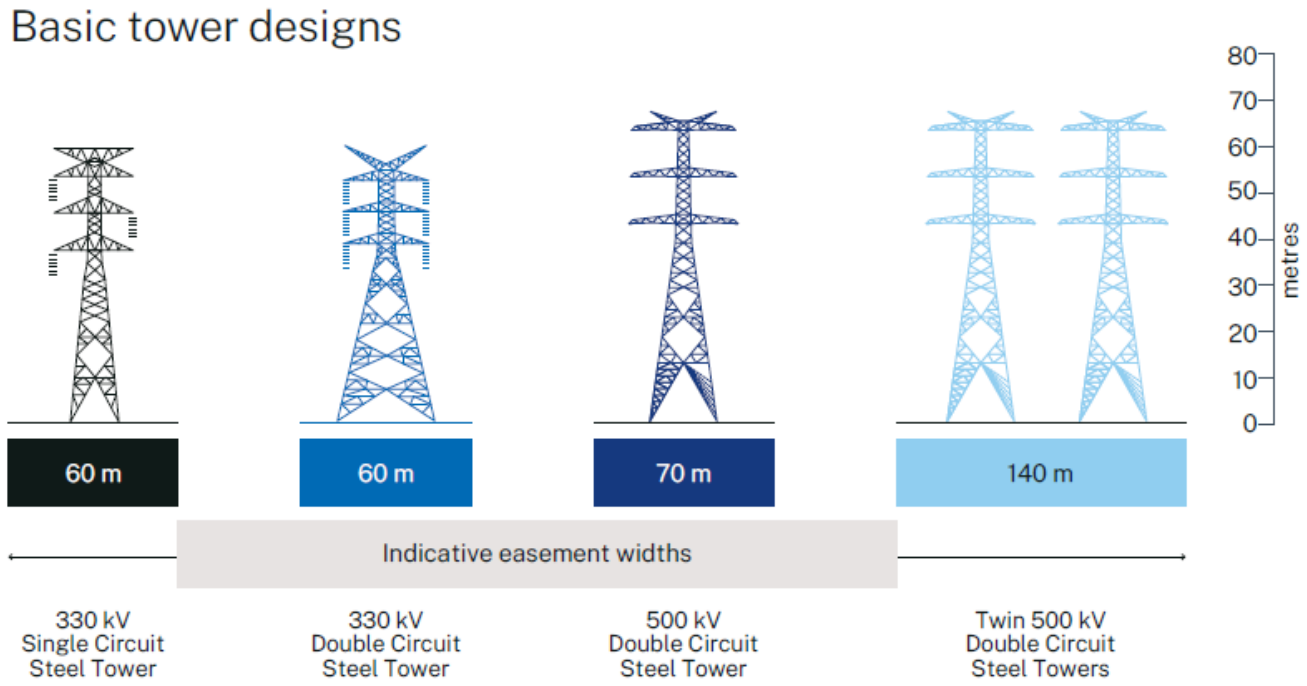


Figure 3-2 Indicative concept design and easement widths for the transmission line towers

3.3.2 Energy hubs

Energy hubs are a modern type of substation that act as connection points between renewable energy projects and the broader transmission network. Energy hubs collect electricity from solar, wind and storage projects and transfer it to the network so it can be distributed to the homes, businesses and essential services that need it. Energy hubs will be located close to planned major generation projects to help provide a centralised connection point and reduce the distance of generator connection lines to the transmission network.

The Project includes four proposed energy hubs in the New England REZ:

- North Hub, located about 16 km north west of Armidale
- Central Hub, located about 8 km west of Kentucky

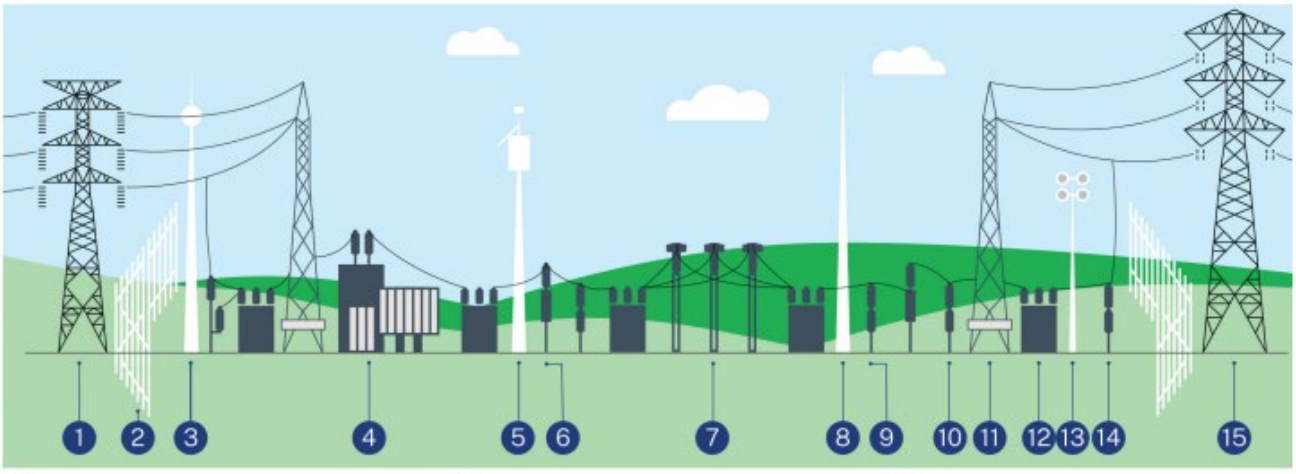
- Central South Hub, located about 13 km north west of Walcha
- East Hub, located about 13 km south east of Uralla.

The layout of the energy hubs is subject to further design and landowner consultation. Based on preliminary estimates, a 500 kV hub (i.e. the North, Central and Central South Hubs) may occupy a total land area of around 75 to 150 ha, with a 330 kV hub (i.e. the East Hub) occupying a much smaller land area of around 10 to 15 ha. Detailed assessments of the energy hub sites will be included in the EIS. Indicative locations are provided in Figure 3-1.

Energy hub sites typically consist of:

- electrical equipment including power transformers, air insulated switchgear, synchronous condensers, phase shifting transformers, system strength and reactive support plant equipment, power cables and busbars
- secondary systems including protection systems, control systems, Energy Hub Automation Systems, communications networks, auxiliary systems, metering and monitoring systems
- Battery Energy Storage Systems (BESS). Preliminary analysis indicates that BESSs are unlikely to be required, but they may be used to replace or supplement synchronous condensers at hubs. If adopted, analysis from similar projects indicates that a BESS may have a nominal capacity of 200MW/400MWh
- other systems including closed-circuit television (CCTV), fire-security systems, weather systems and wireless access points
- civil infrastructure such as stormwater drainage and access roads.

Figure 3-3 provides an indicative energy hub arrangement.



1. 330 kV transmission line tower which supplies renewable energy from solar, wind and storage projects
2. Fence
3. Communication tower
4. Power transformer
5. Weather station
6. Current transformer
7. Busbar
8. Lightning mast
9. Circuit breaker
10. Voltage transformer
11. Gantry
12. Line disconnector
13. Light pole
14. Surge arrestor
15. 500 kV transmission tower which forms the backbone of the REZ transmission network

Figure 3-3 Indicative energy hub arrangement

The northern connection, which will link the Project transmission lines to an existing 330 kV transmission line, will consist of a switching station near the connection point with the existing transmission line. The northern connection would occupy a land area of around 5 ha, and include switchgear and secondary systems.

3.3.3 Ancillary facilities

The Project will require several major construction centres to manage worker accommodation, materials and plant delivery and distribution, and project management offices. These locations would likely be located within and/or adjacent to each energy hub, as well as at select locations near transmission lines and access roads.

Additional temporary ancillary facilities required for the construction of the Project will include various construction compounds, laydown areas and Project offices.

The Project will require dedicated laydown and compound areas along the Project corridor to manage delivery of plant and materials to work areas. Sites to obtain suitable earthwork material may be required to supplement fill requirements, with crushing and screening plants to process the extracted material.

Concrete batching plants would be required to support construction for the transmission line towers and energy hubs. Helipad and helicopter support facilities may support line stringing and other activities. Laydown and compound areas in remote locations may also be used for temporary concrete batching plant sites.

The locations for the construction compounds, laydown areas and workforce accommodation camps will be defined as part of further design development in consultation with the relevant Council and landowners, and assessed as part of the EIS. These facilities will be preferentially located on previously disturbed land at a reasonable distance from houses, watercourses and drainage lines. Following construction, ancillary facilities would be removed and sites reinstated to their former condition or as agreed with the relevant Council or landowner.

3.3.4 Utilities

Utility relocations may be required where the new infrastructure would intersect existing utilities. Work may also be required to connect ancillary construction facilities with existing utility services. The existing utility assets in proximity to the Preferred Study Corridor will be identified as part of further design development and assessed as part of the EIS.

Utility relocation and adjustment work would be minimised by designing the Project's infrastructure to avoid impacts to existing utilities where feasible.

3.3.5 Access

Where practicable, access to the Project would be from existing State, Regional and local roads, formed tracks or previously disturbed areas. In some instances, this would require an upgrade of existing roads and creek crossings to support the transport needs of the Project and wider community, including pavement, bridge, utilities and drainage work. In areas where there are no suitable roads or tracks, access would be constructed.

The New England and Oxley highways would be the primary routes taken by heavy and light vehicles to access the Project. From these highways, the Project would be accessed by an extensive network of council-owned roads, private-owned roads and new access tracks to be constructed as part of the Project. In addition to upgrades to existing roads, sections of new access tracks would be constructed to facilitate construction and operational access.

Access requirements, including for over-size and over-mass (OSOM) loads, will be confirmed during further design development and construction planning. This work may be wholly or partially incorporated into the Project and assessed in the EIS. Some work may be subject to separate approval processes such as assessment under Division 5.1 of the EP&A Act by EnergyCo or the relevant roads authorities (e.g. for existing road upgrade work). Regardless of the approval pathway(s) selected, the scope of the current Project and any requirements for additional environmental assessment and approvals will be clearly identified in the EIS.

3.4 Construction stages

The Project is planned to be delivered in two stages, which are outlined in Table 3-2. Staging the Project enables EnergyCo to commit to unlocking a transfer capacity of 2.4 GW in the New England REZ by around 2031 through Stage 1 with an additional 3.6 GW to be delivered during Stage 2 by around 2033 as identified in the 2024 ISP (AEMO, 2024). The staged approach enables effective management of construction resources and government funding in line with the capacity timing needs identified in the NIS (EnergyCo, 2023). The Project will however, be assessed with a single EIS covering both stages.

There is potential for a future Stage 3, incorporating connections to future generator projects, which would provide additional network capacity. Any future Stage 3 works would be subject to a separate planning and approval process.

An indicative approach to staging is outlined in Table 3-2 and Figure 3-1 and may be updated in the EIS.

Table 3-2 Construction stages

Infrastructure	Infrastructure scope
Stage 1 Energy hubs 	• Central Hub: 500/330 kV substation. • Central-South and North hubs: 330 kV switchyard (capable of future expansion to 500 kV). • East Hub: 330 kV switchyard.
Stage 1 Transmission lines (around 340 km) 	• Bayswater substation to Central Hub: 500 kV transmission line. • Central-South Hub to Central Hub: 500 kV transmission line, operated at 330 kV. • Central Hub to North Hub: 500 kV transmission line, operated at 330 kV. • Central Hub to East Hub: 330 kV transmission line.
Stage 2 Energy hubs 	• Expand the Central-South Hub to be a 500 kV/330 kV substation. • Expand the North Hub to be a 500 kV/330 kV substation (with potential northern connection to existing Transgrid line).
Stage 2 Transmission lines (around 220 km) 	• Bayswater substation to Central-South Hub: additional 500 kV transmission line. • Central Hub to Central-South Hub: convert operations of lines from 330 kV to 500 kV. • Central Hub to North Hub: convert operations from 330 kV to 500 kV.

3.5 Construction of the Project

3.5.1 Construction methodology

Most construction activities will be carried out within the easements and at energy hubs, with the exception of access roads, some ancillary sites, stringing sites at significant transmission line bends, or other construction facilities. The indicative construction methodology for the Project is outlined in Table 3-3 and will be developed further during the EIS phase.

Table 3-3 Construction methodology

Construction phase	Construction activities
Site establishment 	• Establishment of temporary environmental controls. • Establishment of construction sites, access tracks and utility protection and adjustments. • Vegetation clearing. • Utility supply to construction ancillary sites.
Civil work associated with transmission lines 	• Establishment of tower sites, including leveling work and establishment of construction pads and hardstand areas. • Installation of tower foundations through boring or excavation and concrete pours. • Tower steel delivery and ground assembly. • Tower erection either using a crane or heavy lift helicopter (for challenging terrain). • Stringing site establishment, cable drum delivery, winch equipment setup and stringing of the transmission lines.
Civil work associated with the energy hubs 	• Civil excavation, earthworks cut and fill, compaction, footing and trench construction and associated concrete pours. • Establishment of drainage systems (such as stormwater and transformer oil containment systems) and electrical earthing. • Establishment of switchyard and equipment hardstands. • Erection of electrical equipment, systems and building fit out.
Pre-commissioning 	• Testing and commissioning. • Connection to the transmission network. • Protection, control, and metering system and communication system testing.
Commissioning 	• Transmission line energisation (connection to the electrical network). • High voltage (HV) equipment operation and energisation. • Testing and compliance checks.

Construction phase	Construction activities
Demobilisation and site rehabilitation 	• Removal of construction plant and equipment, and all materials not required during operation. • Removal and/or handover of construction compounds and camp sites. • Removal of any temporary site buildings and temporary environmental controls. • Rehabilitation work, including rehabilitation of construction sites, compounds and camp sites and related infrastructure. • Rehabilitation of access roads or tracks (where they are not required for further construction activities, ongoing maintenance, or landowner use).

3.5.2 Construction hours

Construction of the Project would generally be carried out during standard construction hours outlined in the Interim Construction Noise Guidelines (NSW DECC, 2009) (ICNG):

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

Some construction activities would be carried out outside the recommended standard hours (out of hours work). Due to the remote nature of the work, and the requirement to accommodate a remote workforce, or for the delivery of plant, equipment and materials, construction hours may extend across a seven day work week between 7am and 7pm. In these cases, extended operation of the main construction compounds would also be required to support construction activities during extended hours. The workforce accommodation camps would be operational 24 hours a day, seven days a week.

As the design development for the Project progresses, the required construction hours will be refined and will be assessed as part of the EIS.

3.5.3 Construction traffic

Traffic movements during construction of the Project would comprise heavy vehicle movements for transporting equipment and materials, as well as light vehicle movements for the construction workforce travelling to and from the construction site. The peak heavy vehicle movements would occur during the main civil construction works for the Project. At some stages of construction, oversized loads would also be required, such as for the delivery of transformer units and other electrical equipment to the hubs.

The key transport routes for the Project would use the surrounding road network, including local, regional and State roads. This includes for the transport of materials and equipment from main shipping ports, including Newcastle and Sydney. New access tracks and upgraded private roads would be used to get from the public road network to the construction sites.

The proposed construction haulage routes will be confirmed as further design development is completed for the Project, and will be documented in the EIS.

3.5.4 Construction workforce

During the peak of construction, the Project is expected to create about 1,250 jobs. The construction workforce required would vary depending on the stage of construction and associated activities.

3.6 Operation of the Project

The energy hubs and transmission lines will be inspected by operational employees and contractors on a regular basis. Other operational activities relate to maintenance activities or in the event of an emergency.

Ongoing maintenance activities along the transmission line easements, and at the hub sites would include:

Regular inspection (ground and aerial) and maintenance of electrical equipment and easements

General building, asset protection zone and landscaping maintenance

Fire detection system inspection and maintenance

Stormwater maintenance

3.7 Project schedule

The overall strategic target dates for the development of the Project are indicatively as follows:

- Stage 1 – operational in 2031.
- Stage 2 – operational in 2033.

Achieving these dates will contribute towards supplying sufficient renewable energy to be distributed across the State to replace the closing coal-fired power stations. The Project schedule will evolve as design and construction planning progresses.

3.8 Future development

Future development associated with the New England REZ, but which does not form part of this Scoping Report and associated EIS includes infrastructure required to facilitate connections from the hubs to electricity generation assets. These have not yet been designed and the generator projects requiring connection have not been confirmed. These will be subject to future consideration and planning approval.

The originally identified South Hub and associated transmission line was deferred from the Project in January 2024. Any additional energy hubs and associated transmission lines will be subject to separate future consideration and planning approval.

3.9 Project alternatives

The Preferred Study Corridor was determined through a series of options assessments undertaken by EnergyCo where alternative alignments were considered (discussed in Section 1.4.3). The Preferred Study Corridor selected as an outcome of this process best meets the EnergyCo's objectives outlined in Section 1.4.2.

In addition to the range of alternative route alignment options considered, the following alternative options have been considered against the EnergyCo and Project-specific objectives:

Option 1	Option 2	Option 3	Option 4	Option 5
Base case ('do nothing') option	Optimisation and modification of existing transmission line infrastructure	Provision of new underground transmission infrastructure	Provision of new overhead transmission infrastructure (the Project)	Alternative power sources

3.9.1 Option 1: base case ('do nothing') option

The base case option is to 'do nothing' and rely on continued coal-fired power generation, supplemented by current and planned development of renewable energy projects, where these can connect to the existing transmission network.

As outlined in Section 2.1, AEMO's recently released 2024 ISP highlights that ten large coal-fired power stations have closed since 2012, and projects that 90% of today's capacity will be closed by 2035, and all before 2040. Future energy demands will not be met using existing energy generating infrastructure and will instead rely on new low emission energy generation sources to supply energy across the State. The 'do nothing' option would mean that the New England REZ objectives would not be achieved.

The 'do nothing' option has been rejected as it is inconsistent with national and NSW legislative and policy objectives and would lose the opportunity for the Project to contribute to decarbonising the NEM and providing an affordable and reliable source of energy.

3.9.2 Option 2: optimisation and modification of existing transmission line infrastructure

3.9.2.1 Use existing power lines

The existing 330 kV transmission lines that currently transfer power between Bayswater, Tamworth and Armidale, and between Armidale, Kempsey and Newcastle, do not have sufficient available capacity to carry the extra power needed to be delivered by the New England REZ.

To provide energy security for the future, additional REZ network infrastructure including 500 kV double circuit transmission lines is required.

3.9.2.2 Upgrade existing power lines

Whilst this option was investigated, it was not considered feasible due to the need for lengthy system outages and for the existing lines to be taken down, easements widened and new structures built. Additionally, this option would take much longer to construct and materially delay the delivery of first power for the New England REZ. Even with these upgrades, additional lines would still need to be built as the incremental capacity provided by these upgrades would be insufficient to meet the network capacity requirements of the REZ.

3.9.2.3 Follow the existing 330 kV power line further west

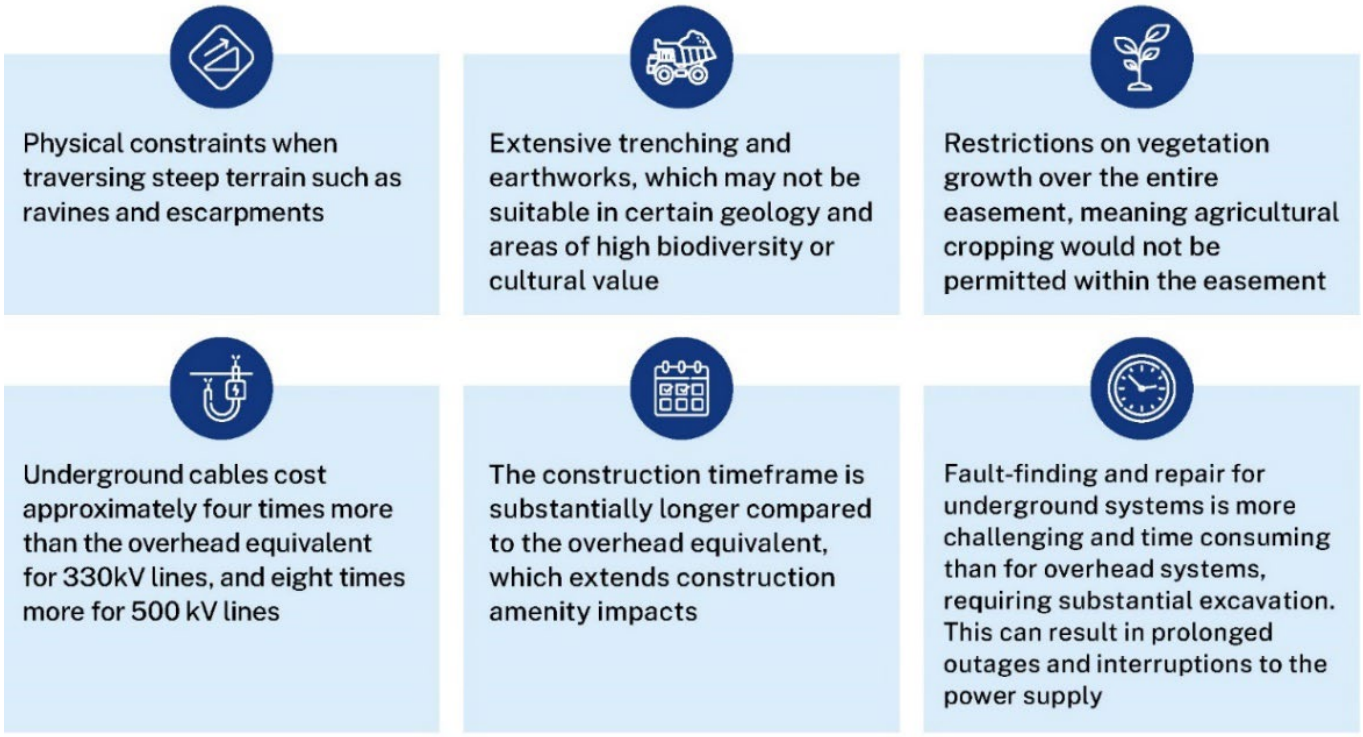
Transgrid currently operates two 330 kV transmission lines that run from Bayswater to Tamworth and on to Armidale. Opportunities to co-locate with either of these lines have been considered. However, the western line is closer to the regional centres of Tamworth and Scone, regional centres that have undergone significant development and urban growth since the existing transmission line

was first built in the 1960s. Given the proximity of these major regional centres, co-location with those lines would have substantial impacts to private properties, townships and amenity.

3.9.3 Option 3: provision of new underground transmission infrastructure

As part of the Project development, EnergyCo has considered installing the transmission lines underground.

There are a number of constraints to underground transmission lines, including:



Underground transmission lines generally have lower visual impacts, though above ground infrastructure is required at regular intervals along the underground system.

A Select Committee was established by the NSW Government on 13 September 2023 to inquire into and report on the feasibility of undergrounding the transmission infrastructure for renewable energy projects. The report, released in March 2024 found that available evidence generally supports that undergrounding electricity infrastructure is more costly, and that there are concerns from some stakeholders that the cost of undergrounding electricity transmission projects will negatively impact the price of electricity to consumers through flow on effects (NSW Parliament, 2024).

Overhead transmission is proposed as it is seen as best balancing the considerations of cost to consumers, project delivery schedule, construction risk, environmental impact, reliability and transfer capacity. Based on the above factors, locating high voltage transmission lines underground was not considered to be a viable option for this Project. Notwithstanding, the potential for undergrounding will be further considered during the EIS phase as part of Project design development.

3.9.4 Option 4: provision of new overhead transmission infrastructure (the Project)

Provision of new overhead transmission infrastructure has been identified as the preferred option through the Project development process as discussed in Section 1.4.3. Overhead transmission

infrastructure avoids the longer time frames, greater costs and constructability constraints of underground infrastructure (Option 3) and the potential impacts, and network outages and delays, associated with modifying existing infrastructure (Option 2).

3.9.5 Option 5: alternative power sources

The 2024 ISP highlights that ten large coal-fired power stations have closed since 2012, and projects that 90% of today's capacity will be closed by 2035, and all before 2040. Consequently, significant investment is required in the physical infrastructure of the NEM. The 2024 ISP identifies that the lowest-cost path to meet Federal and State government energy policies on emissions reductions is renewable energy, connected by transmission and distribution, firmed with storage and backed up by gas-powered generation (AEMO, 2024). This includes around 10,000 kilometres of new transmission infrastructure, which is urgently needed to connect low-cost renewable energy developments to consumers across Australia.

Delays in the renewable energy roll out will place the transition timeframe and emissions reduction targets at risk. In response to delays to date, a temporary two year extension of the closure of Eraring Power Station was announced by the NSW Government in May 2024 to support the security of electricity supply until the new expected closure date of August 2027. Ongoing delays in the renewable energy roll out create greater risk of further Government funded extensions to ageing coal fired generators, increasing costs to the people of NSW.

EnergyCo has received some community feedback suggesting alternative power sources instead of the Project. Potential alternative power sources that have been raised include coal-fired power stations and nuclear power stations.

NSW's electricity supply has traditionally been heavily reliant on coal-fired power stations, however, many of these are now reaching the end of their technical life. The Commonwealth and NSW governments have committed to net zero emissions by 2050 and the commissioning of new coal-fired power stations would not contribute towards the achievement of net zero emissions. Furthermore, wind and solar electricity generation can provider cheaper and cleaner energy for the people of NSW while contributing to the achievement of net zero emissions by 2050.

Nuclear power development is currently prohibited under both Commonwealth and NSW legislation, however, EnergyCo recognises there is a conversation about the possibility of nuclear energy contributing to future energy supply in the broader community.

The CSIRO's GenCost 2023-24 Final Report (Gramham, Hayward and Foster, 2024)[2] considered a range of generation options including nuclear small modular reactors (SMRs) and large-scale nuclear production. The report identified that:

- A range of social, political, regulatory and technical factors would contribute to a long lead time before any nuclear generation could occur, with a likely 15 years to first production from a decision to build nuclear SMR in Australia, and given the longer construction time of large-scale nuclear plant, the total development time would be a few years longer. A 15 plus year total development time would mean that if a decision to pursue nuclear in Australia were made in 2025, with political and community support for the required legislative changes, then the first full operation would be no sooner than 2040. This timing would not meet the timing objectives of the New England REZ to which this Project is related.

[2] an annual economic report estimating the cost of building new electricity generation, storage, and hydrogen production in Australia

- Nuclear has several additional steps in its pre-construction timeline that other technologies do not have. Nuclear technologies need to undergo more extensive safety and security permitting, nuclear prohibitions would need to be removed at the state and commonwealth level and safety authorities need to be established.
- Levelised cost of electricity (LCOE) (an electricity generation technology comparison metric) cost range for variable renewables (solar and wind) with integration costs was the lowest of all new-build technologies (approximately 100 – 140 $/MWh) when considering costs in 2023. Nuclear SMRs had significantly higher costs (approximately 390 – 630 $/MWh) than all other alternatives with large-scale nuclear costs (approximately 150 -260 $/MWh) being less than SMRs but more than solar and wind.

Given these constraints and timeframes, the Project is consistent with the 2024 ISP lowest cost path and based on timing, is required irrespective of whether or not nuclear energy may become a component of Australia's energy mix in the future.

Other alternatives such as offshore wind would not be available in the timeframe needed for the 12 GW of renewable generation required by 2030 under the Roadmap. While offshore wind may be an important component of NSW's future energy mix, the GenCost 2023-24 report identified that offshore wind is higher cost than onshore wind (Gramham, Hayward and Foster 2024).

In 2021 the NSW Government released the NSW Hydrogen Strategy (DPIE 2021b) which provides a framework to support the development of a commercial hydrogen industry in NSW. By supporting industry to rapidly achieve scale and increase the competitiveness of hydrogen against existing emissions intensive fuels and technologies it is anticipated that hydrogen could play a major role in the renewable energy transition. Together with REZs, hydrogen hubs and refuelling networks will seek to unlock decarbonisation of the heavy transport sector and support the emergence of new decarbonised industries, such as green steel and ammonia.

As discussed in Section 2, the Project is consistent with both Commonwealth and NSW government policy and is therefore the proposed option being pursued to support providing clean and reliable electricity to consumers.

Further consideration of alternatives will be provided in the EIS.

4 Statutory context

4.1 NSW legislation

The EP&A Act is the primary instrument which regulates the environmental impact assessment and approval process for development in NSW. The EP&A Act sets out development assessment requirements under Part 4 (development assessment and consent) and Part 5 (infrastructure and environmental impact assessment). As CSSI, the Project will be assessed under Part 5 of the EP&A Act.

4.1.1 Permissibility and planning approval pathway

State Environmental Planning Policy (Transport and Infrastructure) 2021 (Transport and Infrastructure SEPP) is the key environmental planning instrument that sets out the permissibility of infrastructure development and identifies under which part of the EP&A Act it is assessed. Clause 2.44(1) of the Transport and Infrastructure SEPP states:

> *Development of the purpose of an electricity transmission or distribution network may be carried out by or on behalf of an electricity supply authority or public authority without consent on any land. However, such development may be carried out without consent on land reserved under the National Parks and Wildlife Act 1974 only if the development –*
>
> *(a) is authorised by or under that Act, or*
>
> *(b) is, or is the subject of, an existing interest within the meaning of Section 39 of that Act, or*
>
> *(c) is carried out on land to which that Act applies over which an easement has been granted and is not contrary to the terms or nature of the easement, or*
>
> *(d) is an electricity work to which Section 53 of the Electricity Supply Act 1995 applies.*

The EP&A Act defines a public authority to include a statutory body representing the Crown. EnergyCo is established under the *Energy and Utilities Administration Act 1987* and is a statutory body representing the Crown. EnergyCo is therefore a public authority. Additionally, the Project is considered to be development for 'electricity transmission or distribution networks'. The Preferred Study Corridor is not located within lands reserved under the *National Parks and Wildlife Services Act 1993*. As such, the development of the Project is permissible without consent under Section 2.44 of the Transport and Infrastructure SEPP. It is therefore assessed under Part 5 of the EP&A Act.

Permissibility of any additional elements that may be introduced to the Project following further Project refinement will be subject to review as they are identified.

4.1.1.1 Declaration of Critical State Significant Infrastructure

Section 5.12 and Section 5.13 of the EP&A Act provide for the declaration of SSI and CSSI. Under Section 5.13 of the EP&A Act, SSI projects may be declared as CSSI if the Minister for Planning and Public Spaces considers them to be essential to the State for economic, social or environmental reasons.

The State Significant Infrastructure Guideline (DPHI, 2024a), sets out the general principles for the declaration of projects as SSI and CSSI. This includes the following matters which the Minister may consider in deciding whether infrastructure is essential for the State for economic, environmental or social reasons:

The Project was declared CSSI under Section 5.13 of the EP&A Act on 27 June 2024.

NSW State Significant Infrastructure Guidelines

The State Significant Infrastructure Guidelines (DPHI, 2024a) provide a detailed explanation of the assessment of SSI in NSW. They seek to ensure a comprehensive assessment for all SSI projects in accordance with government legislation, plans, policies and guidelines and that the assessment is proportionate to the scale and impacts of the project.

DPHI has also issued a set of technical guidelines to support better assessment and better engagement on state significant projects. These include:

- Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024b).
- Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022d).
- Social Impact Assessment Guidelines and supporting Technical Supplement and Worksheet (DPE, 2023a).

The Scoping Report, EIS and technical assessments will need to have regard to these guidelines.

Whilst there is no current specific guideline for transmission line projects in NSW, a draft Large Scale Transmission Line Guideline (NSW Government, 2024) is being developed by DPHI and has been subject to public exhibition. The transmission guideline may be finalised during the EIS preparation phase for the Project. Ongoing engagement with DPHI will be critical to understanding the requirements of and timing for the release of any such guideline so that the EIS for the Project can considers its requirements, as relevant.

4.1.2 Other relevant NSW legislation

Table 4-1 provides a summary of other NSW statutory approval requirements and their relevance to the Project.

Table 4-1 Other NSW approvals

Relevant provision	Application of provision to Project
Approvals that are not required for approved CSSI	Under Section 5.23(1) of the EP&A Act, the following approvals are not required for approved CSSI: • a permit under Sections 201, 205 or 219 of the *Fisheries Management Act 1994* (FM Act) • an approval under Part 4, or an excavation permit under Section 139 of the *Heritage Act 1977* (Heritage Act)

Relevant provision	Application of provision to Project
	• an Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974* (NP&W Act) • a bush fire safety authority under Section 100B of the *Rural Fires Act 1997* • a water use approval, water management work approval or activity approval (other than aquifer interference approvals) under Sections 89 to 91 of the *Water Management Act 2000*. Section 5.23(3) of the EP&A Act also specifies that directions, orders or notices cannot be made or given so as to prevent or interfere with the carrying out of approved CSSI. Of relevance to the Project would be: • an interim protection order (within the meaning of the NP&W Act) • an order under Division 1 (Stop work orders) of Part 6A of the NP&W Act or Division 7 (Stop work orders) of Part 7A of the FM Act • a remediation direction under Division 3 (Remediation directions) of Part 6A of the NP&W Act • an order or direction under Part 11 (Regulatory compliance mechanisms) of the *Biodiversity Conservation Act 2016* (BC Act) • an environment protection notice under Chapter 4 of the POEO Act • an order under section 124 of the *Local Government Act 1993*.
Approvals that should be substantially consistent with approved CSSI	Under section 5.24(1) of the EP&A Act, the following approvals or authorisations cannot be refused if they are necessary for carrying out approved CSSI and are substantially consistent with the approval granted under Division 5.2 of the EP&A Act: • environment protection licences (EPLs) under Chapter 3 of the *Protection of the Environment Operations Act 1997* (POEO Act) • consent under Section 138 of the *Roads Act 1993* (Roads Act). With respect to EPLs, Schedule 1 of the POEO Act, does not define electrical transmissions lines or substations as a scheduled activity requiring an EPL. However, subject to development of the construction methodology, certain construction activities may be classified as a scheduled activity triggering the requirement for an EPL (refer to Table 4-2). With respect to s138 of the Roads Act, the Project will require road works on both classified and unclassified roads for the construction of the Project. EnergyCo would require approval to undertake work on classified roads. However, by reason of clause 5(1) of Schedule 2 of the Roads Act, EnergyCo is not required to obtain approval to carry out work on unclassified roads other than a Crown Road. However, EnergyCo would consult the roads authority regarding the proposed works.

Table 4-2 provides a summary of other key NSW legislation relevant to the Project, regardless of whether the Project is declared CSSI.

Table 4-2 Other key NSW legislation of relevance to the Project

Legislation	Requirement
Biodiversity Conservation Act 2016 (BC Act)	The BC Act aims to conserve threatened species, populations and ecological communities. Under the BC Act, specified projects are subject to requirements to offset biodiversity impacts. Offsets are actions taken to compensate for the biodiversity impacts of the proposed project (e.g.: clearing of native vegetation, impacts on threatened species). The intended result is no net loss of biodiversity. The Project (as SSI) triggers the need to prepare a Biodiversity Development Assessment Report (BDAR). The BDAR will: a) assess biodiversity values of the site. The offsets framework relies on a system to measure biodiversity values, referred to as the biodiversity assessment method (BAM). b) assess the impacts on biodiversity, c) set out the proposed measures to avoid or minimise the impacts on biodiversity, and d) calculate the biodiversity credits required to offset the residual impacts on biodiversity. Parts of several proposed or established biodiversity offset areas (biodiversity stewardship agreement, conservation agreements, wildlife refuge) are located within the Preferred Study Corridor. Further corridor and design refinement will seek to avoid or minimise interaction with these areas where practicable and to offset any residual impacts, with this issue to be further considered in the EIS.
Aboriginal Land Rights Act 1983 (NSW) (ALR Act)	The ALR Act provides land rights for Aboriginal people in NSW, providing mechanisms for Aboriginal Land Claims. The Project intersects a number of Crown land lots which may be subject to an Aboriginal land Claim. The Project will undertake further investigations to ascertain whether there are lots subject to an Aboriginal Land Claim.
Contaminated Land Management Act 1997 (CLM Act)	The CLM Act establishes the process for investigating and if required, remediating land that the NSW Environment Protection Authority (EPA) considers to be contaminated significantly enough to require regulation. This may be relevant for this Project during construction and/or operation and will be discussed in the EIS. There are no sites registered in the Contaminated Lands Register within the Preferred Study Corridor. A Phase 1 contamination investigation will be undertaken in accordance with the Managing Land Contamination Planning Guidelines SEPP 55–Remediation of Land (Department of Urban Affairs and Planning and Environment Protection Authority, 1998) to inform the design of the Project and EIS process.

Legislation	Requirement
Crown Land Management Act 2016	This Act sets out the requirements for the management of Crown land in NSW. This includes the regulation of activities on Crown l. It also regulates dealings involving Crown land as well as the acquisition of land and vesting of Crown Land. There are areas of Crown land that would be affected by the Project, and EnergyCo will consult with DPHI – Crown Lands regarding interaction of Crown lands with the Project.
Land Acquisition (Just Terms Compensation) Act 1991 (Just Terms Act)	The Just Terms Act applies to the acquisition of land (by agreement or compulsory process) by a public authority with the statutory power to acquire the land. The Just Terms Act requires that independent valuers assess the current market value for each property interest being acquired. In addition to the market value of the property, valuers assess any additional costs that would fairly and reasonably be incurred as a result of the acquisition; such as stamp duty, professional costs (e.g. legal fees and valuation fees), relocation costs (if relevant), losses resulting from severance, and losses relating to disturbance. The valuation informs the offer made to the landowner. The provisions of the Just Terms Act apply to the acquisition of interests in land by EnergyCo.
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act is an Act to protect the environment. It sets environmental standards and regulates pollution. It provides for environment protection licences (e.g. waste, air, water and noise). An EPL is required under Chapter 3 of the POEO Act to undertake a scheduled activity (listed in Schedule 1 of the Act) or scheduled development work (outlined in section 47 of the Act). Construction activities that require an EPL in the event that they exceed the criteria listed in Schedule 1 of the POEO Act may include: • extractive activities (clause 19) • crushing, grinding or separating materials (clause 16) • helicopter-related activities (clause 20). Licensing requirements for the Project will be considered in consultation with the EPA and confirmed in the EIS.
Water Management Act 2000 (WM Act)	During construction, the Project may extract more than 3 megalitres from groundwater sources where a water sharing plan applies. In this case, an aquifer interference approval will be required under Section 91(3) of the WM Act. The potential water requirements during construction and operation will be assessed as part of the EIS. Any necessary licences would be obtained for the Project.

4.1.2.1 Applicable NSW Environmental Planning Instruments

Section 5.22(2) of the EP&A Act provides that environmental planning instruments (EPIs), such as State Environmental Planning Policies (SEPPs) and Local Environment Plans (LEPs), do not apply to CSSI projects except to the extent they apply to the declaration of infrastructure as SSI or CSSI and to the declaration of development that does not require consent. Notwithstanding, as a matter of best practice key environmental planning instruments that relate to the assessment of impacts for the Project will be considered in the EIS.

Local Environmental Plans

The Project would be located within the boundary of seven LGAs, as identified in Section 2.3, each of which has a LEP that guides development in the LGA.

Land within the Preferred Study Corridor falls within a range of land use zones under the various LEPs, including:

(a) RU1 Primary Production (consisting of a majority of the land on which the Project would be located)

(b) RU2 Rural Landscape (area west of Uralla)

(c) RU4 Primary Production Small Lots (area in Gundy)

(d) C3 Environmental Management (area between Hebden and Muscle Creek)

(e) SP2 Infrastructure (at the Bayswater Power Station, Lake Glenbawn and Chaffey Dam, as well as the crossings for classified roads and railways).

Land zoning within the Preferred Study Corridor is shown in Figure 4-1.

While the LEPs guide local development within the LGA, the EP&A Act expressly limits the application of environmental planning instruments. However, this report has provided preliminary consideration of heritage items listed under the LEPs in Section 6.1.3 and has considered preliminary potential impacts to land use in Section 6.1.6 and these matters will be considered in the EIS.

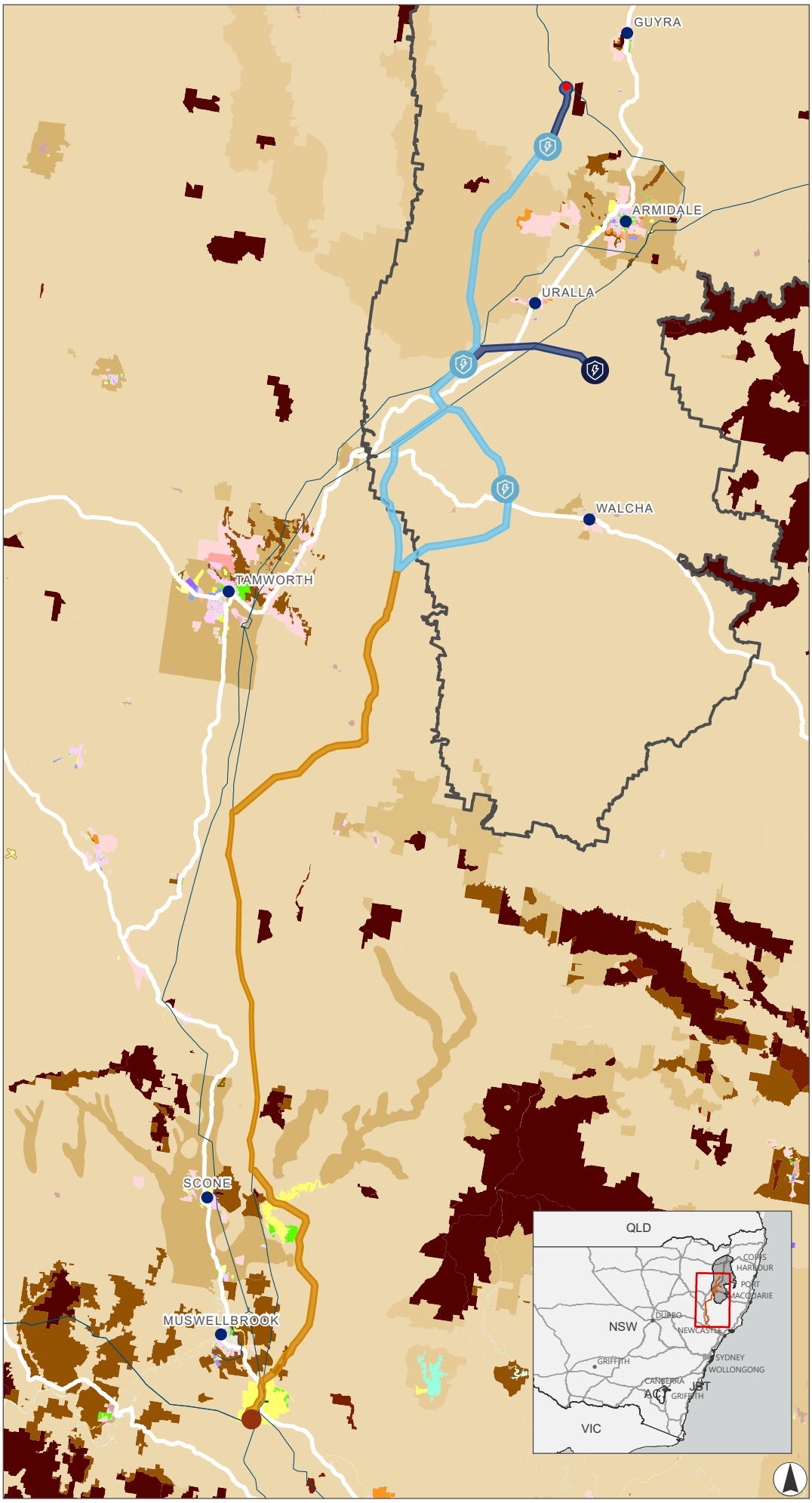


FIGURE 4-1

Land zoning within the Project study area

Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Land Zoning

- B2 - Local Centre
- B4 - Mixed Use
- C1 - National Parks and Nature Reserves
- C2 - Environmental Conservation; C2, Environmental Management
- C3 - Environmental Management
- C4 - Environmental Living
- E1 - Local Centre
- E2 - Commercial Centre
- E3 - Productivity Support
- E4 - General Industrial
- E5 - Heavy Industrial
- IN1 - General Industrial
- MU1 - Mixed Use
- R1 - General Residential
- R2 - Low Density Residential
- R3 - Medium Density Residential
- R5 - Large Lot Residential
- RE1 - Public Recreation
- RE2 - Private Recreation
- RU1 - Primary Production
- RU2 - Rural Landscape
- RU3 - Forestry
- RU4 - Primary Production Small Lots
- RU5 - Village
- RU6 - Transition
- SP1 - Special Activities
- SP2 - Infrastructure
- SP3 - Tourist
- W1 - Natural Waterways
- W2 - Recreational Waterways

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

4.2 Commonwealth legislation

4.2.1 *Environment Protection and Biodiversity Conservation Act 1999*

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides a framework for protection of the Australian environment, including its biodiversity and its natural and culturally significant places. Any action which will or is likely to have a significant impact on a matter of national environmental significance (MNES) must be referred to the Commonwealth Minister for the Environment and Water. MNES include:

The EPBC Act includes a process for referring proposed actions to enable the Minister (or delegate) to form a view as to whether or not the action is likely to have a significant impact on MNES.

The Project is not within a world heritage property or place, does not have wetlands of international importance, is not within either a Commonwealth marine area or the Great Barrier Reef Marine Park, and does not relate to a nuclear action, coal seam gas or coal mining development.

There is potential for the Project to impact on listed threatened species and ecological communities, and migratory species, which is discussed in Section 6.1.1.

A Referral will be lodged to determine whether the Project requires formal assessment and approval under the EPBC Act as a controlled action. If deemed a controlled action, it is proposed that the Project would be assessed under the bilateral agreement between the NSW and Commonwealth governments.

4.2.2 Native Title Act 1993

The *Native Title Act 1993* (Native Title Act) provides for the recognition of native title and establishes ways in which future dealings affecting native title may proceed, sets the standards for those dealings and establishes a mechanism for determining claims to native title. The Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010a) stipulates that, where

relevant, consultation must be conducted with Native title holders or registered native title claimants.

Searches of the registers maintained by the National Native Title Tribunal identified one known native title claim under the Native Title Act in the Preferred Study Corridor, being the 'NC2011/006 – Gomeroi People'. The status of this claim has not been determined as of March 2024 and will be further confirmed as part of the EIS. There are no Indigenous Land Use Agreements that apply to the Preferred Study Corridor.

4.2.3 Climate Change Act 2022

The Commonwealth *Climate Change Act 2022* makes a commitment to a greenhouse gas emissions reduction target of 43% below 2005 levels by 2030. An objective of this Act is to advance an effective and progressive response to the urgent threat of climate change drawing on the best available scientific knowledge.

While there are no specific legislative requirements in this Act that are applicable to the development of infrastructure projects across Australia, the Project facilitates the longer-term transition to low-emission energy sources by connecting renewable energy generators to the NEM, which will assist in achieving the nation-wide emissions reduction targets.

4.2.4 Airports Act 1996

The Preferred Study Corridor is located about 20 km west and north of Armidale Airport and about 13 km east of the Scone Memorial Airport. The EIS will address relevant provisions of the Airports Act, including the need for a controlled activity approval (if relevant).

4.3 Planning approvals process

The NSW Minister for Planning and Public Spaces is the approval authority for the Project with an EIS required to be lodged with DPHI.

Before preparing the EIS, the Minister for Planning and Public Spaces must issue SEARs for the Project. This Scoping Report has been prepared to support the request for SEARs as per the SSI Guidelines (DPHI, 2024a). The EIS will be prepared to address the SEARs (once issued) and the form and content requirements set out in the EP&A Regulation and the SSI Guidelines.

If the Project is determined to be a controlled action requiring approval under the Commonwealth EPBC Act, the approval of the Australian Minister for the Environment and Water will be required in addition to the NSW approval process. Should the Project be determined to be a controlled action, it is proposed to be assessed in accordance with the NSW Assessment Bilateral Agreement between the Commonwealth and NSW Governments, however, the assessment path will be confirmed by the Department of Climate Change, Energy, the Environment and Water (DCCEEW Commonwealth) following the controlled action decision. If the Bilateral Agreement process applies, DCCEEW will issue Supplementary SEARs for the Project which the EIS must also address.

The EIS will be submitted to DPHI for public exhibition for at least 28 days. During the exhibition period, the public and agencies will be invited to make submissions. After the exhibition period closes, DPHI will ask EnergyCo to respond to issues raised in the submissions and prepare a Submissions Report.

Following the publication of the Submissions Report by EnergyCo, the Secretary will prepare an Assessment Report for the NSW Minister for Planning and Public Spaces. The Assessment Report must be considered by the Minister in determining whether or not to approve the carrying out of the Project. The Minister's approval would be subject to relevant conditions of approval.

A summary of the overall assessment and approval process for the Project is shown in Figure 4-2.

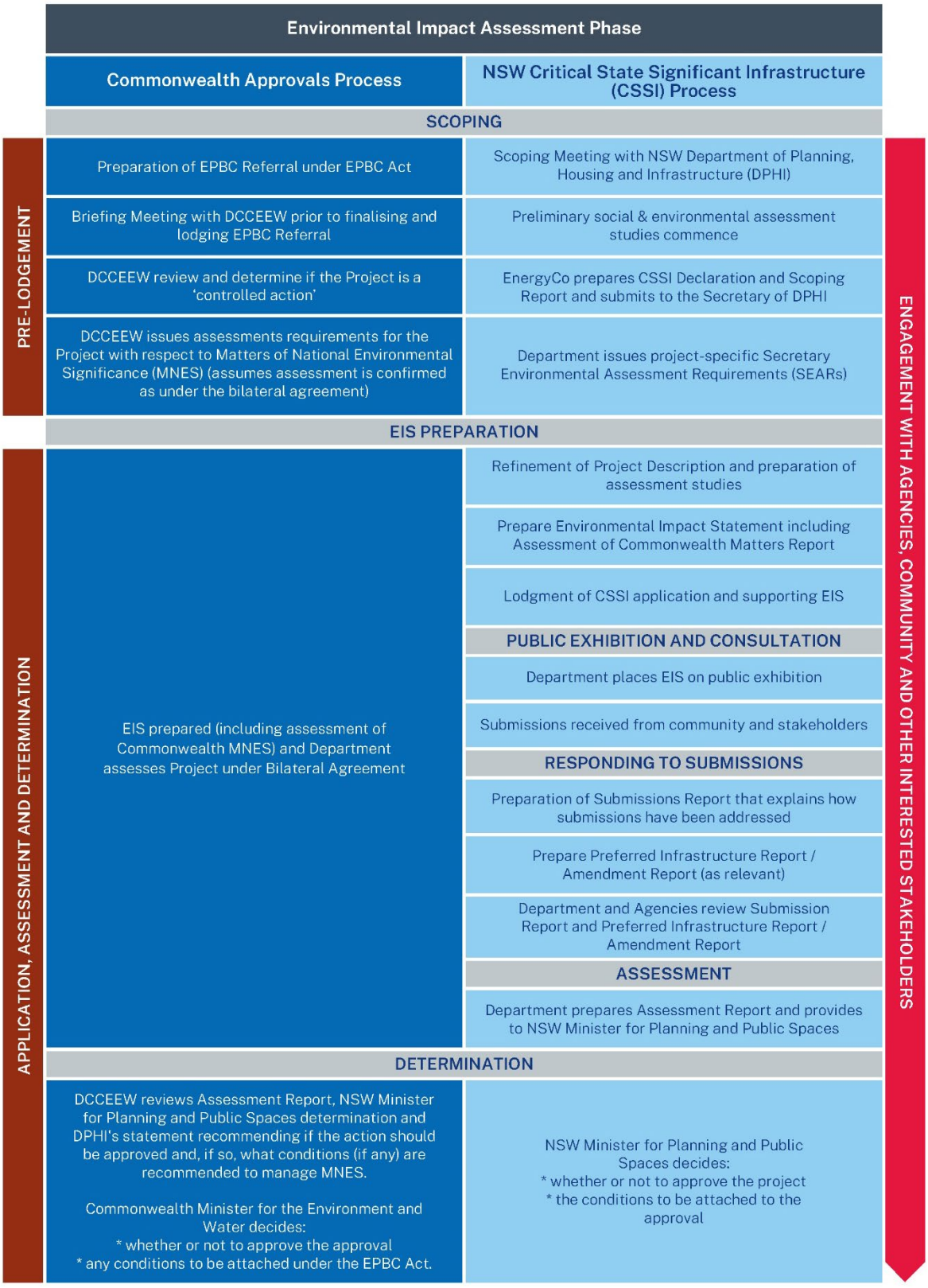


Figure 4-2 NSW CSSI and Commonwealth EPBC Act approvals process

4.4 Summary of Statutory Requirements

A summary of the key statutory requirements for the Project is outlined in Table 4-3.

Table 4-3 Summary of key statutory requirements

Statutory Requirement	Relevant legislation	Requirements
Power to grant approval	EP&A Act (NSW)	The CSSI application for the Project will be subject to the requirements of Part 5, Division 5.2 of the EP&A Act (as outlined in Section 1.4.4) and will be lodged with the Planning Secretary of DPHI, who will prepare environmental assessment requirements. The approval authority will be the NSW Minister for Planning and Public Spaces, in accordance with Section 5.14 of the EP&A Act.
Permissibility	EP&A Act (NSW)	The Transport and Infrastructure SEPP sets out planning requirements for infrastructure and transport, including criteria for carrying out a development without consent. As discussed in Section 4.1.1, the Project is permissible without consent as the Project is being developed for the purposes of 'electricity transmission or distribution networks', being carried out by a public authority and is not situated within land reserved under the NP&W Act. However, as the Project has been declared CSSI, an assessment under Division 5.2 of the EP&A Act must be undertaken, with the Minister for Planning and Public Spaces being the consent authority.
	Transport and Infrastructure SEPP (NSW)	The Transport and Infrastructure SEPP sets out planning requirements for infrastructure and transport, including criteria for carrying out a development without consent. As discussed in Section 4.1.1, the Project is permissible without consent as the Project is being developed for the purposes of 'electricity transmission or distribution networks', being carried out by a public authority and is not situated within land reserved under the NP&W Act. However, as the Project has been declared CSSI, an assessment under Division 5.2 of the EP&A Act must be undertaken, with the Minister for Planning and Public Spaces being the consent authority.

Statutory Requirement	Relevant legislation	Requirements
Other relevant legislation and approvals	EPBC Act (Commonwealth)	As discussed in Section 4.2.1, a Referral will be lodged to determine whether the Project requires formal assessment and approval under the EPBC Act as a controlled action. If deemed a controlled action, it is proposed that the Project would be assessed under the bilateral agreement between the NSW and Commonwealth governments. The Project may potentially impact EPBC Act approved biodiversity offsets, however, this will be further considered in the EIS. Section 143 of the EPBC Act provides for the variation of conditions attached to an approval. EnergyCo will consult with the relevant approval holder and DCCEEW (Commonwealth) relating to any potential impacts to offset areas.
	Airports Act 1996 (Commonwealth) (Airports Act)	The Preferred Study Corridor is located about 20 km west and north of Armidale Airport and about 13 km east of the Scone Memorial Airport. The EIS will address relevant provisions of the Airports Act, including the need for a controlled activity approval (if relevant).
	Native Title Act 1993 (Commonwealth) (Native Title Act)	A search of the Register of Native Title Claims identified that the Preferred Study Corridor is located within an area subject to a registered native title claim, being the 'NC2011/006 – Gomeroi People'. This native title claim has not been determined as of March 2024. The status of this claim will be confirmed during the Scoping and/or EIS phase for the Project. EnergyCo will consult with the native title claimant during the Scoping and/or EIS phase for the Project.
	Aboriginal Land Rights Act 1983 (NSW) (ALR Act)	The Project is intersected by a number of Crown Land lots, which may be subject to an Aboriginal Land Claim under the ALR Act. Investigations are underway with NSW Crown Lands (the state agency responsible for the management of NSW's Crown land) to ascertain whether these lots are subject to an Aboriginal Land Claim. Aboriginal stakeholders will be consulted during the Scoping and EIS phase for the Project through the Aboriginal Cultural Heritage Assessment Report (ACHAR).

Statutory Requirement	Relevant legislation	Requirements
Other relevant legislation and approvals	*Roads Act 1993* (NSW) (Roads Act)	The Project will potentially require will require road works on both classified and unclassified roads for the construction of the Project. EnergyCo would require approval under the Roads Act to undertake work on classified roads. In accordance with Section 5.24 of the EP&A Act, an approval under Section 138 of the Roads Act cannot be refused if it is necessary for carrying out an approved SSI project and is to be substantially consistent with the SSI approval.
	Protection of the Environment Operations Act 1997 (NSW) (POEO Act)	Schedule 1 of the POEO Act does not define electrical transmissions lines or substations as a scheduled activity requiring an EPL. However, subject to development of the construction methodology, certain construction activities may be classified as a scheduled activity triggering the requirement for an EPL (for example, extractive activities, crushing, grinding or separating works, helicopter - related activities). In accordance with Section 5.24 of the EP&A Act, an EPL cannot be refused if it is necessary for carrying out an approved SSI project and is to be substantially consistent with the SSI approval.
	Biodiversity Conservation Act 2016	The Project may potentially impact BC Act approved offset areas, however, this will be further considered in the EIS. The Project will potentially require the consent of the NSW Minister for the Environment for works in or changes to offset areas and/or wildlife refuges.
Other approvals that do not apply or must be applied consistently	Sections 5.23 and 5.24 of the EP&A Act	Refer to Section 4.1.2.
Pre-conditions to exercising the power to grant approval	Any relevant NSW legislation	The Project will potentially require the consent of the NSW Minister for the Environment for any works in or changes to offset areas and/or wildlife refuges under the BC Act.
Mandatory matters for consideration	EP&A Act	Under section 5.19 of the EP&A Act, when deciding whether or not to approve the carrying out of the Project, the Minister for Planning and Public Spaces must consider the Planning Secretary's assessment report and any advice provided by the Minister responsible for the proposed infrastructure.

5 Community and stakeholder engagement

Stakeholder engagement and community participation is critical to the successful planning, development, construction and operation of the Project. To achieve this, EnergyCo is committed to engaging closely with local councils, First Nations people and communities, landowners and many other stakeholder groups to ensure that host communities are able to participate in the planning and development of projects in their regions. Through proactive and meaningful stakeholder engagement processes, stakeholders provide valuable input as part of the ongoing Project design refinement process, the environmental and social assessment process, and ultimately the implementation of the Project. As part of a detailed consideration of stakeholder feedback EnergyCo will seek to maximise the local and regional benefits, and minimise the impacts of the Project.

This chapter outlines the community and stakeholder engagement carried out for the Project to date, including a summary of the feedback provided. This chapter also outlines future engagement activities planned for the upcoming stages of the Project.

EnergyCo's communication and engagement approach considers the following documents and guidelines:

- Undertaking Engagement Guidelines for State Significant Projects (DPHI, 2024b).
- Quality Assurance Standard for Community and Stakeholder Engagement (International Association for Public Participation (IAP2), 2015).
- Community Engagement Guidelines for Building Powerlines for Renewable Energy Developments – A guide for proponents, landholders and communities (Clean Energy Council (CEC), 2018).
- Property Acquisition Standards (NSW Government, 2019).
- Draft Transmission Guideline (NSW Government 2024).
- Community Participation Plan (DPIE, 2019).

5.1 Approach

EnergyCo acknowledges that the Project is large-scale and complex in nature, with high levels of interest from the public, local communities, and other key stakeholders. EnergyCo recognises the diverse engagement and information needs of the community and is committed to a robust engagement plan that is inclusive and encourages participation.

EnergyCo is committed to ongoing, open, and inclusive engagement and consultation with key stakeholders and the wider community, which aims to build:

- trust in the transition: develop and foster trust in the transition to a renewable energy powered NSW through the implementation of the Roadmap
- awareness: build awareness and understanding of the role of physical development in the State's energy transition as coordinated by the EnergyCo communications teams
- genuine respect: ensure communities feel genuinely heard, included and engaged by EnergyCo, generation and transmissions project teams, and operators.

EnergyCo recognises the importance of early and effective engagement with communities and stakeholders and will:

- use appropriate methods to inform the community of the Project and provide updates on Project progress

- develop trusted relationships with stakeholders through early, open, and transparent engagement
- engage early with stakeholders to understand potential impacts and opportunities that may arise from the Project on people and communities
- facilitate genuine involvement of stakeholders in the planning and assessment process, and ensure the community has a voice and that their input is used to inform the Project design and assessment process
- keep the broader community and stakeholders informed and involved in the identification, assessment, and management of potential impacts and benefits associated with the Project
- ensure commitments made to the community are met
- deliver a strategic and coordinated approach to engagement through the planning and assessment phase of the Project
- ensure community and stakeholder inputs are effectively integrated into the technical, environmental and social assessments to support sustainable development of the Project.

A Communication and Stakeholder Engagement Strategy has been developed for the Project to define EnergyCo's overarching strategy for managing and delivering effective community and stakeholder engagement. Implementation of engagement started in June 2023 and will be ongoing over the life of the Project. Engagement approaches will be regularly reviewed and evaluated to ensure they provide appropriate opportunities for participation and are responsive to stakeholder needs and feedback.

5.1.1 Key stakeholders

EnergyCo has identified stakeholders with an interest in the Project, or those directly and indirectly affected by it. The Project's knowledge of the existing stakeholder environment will evolve as the Project progresses. Key stakeholder groups have been identified in Figure 5-1 below.

Figure 5-1 Key stakeholder groups

5.2 Summary of engagement to date

Since the beginning of the Project's community engagement in May 2023, engagement activities have focused on directly affected landowners and host communities within the Preliminary Study Corridor and more recently those within the Revised Study Corridor. A summary of community engagement activities undertaken up to June 2024 is provided below.

474 individual and group landowner meetings

18 community sessions with 715 attendees

Community meetings and Project briefings with Traditional Owners and First Nations communities

Project refinements or design changes informed by community feedback

161 email enquiries from members of the public and 157 calls to the Project hotline

Introductory meetings with special interest groups and community groups

1,260 people registered for the Project mailing list

Meetings with local councils and MPs

A timeline of community and stakeholder engagement activities undertaken to date is provided in Table 5-1. Engagement with Registered Aboriginal Parties for the Aboriginal Cultural Heritage Assessment is discussed in Section 6.1.2.

Table 5-1 Engagement timeline

5.2.1 Engagement methods and activities

To ensure effective engagement, a range of different engagement methods and activities are being used for the Project. Table 5-2 and Table 5-3 summarises the community engagement mechanisms and activities carried out to date.

Table 5-2 Overview of engagement mechanisms and activities – information provision

Mechanism	Description	Timing
Postcard	Mailout postcard to residents across the Preliminary Study Corridor and wider community with a QR code inviting interested community members to provide contact details to sign up to the Project's email distribution list to receive regular Project information.	May–June 2023
Project Overview	The Project Overview document was publicly released to provide an introductory summary of the Project, including a description of EnergyCo and related entities, the need for the Project, details of the REZ, transmission planning, the preliminary study corridor, consultation opportunities and community and landowner benefit schemes.	June 2023
Notification letters and individual property maps	Delivered to directly affected landowners to introduce the Project and the Preliminary Study Corridor / Revised Study Corridor, and to provide landowners with contact information to arrange a face-to-face meeting.	May and August 2023; March 2024
Mailing list	Updates provided by the Project's email distribution list.	June 2023 onward
Project website	A dedicated website has been established and updated to include Project information and provide updated on engagement activities and upload latest communication materials.	June 2023 onward
Social media	LinkedIn posts advertising Community Information Sessions.	March 2024
Online interactive map	An interactive spatial tool to visually represent the Project and other relevant geographical information.	June 2023 onward
Advertising	Community information sessions were publicised through local media outlets across the region, including the Armidale Express, Glen Innes Examiner, Guyra Gazette, Inverell Times, Northern Daily Leader (Tamworth), Apsley Advocate, Hunter River Times, 1188 2NZ, Gem FM, 2AD, FM 100.3, 2TM, 92.9 FM.	June 2023; March 2024

Mechanism	Description	Timing
Fact Sheets	To provide detailed information about topical information relating to the Project, fact sheets currently available for the Project include: • field investigations • property and easement acquisition • living and working near transmission lines easements • energy hubs • electric and magnetic fields.	June 2023 onward
Project Update 1	Introduce the New England REZ including how the REZ was developed, community consultation opportunities and community benefits resulting from the Project.	August 2022
Project Update 2	To provide an update on the status of the Project and progress made, and to share information on how the Preliminary Study Corridor was selected.	December 2023
Project Update 3	To announce the deferral of the South Hub and the connecting line.	January 2024
Project Update 4	To announce the Revised Study Corridor and to advertise the second round of Community Information Sessions.	March 2024

Table 5-3 Overview of engagement mechanisms and activities – consultation

Mechanism	Description	Timing
Landowner meetings and correspondence	Face-to-face personal meetings held with directly affected landowners to understand and discuss specific and individualised concerns and circumstances. Ongoing correspondence and communication has occurred via phone, email or in-person follow up meetings since the initial introductory meetings at the time of Project launch.	June 2023 onward
Group meetings	Face-to-face small group meetings were held with directly affected landowners, focusing on a specific section of the Preliminary Study Corridor and the localised concerns or issues relevant to the community in that area.	September 2023 onward
Project briefings	Formal briefings with elected representatives, Councils, State government agencies, and Local Aboriginal Land Councils.	May 2023 onward

Mechanism	Description	Timing
Community information sessions	Community information and drop-in sessions held at local venues to share Project information to the broader community, answer questions and receive feedback. 14 community information sessions were held across Armidale, Uralla, Walcha, Dungowan, Murrurundi, Scone, and Muswellbrook in June and July 2023, with 3 additional sessions in Armidale, Tamworth and Muswellbrook in March 2024 and an additional session in Woolomin in May 2024 to share information on the revised study corridor with the broader community.	June and July 2023; March and May 2024
Pop up events	Community pop up events held at local community events / locations to share Project information to the broader community, answer questions and receive feedback. Three pop up events were held in June 2024 in Scone, Muswellbrook and Tamworth.	June 2024
Community meetings	Group meetings were held with First Nations communities in Armidale, Guyra and Walcha.	June 2023
Feedback forms	Feedback forms were made available in-person at the community information sessions as well as online for a month following the sessions for attendees to register their interest in receiving Project updates and provide written feedback on the Project.	June 2023–August 2023
Special interest meetings	Structured discussions to gather key inputs on specific subject matter, or to hear from, and receive feedback from generators active in the region and special interest groups.	July 2023 onward
Local government meetings	Engagement with local Councils has been ongoing since 2023. A Local Government working group was established in November 2023 to guide local government input and direction on the establishment, planning, and delivery of the REZ. It involves the Councils of Muswellbrook, Hunter, Liverpool Plains, Tamworth, Walcha, Uralla and Armidale.	2023 onward

Mechanism	Description	Timing
Agency meetings	Project briefings and updates have been undertaken throughout 2023 and 2024 with the following agencies: • DPHI – Energy Assessment Team • NSW DCCEEW – Biodiversity Conservation and Science (BCS) • NSW DCCEEW – Heritage • Commonwealth DCCEEW • Transport for NSW • Water NSW • DPHI – Crown Lands.	2023 onward

5.3 Engagement outcomes

The outcomes of community engagement activities undertaken outline the range of community views, concerns, interests, and feedback provided on the Project to date. Summaries of community views are provided in Figure 5-2 and Appendix C which align with the categorisations as per the Scoping Report Guideline (DPE, 2022a). It is noted that some engagement outcomes are relevant to more than one category, meaning that some points of feedback have been allocated to more than one category for reporting purposes.

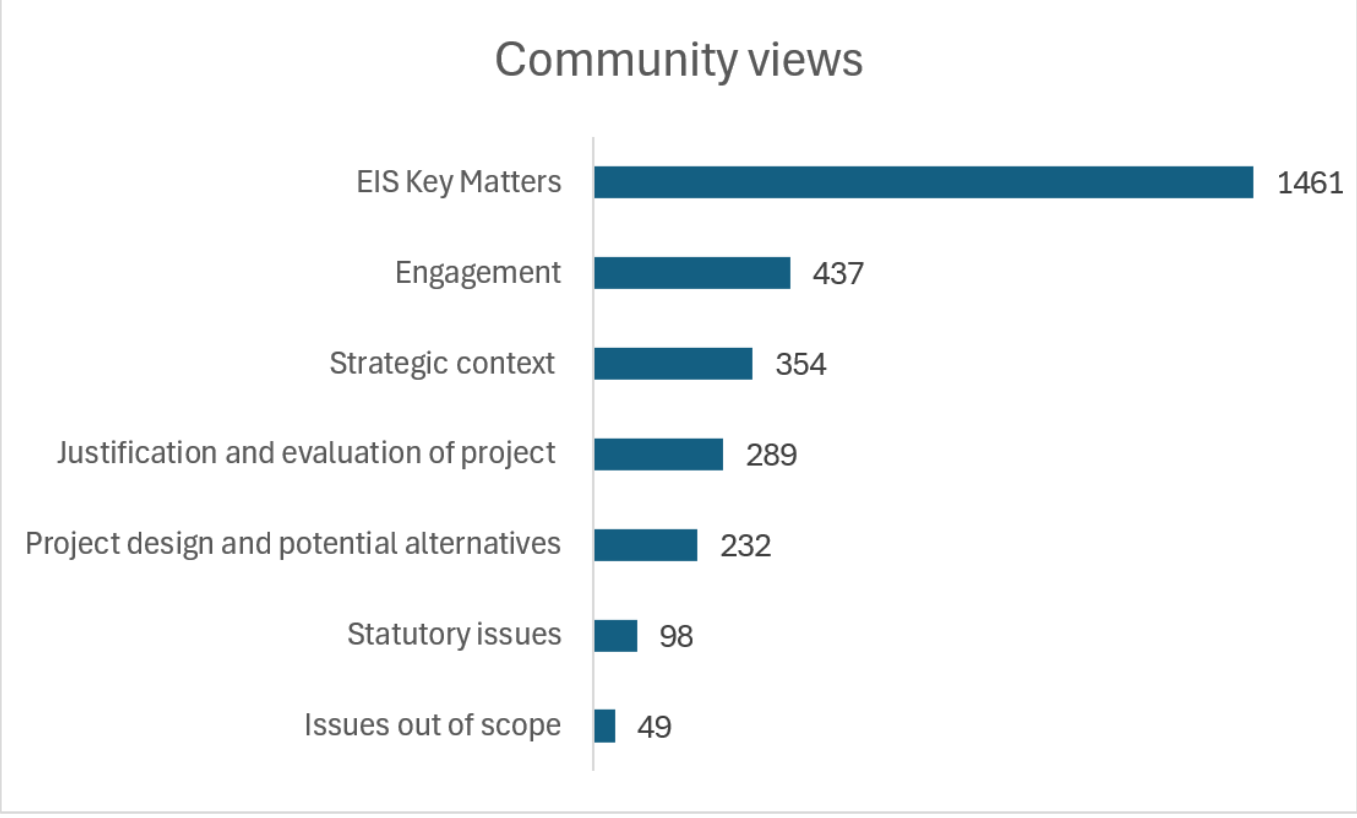


Figure 5-2 Categorisation of community views

The key feedback topic by category is presented in Table 5-4.

Table 5-4 Community views and key feedback

Category	Key feedback topic
EIS key matters	• Hazards and risk matters including the perceived Electro Magnetic Field (EMF) impacts on people, livestock and wildlife, biosecurity concerns, bushfire and safety risk and the potential for land contamination. • Access and transport matters including existing road infrastructure including private access roads or tracks. • Localised amenity matters including concern relating to noise generation and visual changes to the rural landscape. • Biodiversity matters including known habitats of terrestrial flora and fauna on private properties. • Heritage matters including Aboriginal cultural values and built or natural heritage items across the landscape. • Economic matters including personal livelihood impacts and regional development opportunities such as employment and training. • Social matters including to people's way of life and agricultural livelihoods, changes to the dynamics and relations within local communities, concerns relating to people's mental health and community wellbeing, changes to people's sense of place and attachment to their surrounds, accessibility to social infrastructure or services, and the nature of community participation in decision-making systems. • Land matters including stability. • Water related matters including availability and water quality.
Engagement	• Concern about the effectiveness of community engagement, specifically relating to the perceived limited early engagement with affected communities. • Concern about a perceived lack of opportunity for directly affected landowners to be involved in route selection and perceived lack of transparency around route selection and decision-making. • Concern about response times to inquiries.
Strategic context	• The need to transition towards renewable energy to power NSW. • Reasoning and justification for the REZ establishment. • Cumulative environmental and social issues associated with local proposed or recently developed renewable energy projects. • Cumulative environmental and social matters associated with the establishment of the New England Renewable Energy Zone. • Identification of key natural features across the landscape, including creeks, waterways, ridge lines and dams. • Defining, building, and maintaining a social licence to operate across all host communities.

Category	Key feedback topic
Justification and evaluation of Project	• Identification of built assets on private properties, including dwellings, farm infrastructure, roads and airstrips that may interact with the Project design. • Reasoning and justification for the alignment.
Project design and potential alternatives	• Consideration of routes along the coast, or wholly in public lands. • Undergrounding of transmission lines. • Nuclear, gas and/or coal options in lieu of renewable energy. • Opportunities for micro-siting on directly affected landowner properties to minimise property impacts. • Preferred route and infrastructure location changes on private properties.
Issues out of scope	• Comments about specific or personal situations, without direct relevance to the Project. • Existing issues associated with other renewable energy projects in the region. • Rural and urban division over the burden of responsibility to host renewable energy generation.
Statutory issues	• Adequacy of compensation frameworks for directly affected landowners where personal livelihoods, assets, dwellings, or personal circumstances are highly impacted. • Provision of compensation frameworks for proximal or neighbouring landowners who are likely to experience high impacts.

Engagement outcomes have been categorised into relevant assessment groups, as per the Scoping Report Guideline (DPE, 2022a). Figure 5-3 below represents the analysis of the 1,461 themes identified. These themes make up the 'EIS Key Matters' category presented in Figure 5-2 above.

A total of 507 points of feedback related to social matters were identified, while relatively fewer issues were raised regarding economic (331) and hazards and risks (158). The social matter represented in Figure 5-3 below does not include feedback regarding the Project's community and stakeholder engagement process, as this is captured under the Engagement Category in Figure 5-2 above.

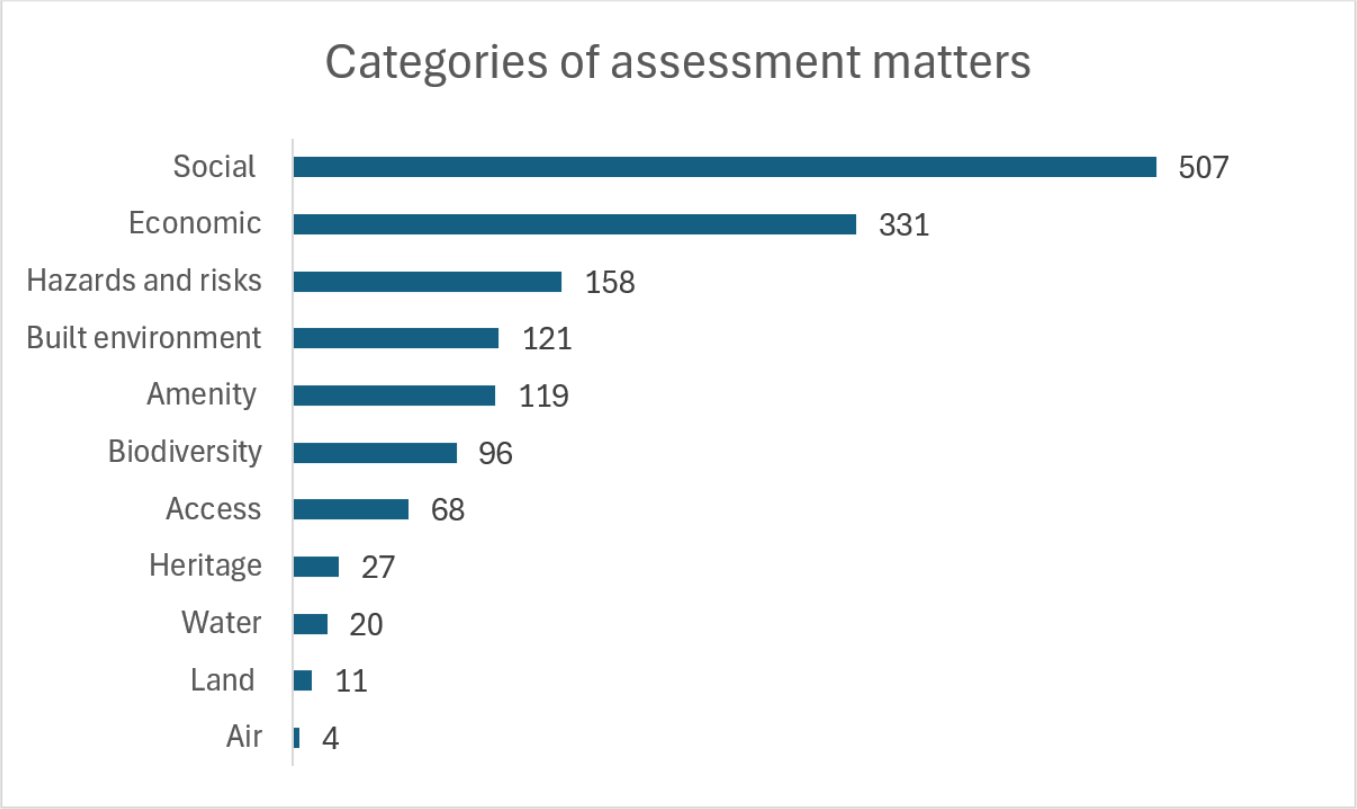


Figure 5-3 Categories of assessment

The key feedback relating to the categories of assessment matters, contained in Figure 5-3 above, is presented in Table 5-5. Further descriptions of the feedback received is outlined in Appendix C.

Table 5-5 Key feedback by category of assessment

Category	Key feedback topic
Social	• Changes to sense of community and place attachment and increase in uncertainty relating to people's personal futures. • Decrease in community cohesion due to perceived fairness or distributive equity within communities and community division due to differences in sentiment towards the Project. • Perceived inequity between rural and urban communities in relation to impact distribution of energy policy decisions. • Potential impacts to health and wellbeing, including stress and anxiety experienced by landowners and host communities. • Mistrust, frustration and reduced trust in Government due to perceived poor engagement practices. • Perceived inequitable distribution of impacts between communities and industry associated with Project establishment and route selection.

Category	Key feedback topic
Economic	• Increased pressure on existing regional workforces and labour pools. • Potential devaluation of private properties and fairness of compensation for host landowners. • Impacts to business key sectors, including agricultural activity. • Diversification of income streams contributing to financial resilience of agribusinesses. • Opportunities for local workforce diversification and capacity building (reskilling, upskilling and/or training) given the establishment of a new industry sector.
Built environment	• Potential for improvement to local infrastructure, transport networks, public or community services or facilities. • Increased pressure on availability and/or accessibility of social infrastructure such as health services.
Access	• Changes to road and transportation networks. • Changes to how people access and use public recreational areas and natural resources.
Amenity	• Changes associated with visual impacts, noise generation, dust and odour during construction and operation of the Project.
Biodiversity	• Impacts of land clearing on local species. • Opportunities to participate in local biodiversity stewardship programs.
Hazards and risks	• Biosecurity risks for host landowners, particularly weed control and contagious livestock diseases. • Public safety, specifically bushfire risk, associated with new electrical infrastructure in drought-prone regions. • Reduced ability for emergency service response and recovery during bushfire or flooding due to aerial restrictions around Project infrastructure and impact upon existing airstrips on private properties. • Potential impacts to health and wellbeing, including exposure to EMFs.
Air	• Clean energy provision facilitated through the Project environmental benefit of reducing climate change through establishment of the Project.
Heritage	• Changes to connection to Country including use of cultural lands by the Project. • Potential physical effect on cultural heritage values, places, stories, sites or landscapes of Aboriginal cultural significance due to Project placement (intangible and tangible).

Category	Key feedback topic
Land	• Loss of agricultural land resulting from changing land uses and operational practices reducing productivity. • Impacts on BSAL. • Concerns relating to soil contamination caused by EMF or Project infrastructure. • Concerns regarding erosion as a result of Project infrastructure and/or construction activities.
Water	• Individual property water security concerns. • Preservation of waterways. • Water usage during Project construction phase and effect on regional water security.

5.4 Future engagement

As the Project's planning and assessment continues, EnergyCo will continue to engage with all key stakeholder groups, including a proactive approach with host communities and landowners. Table 5-6 outlines the future engagement mechanisms associated with key Project milestones.

Table 5-6 Planned future engagement

Project Milestone	Mechanisms	Timing
EIS development	• targeted consultation activities to inform and input into impact assessments (group meetings, interviews, walkovers, workshops, focus groups) • community information sessions • pop-up events • community / business surveys • email updates • briefings and meetings • advertising in local and regional media outlets • website updates and interactive map • Project updates • fact sheets • feedback forms.	2024–2025

Project Milestone	Mechanisms	Timing
EIS public exhibition	• EIS available on the NSW Planning Portal • provide support and information to community and stakeholders • guide to reading an EIS • website update • email to database • stakeholder briefings • community information sessions • advertising in local media outlets • landowner letters • media release.	Late 2025
Submissions	• Submissions Report on the NSW Planning Portal • provide support and information to community and stakeholders • website update • email to database.	Late 2025 Early 2026
Planning approval	• media release • Project update newsletter • website update • stakeholder briefings • e-newsletter.	2026

6 Proposed assessment of impacts

EnergyCo has undertaken a preliminary assessment to understand the potential impacts of the Project on environmental, cultural and social matters that may arise as a result of the construction and operation of the Project. This assessment has included consideration of stakeholder feedback to identify the key issues that require further assessment as part of the EIS.

In accordance with the SSI Scoping Report Guidelines, the key issues requiring assessment for the Project have been identified and the proposed level and scope of assessments is discussed in the following sections. This includes those matters that require further assessment in the EIS (refer to Section 6.1) and those that are not considered to require further assessment (refer to Section 6.2).

A summary of the identified matters and the proposed level of assessment to be completed as part of the EIS is provided in the Scoping Summary Table in Appendix A. The Scoping Summary Table also details relevant plans, policies and guidelines which will be considered in the assessment of these matters.

6.1 Matters requiring further assessment in the EIS

6.1.1 Biodiversity

Avoiding and minimising impacts to biodiversity is one of the key planning principles which has guided the route selection and refinement process for the Project (refer to Section 1.4.3). As a result of this refinement process, the Preferred Study Corridor avoids the national parks estate and the corridor selected has sought to minimise impacts to biodiversity where practicable. Further avoidance and minimisation work will be completed as part of the EIS phase, however, due to the scale of the Project and the need to traverse generally south to north through the landscape, full avoidance of biodiversity impacts is not possible and residual biodiversity impacts will remain.

In addition to designing to avoid and minimise impacts, EnergyCo understands the importance of biodiversity offsetting as a way of compensating for residual biodiversity impacts and is developing a comprehensive biodiversity offsets strategy for the Project. This strategy is underpinned by the NSW Biodiversity Offsets Scheme (BOS) and the requirements of the BAM. EnergyCo is focused on delivering strategic biodiversity offsets that provide not only landscape scale biodiversity conservation outcomes but also benefits the communities and other key stakeholders and will be working with key stakeholders to implement a strategy that achieves this outcome.

The Preferred Study Corridor traverses a broad and diverse landscape, spanning from the Hunter Valley floor to the New England Tablelands. The southern end of the Corridor is heavily disturbed land used for mining and coal fired power generation activities. Much of the central and northern portions of the Preferred Study Corridor have been extensively cleared for agricultural purposes, including broad acre cropping and grazing, however, there are large areas of remnant native vegetation amongst this agricultural land, typically found along roads, rivers and creeklines and in stands of native vegetation within paddocks. Current estimates suggest the corridor is about 50% grasslands. There are several large national parks in the broader area, particularly to the east of the Preferred Study Corridor, containing large areas of intact native vegetation of high quality, with the corridor avoiding all of these areas. The corridor traverses large areas of NSW Government lands dedicated for water supply purposes which are a combination of cleared land and native vegetation.

This section provides a summary of the preliminary biodiversity assessment undertaken to date, which includes a review of literature, desktop searches and results from field surveys undertaken between October 2023 and March 2024.

The Project is CSSI and therefore assessment of biodiversity impacts in accordance with the Biodiversity Assessment Methodology 2020 (BAM 2020) (DPIE 2020b) is required. A detailed biodiversity assessment in accordance with the BAM has commenced and will be delivered as part of the EIS. The information presented in this section is derived from preliminary biodiversity information obtained through relevant database searches, desktop studies and preliminary biodiversity survey work that has been completed from October 2023 to March 2024. A summary of the methodology used for the preliminary biodiversity assessment is provided in Appendix B.

6.1.1.1 Existing environment

The Preferred Study Corridor spans 10 NSW IBRA subregions and there is an elevation change of approximately 1100 m from south to north. As such, the native vegetation types, condition and the habitats provided vary greatly across the Corridor. In addition to this natural variation, there is a variety of existing land use that occurs across the corridor that have shaped biodiversity values, including coal mining in the south through to broad scale agricultural activities in the north.

Native Vegetation

As noted above, there is significant variation in native vegetation types and conditions across the Preferred Study Corridor. A review of the State Vegetation Type Mapping (SVTM, NSW DCCEEW), which is the best available, regional scale, vegetation mapping of NSW, was initially completed to understand the variety of vegetation assemblages likely to occur. This mapping, and Project-specific vegetation surveys, has identified approximately 70 Plant Community Types (PCTs) within the potential area of impact within the Preferred Study Corridor.

Of these 70 PCTs identified, 11 PCTs are associated with nine different Threatened Ecological Communities (TECs) listed under the BC Act and six TECs listed under the EPBC Act. The occurrence of these TECs will be confirmed through targeted vegetation surveys. A full list of the TECs potentially intersected by the Preferred Study Corridor is provided in Appendix B and shown on Figure 6-1. The potential area of impact, which has been used to derive the potential impact area calculations presented in Appendix B, is an area within the Preferred Study Corridor that best represents, at this stage, a more representative extent of the easements and hubs and therefore provides a more reliable estimate of biodiversity impacts for the Project at this scoping study stage. Appendix B also identifies TECs that are currently considered Serious and Irreversible Impact (SAII) entities at risk as per the BC Act 2016. These are communities of particular focus in the assessment process as they have been identified as of particular risk of development impacts.

It is important to note that the process of aligning PCTs to TECs is a complex process and requires substantial field data which is not available at this stage. As such, the TECs presented below, and the potential areas of impact are preliminary only and subject to substantial change throughout the assessment process as further survey work and design refinements are completed. EnergyCo will continue to focus on minimising impacts to TECs where practicable through the evolution of the Project design.

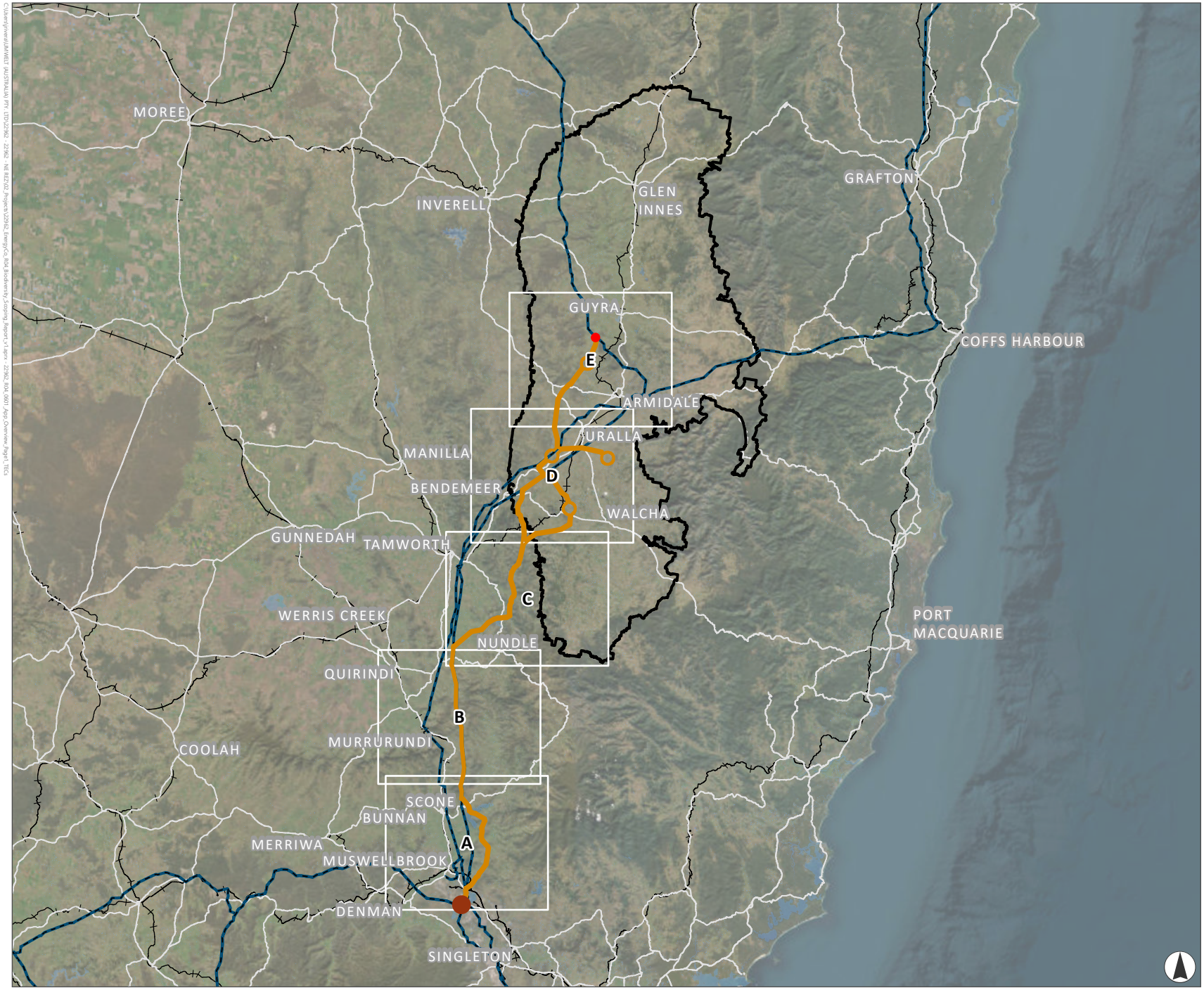


FIGURE 6-1

Preliminary Threatened Ecological Communities within the Project Site

Legend

- Northern Connection
- Bayswater Substation
- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Waterbody

0 40 80

Kilometres

Scale 1:2,189,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

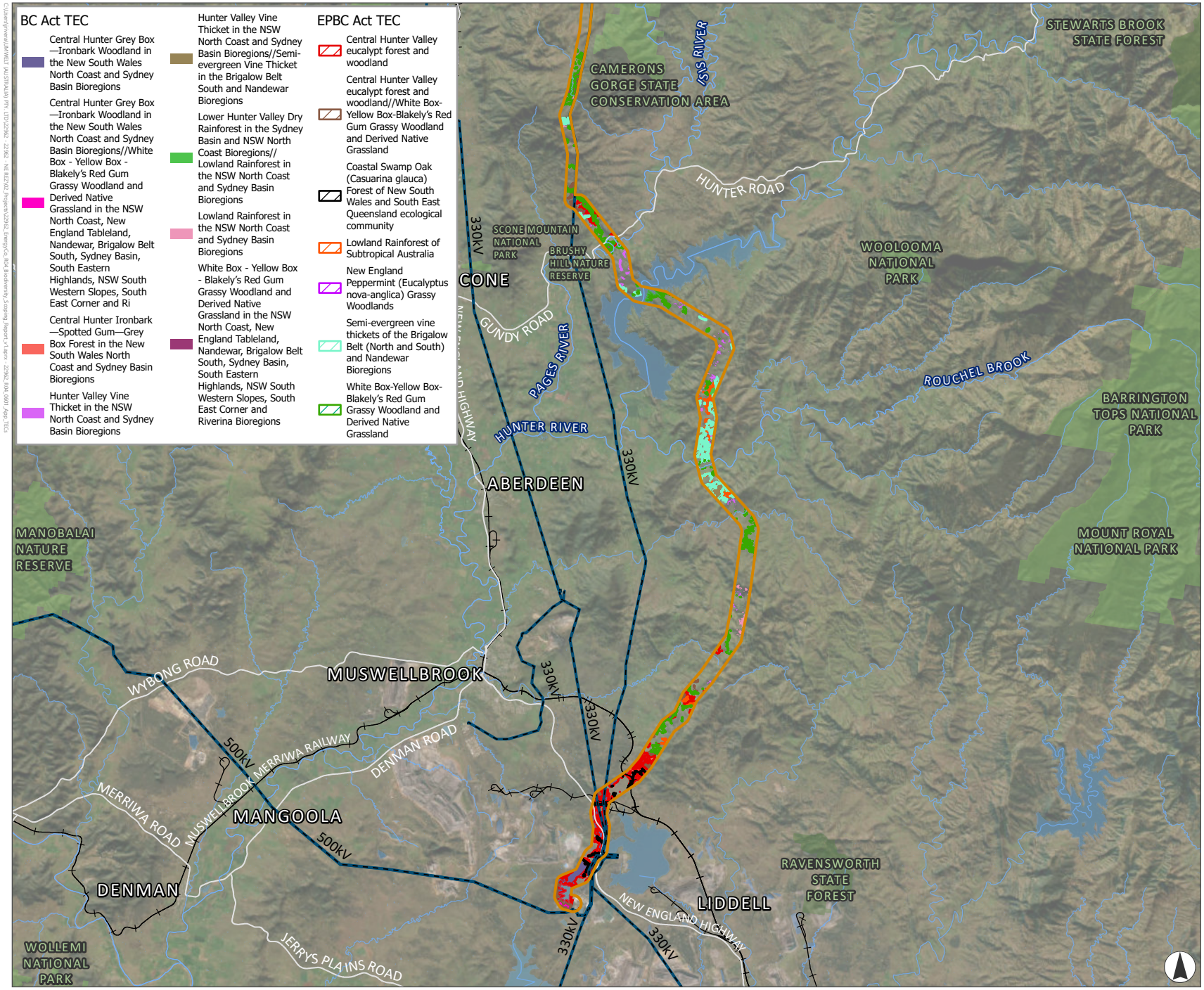
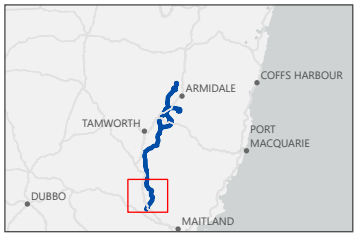


FIGURE 6-1-A

Preliminary Threatened Ecological Communities within the Project Site

Legend

- Preferred Study Corridor
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



0 6 12

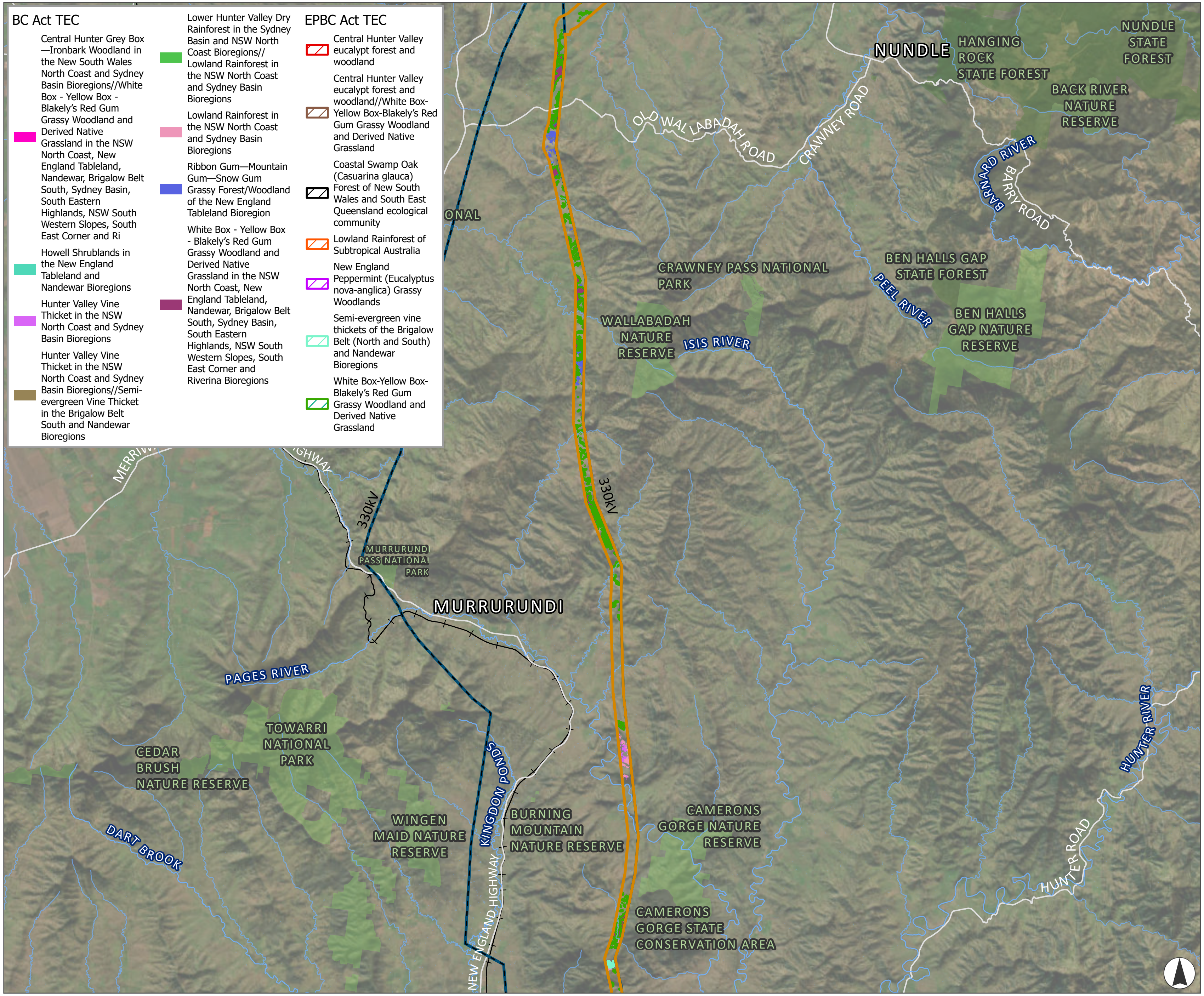
Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

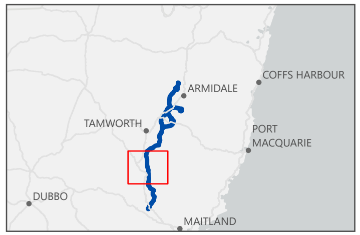
FIGURE 6-1-B

Preliminary Threatened Ecological Communities within the Project Site



Legend

- Preferred Study Corridor
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

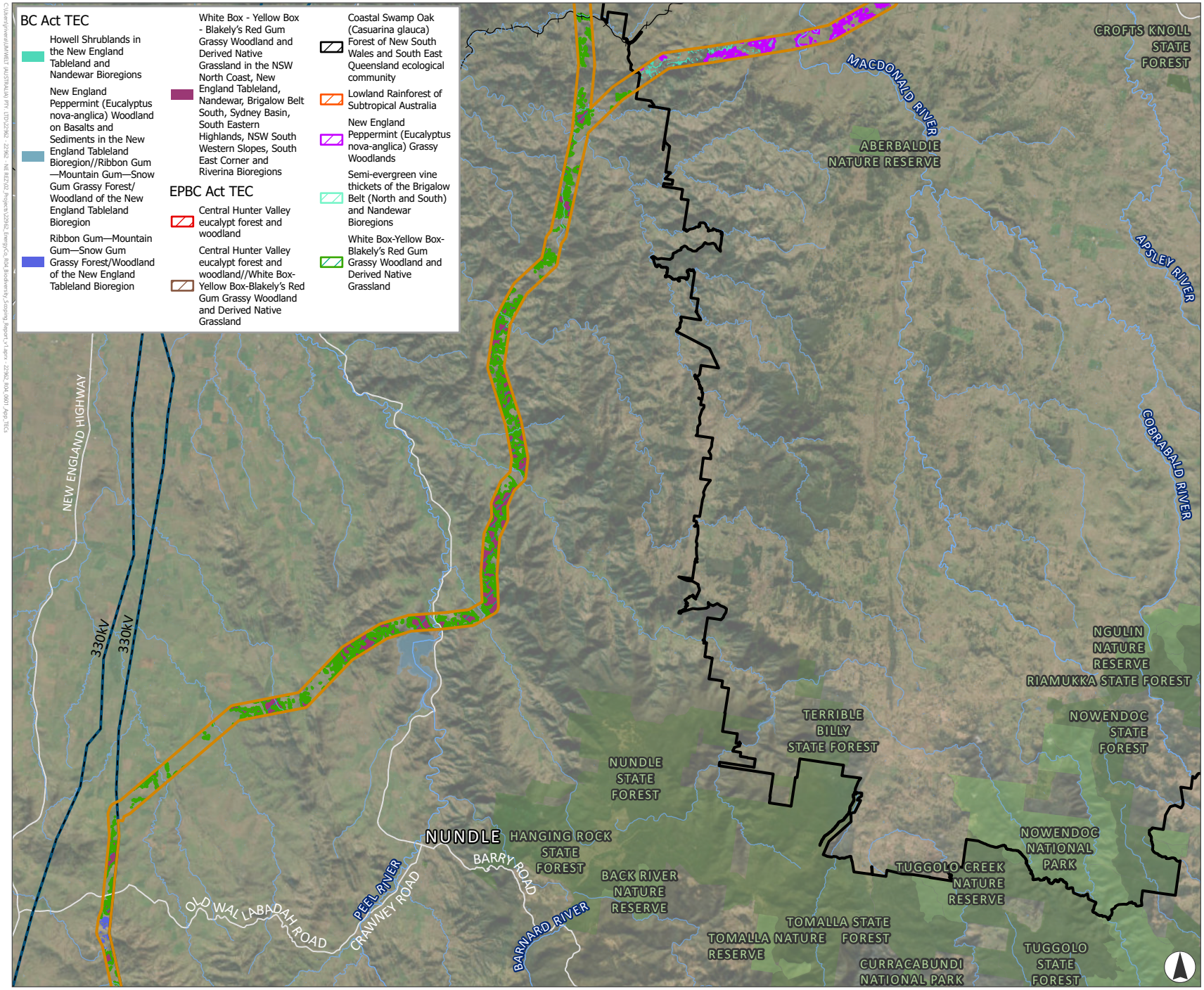
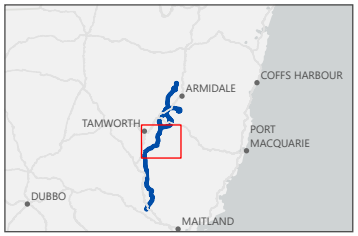


FIGURE 6-1-C

Preliminary Threatened Ecological Communities within the Project Site

Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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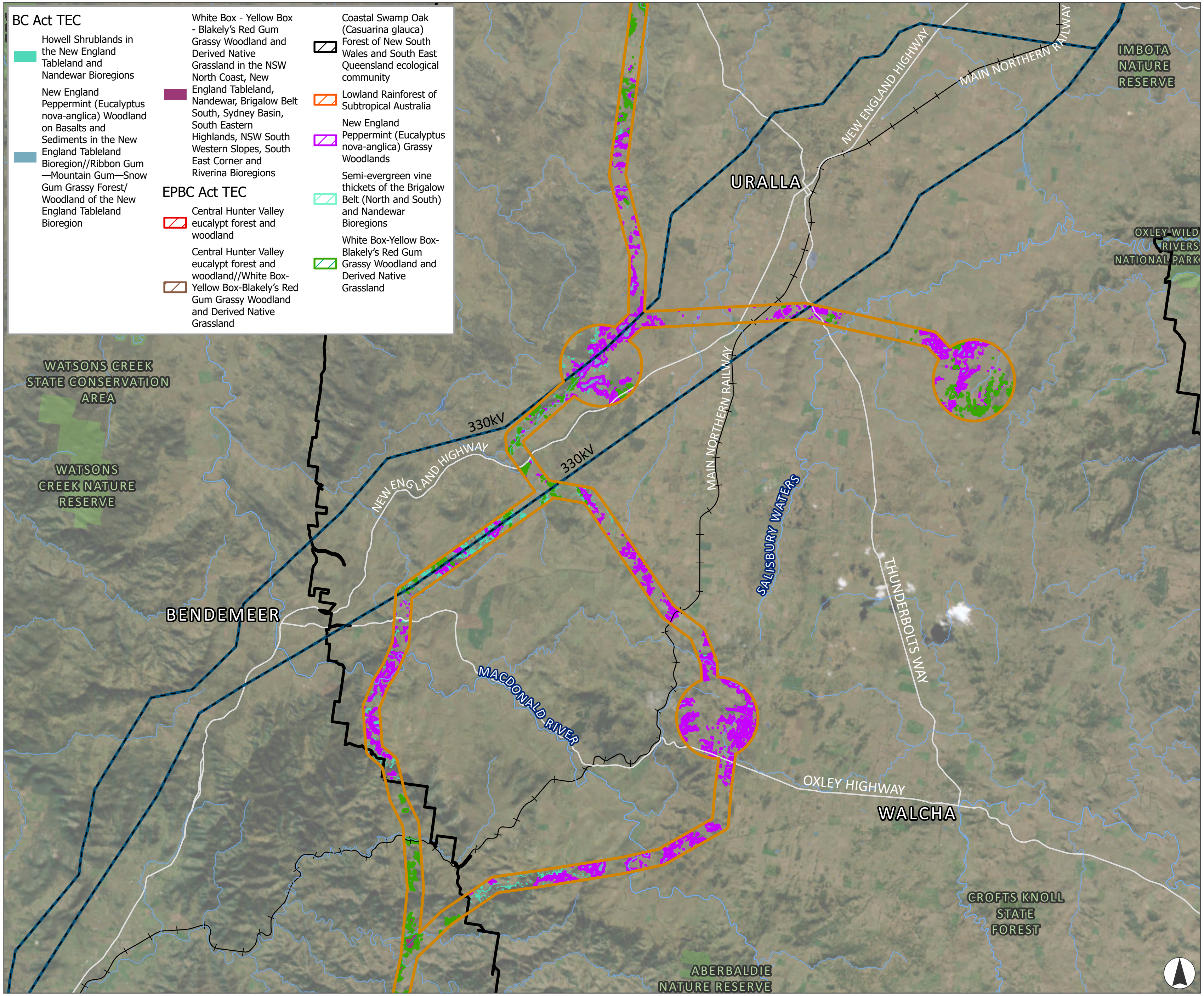
Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

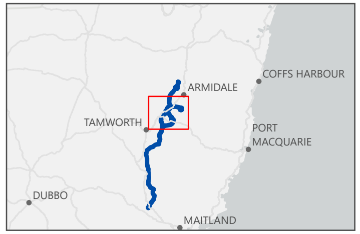
FIGURE 6-1-D

Preliminary Threatened Ecological Communities within the Project Site



Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

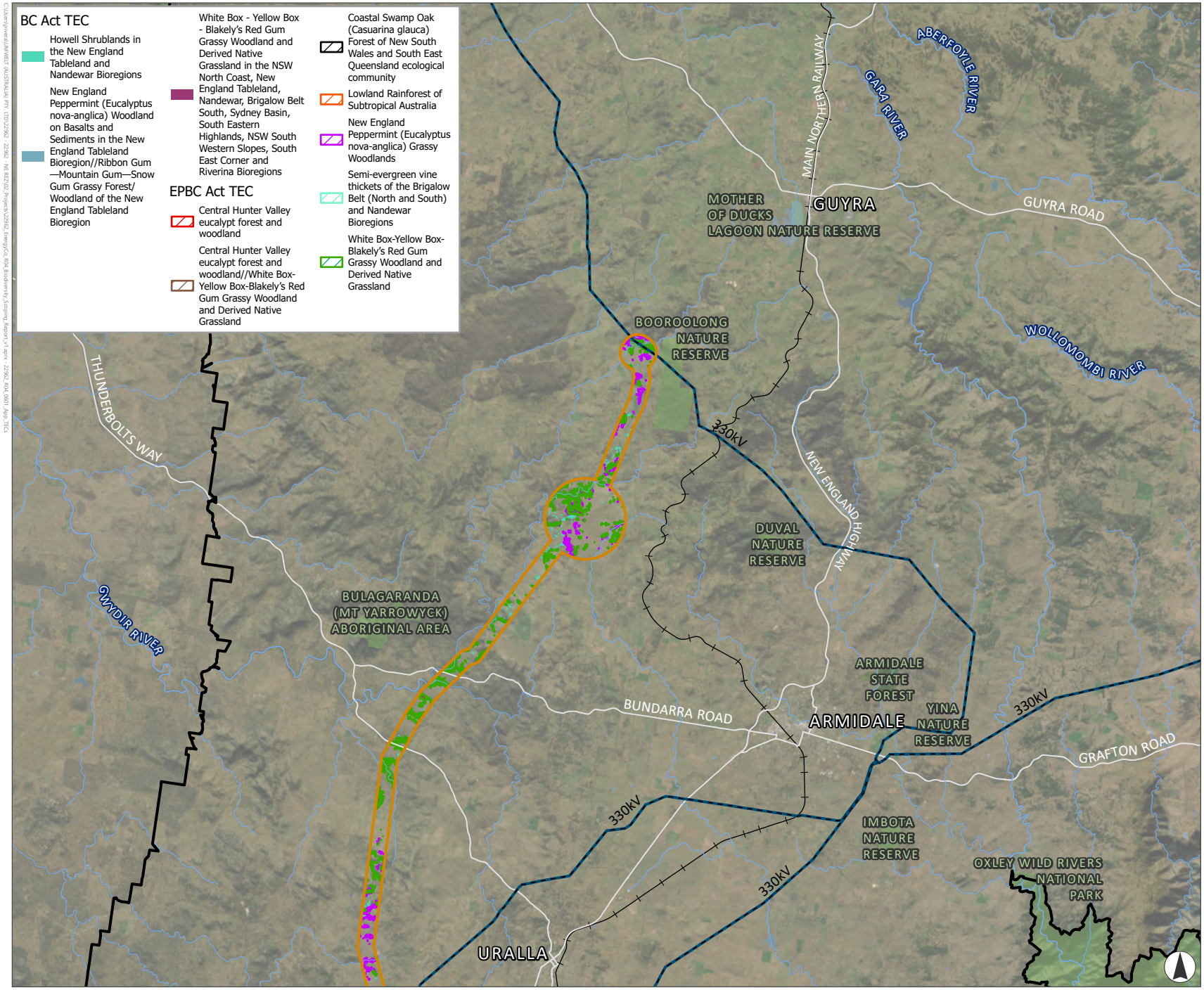
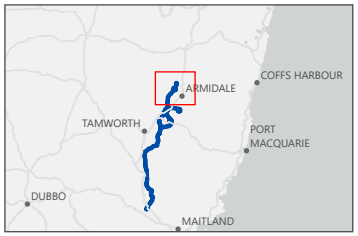


FIGURE 6-1-E

Preliminary Threatened Ecological Communities within the Project Site

Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

Threatened flora

Database searches and preliminary results from field studies have identified 80 threatened flora species that are predicted or known to occur within the Preferred Study Corridor listed under BC Act and/or EPBC Act.

Results from the likelihood of occurrence assessment identified three flora species that are known to occur within the potential areas of impact within the Preferred Study Corridor and 27 species have a moderate or high likelihood of occurrence, as detailed in Appendix B and shown on Figure 6-2. Of these, three flora species have been recorded during field surveys undertaken to date, including:

- Bluegrass (*Dicanthium setosum*) – listed as Vulnerable under the BC Act and EPBC Act
- Narrow-leaved Peppermint (*Eucalyptus nicholii*) listed as Vulnerable under the BC Act and EPBC Act
- Austral Toadflax (*Thesium australe*) – listed as Vulnerable under the BC Act and EPBC Act.

Appendix B also identifies species or populations that are currently considered SAII species as per the BC Act 2016. These are species of particular focus in the assessment process as they have been identified as of particular risk of development impacts.

Threatened fauna

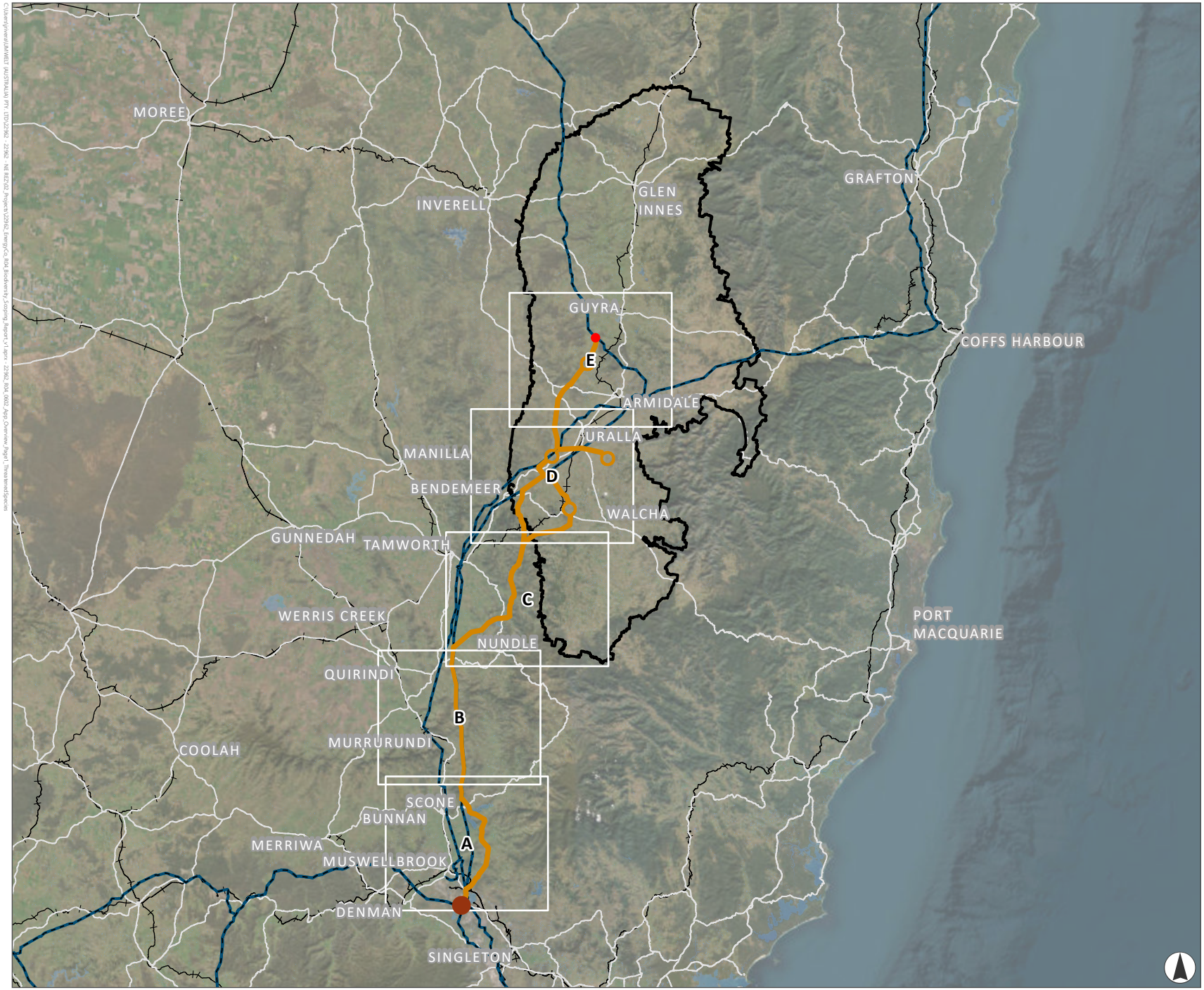
Database searches and preliminary results from field studies identified 101 threatened fauna species listed under BC Act and/or EPBC Act, which are predicted or known to occur within the Preferred Study Corridor.

Results from the likelihood of occurrence assessment identified nine fauna species which are known to occur within the potential area of impact within the Preferred Study Corridor and 42 species with a moderate or high likelihood of occurrence, as shown on Figure 6-2 and detailed in Appendix B. Of these, nine fauna species have been recorded during field surveys undertaken to date, including:

- Koala (*Phascolarctos cinereus)* – listed as Endangered under the BC Act and EPBC Act
- Diamond firetail (*Stagonopleura guttata*) – listed as Vulnerable under the BC Act and EPBC Act
- Dusky woodswallow (*Artamus cyanopterus cyanopterus*) – listed as Vulnerable under the BC Act
- Grey-crowned babbler (*Pomatostomus temporalis temporalis*) – listed as Vulnerable under the BC Act
- Grey-headed flying fox (*Pteropus poliocephalus*) – listed as Vulnerable under the BC Act and EPBC Act
- Squirrel glider (*Petaurus norfolcensis*) – listed as Vulnerable under the BC Act
- Speckled warbler (*Pyrrholaemus sagittatus*) – listed as Vulnerable under the BC Act
- Spotted-tail quoll (*Dasyurus maculatus*) – listed as Vulnerable under the BC Act and Endangered under the EPBC Act
- Border thick-tailed gecko (*Uvidicolus sphyrurus*) – listed as Vulnerable under the BC Act and EPBC Act.

FIGURE 6-2

Threatened Species Records



Legend

- Northern Connection
- Bayswater Substation
- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Waterbody

0 40 80

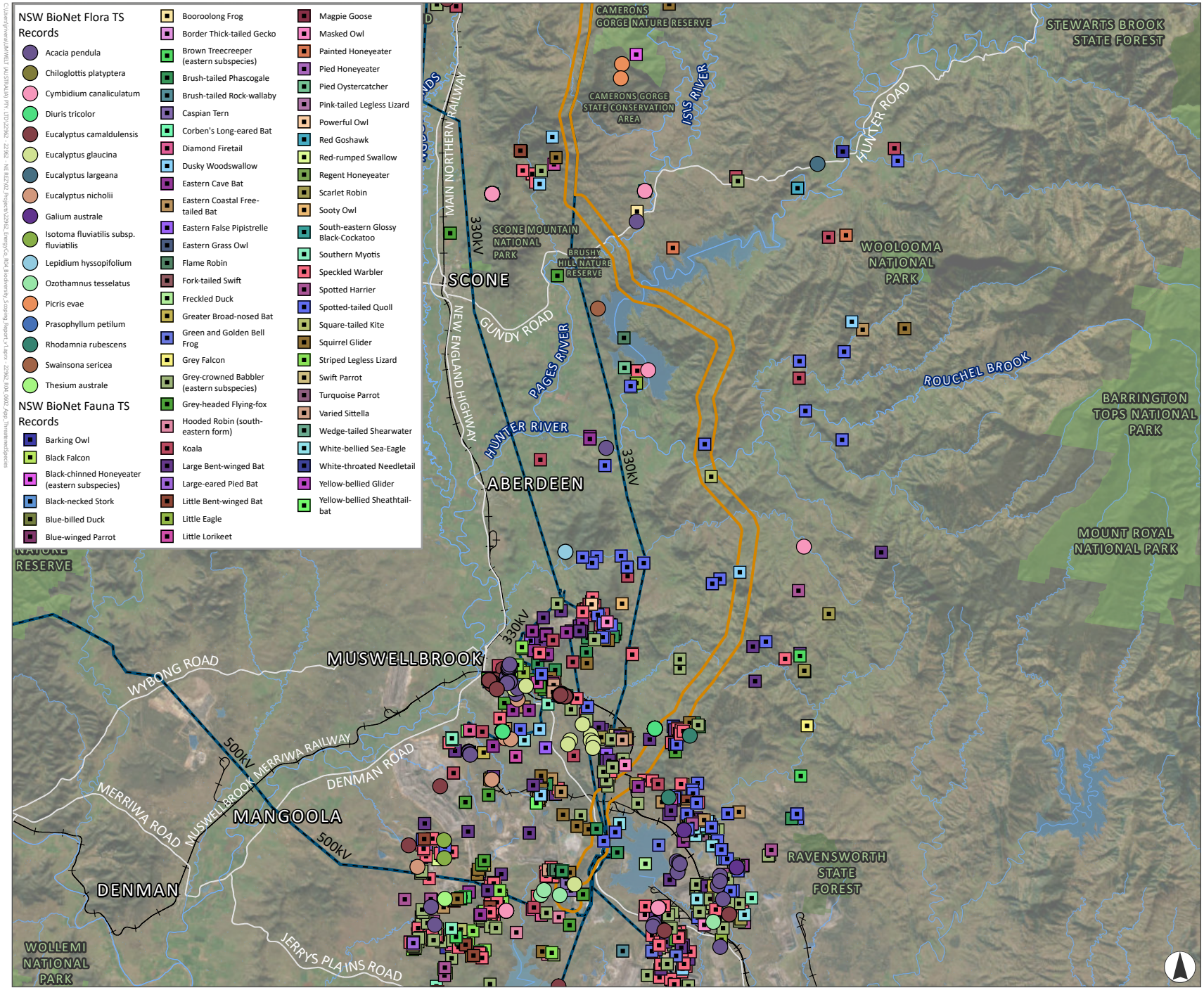
Kilometres

Scale 1:2,189,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

FIGURE 6-2-A

Threatened Species mapped in the Study Area



Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

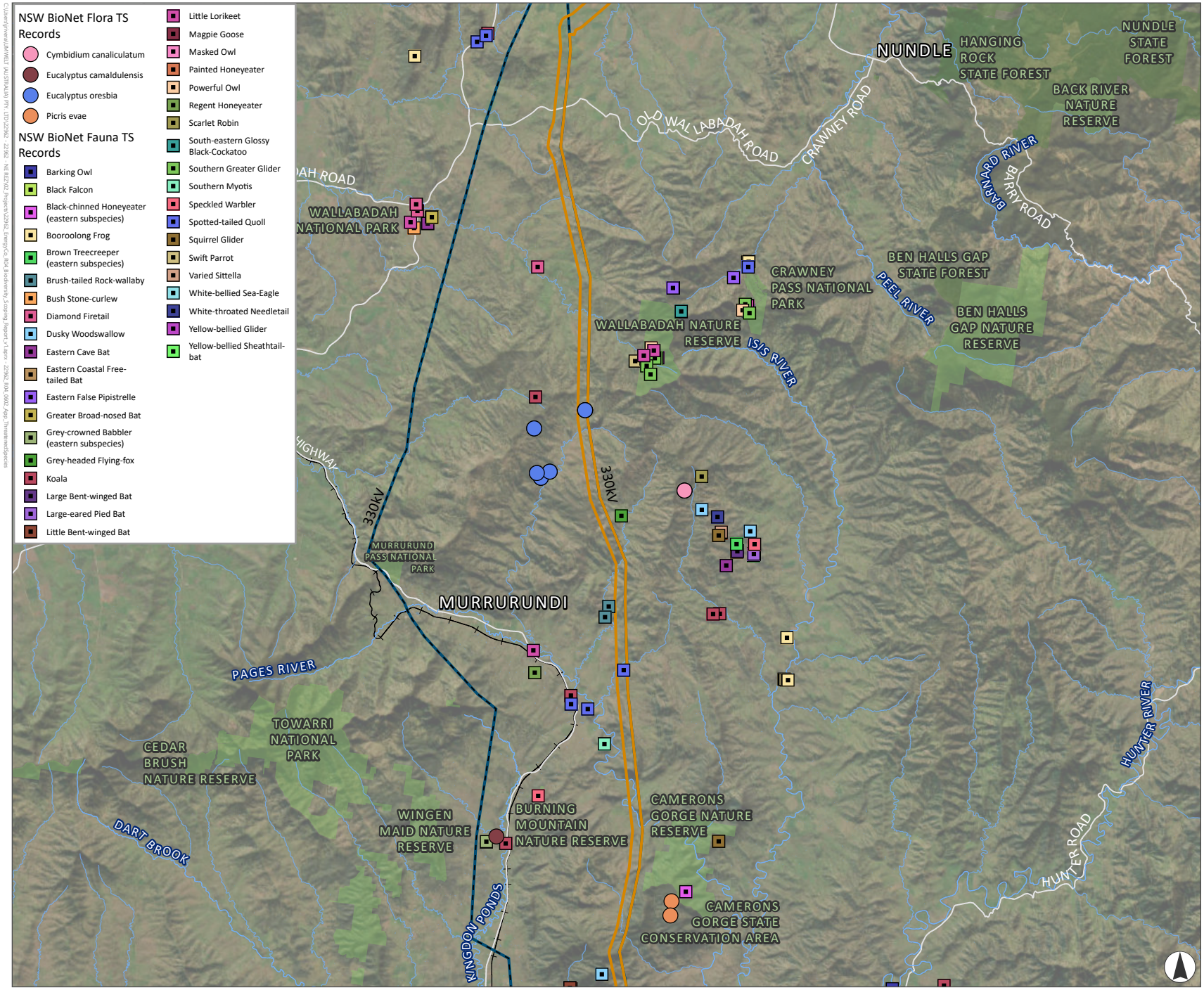


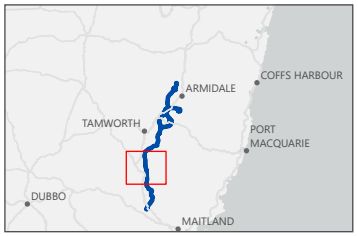
Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

FIGURE 6-2-B

Threatened Species mapped in the Study Area

Legend

- Preferred Study Corridor
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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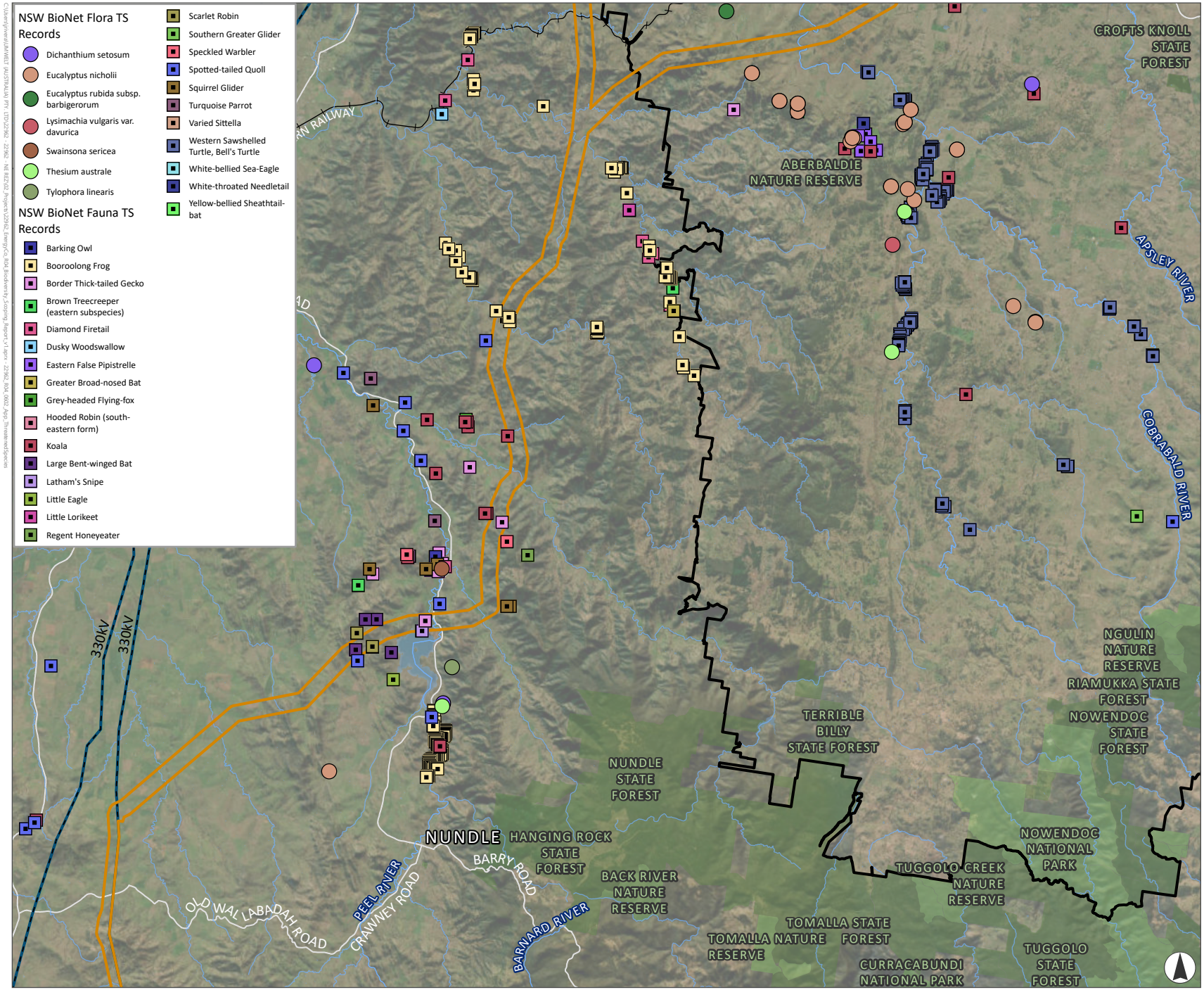
Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

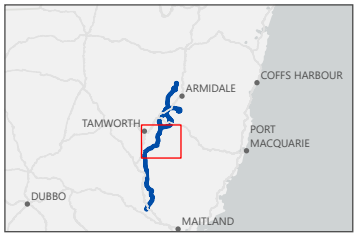
FIGURE 6-2-C

Threatened Species mapped in the Study Area



Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

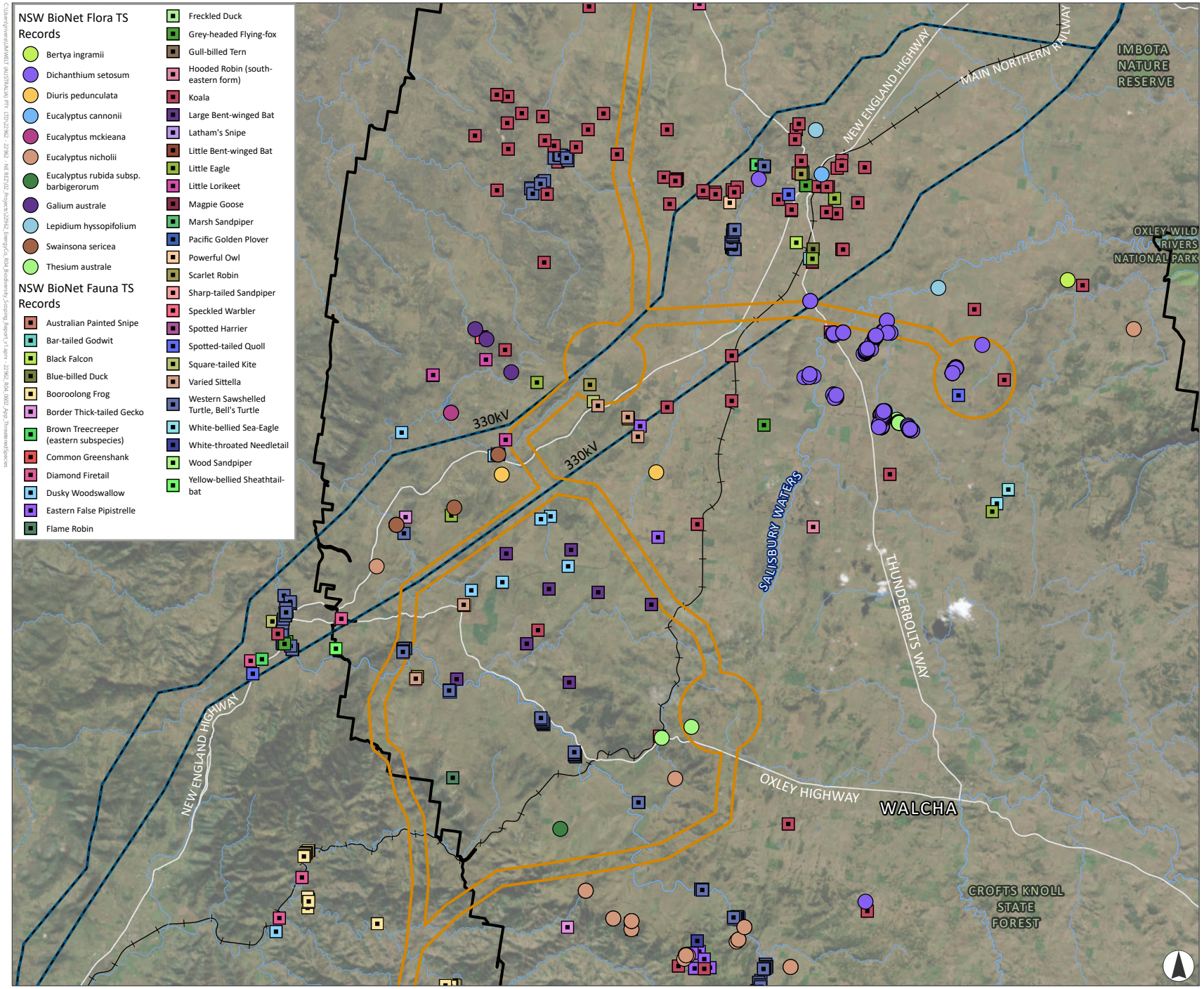
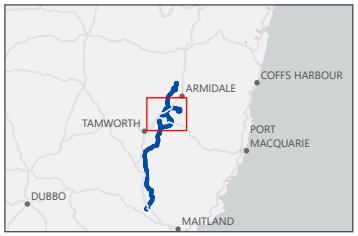


FIGURE 6-2-D

Threatened Species mapped in the Study Area

Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

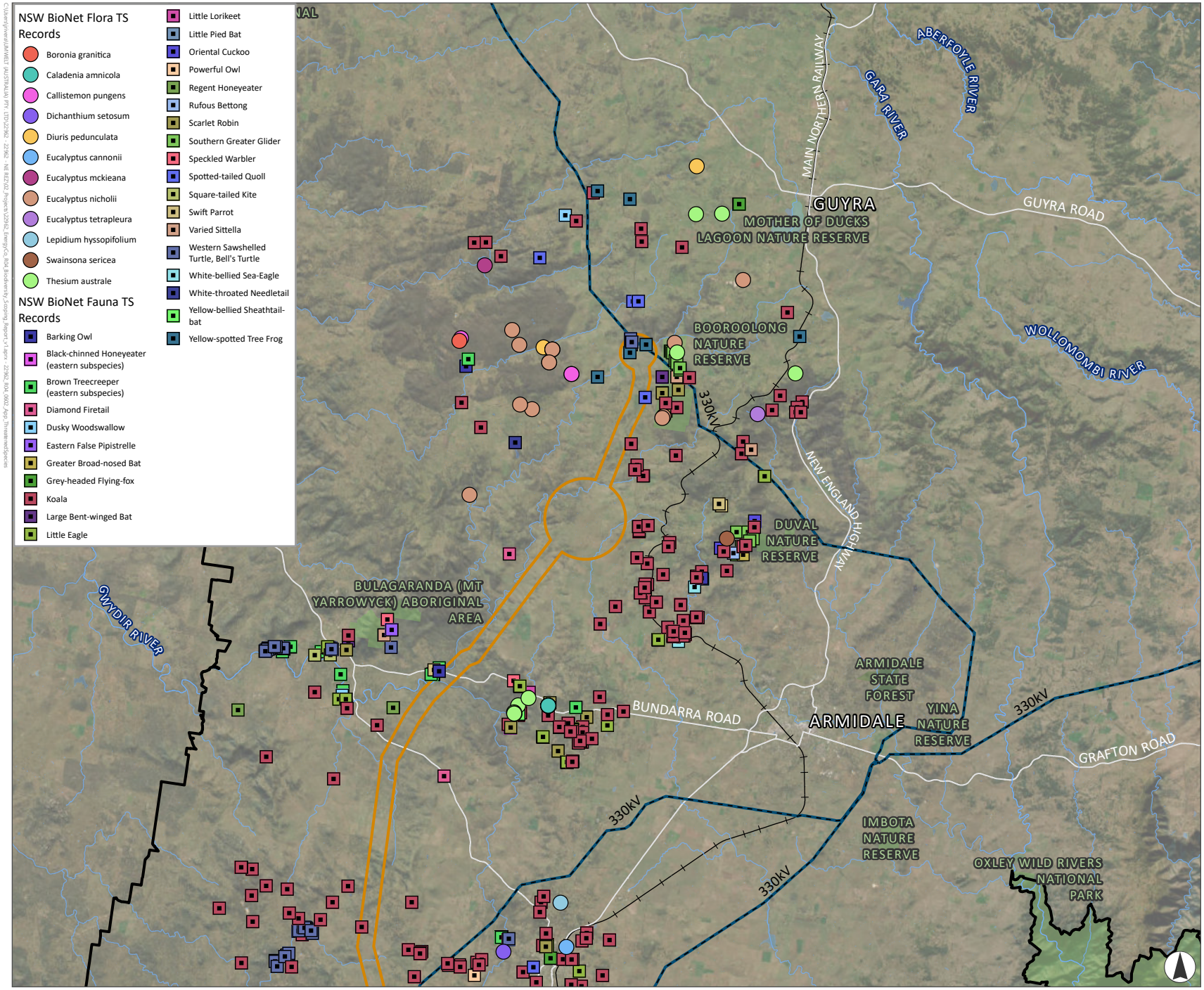
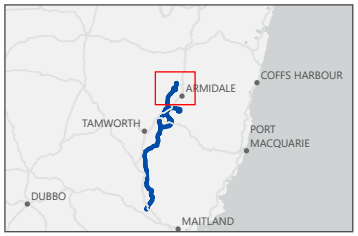


FIGURE 6-2-E

Threatened Species mapped in the Study Area

Legend

- Preferred Study Corridor
- Renewable Energy Zone
- Major Roads
- Railway
- Existing Transmission Line
- Watercourses
- Waterbody
- NPWS Reserve



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Kilometres

Scale 1:329,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2023), State of NSW and Department of Planning and Environment (2023)

Migratory species

The NSW DCCEEW has mapped important shorebird habitat for migratory species (BAM-C; DCCEEW 2023). None of this habitat is within 10 km of the Preferred Study Corridor. The DCCEEW (Commonwealth) Protected Matters Search Tool (PMST) search has predicted the potential occurrence of 14 migratory species, these are identified in Appendix B. Of these, one migratory species has been recorded during field surveys undertaken to date, being the Rufous fantail (*Rhipidura rufifrons*).

Wetlands of national and international importance

Five wetlands of international importance were identified in the PMST search results and these are documented in Table 6-1. These wetlands are situated between 50 km to 1200 km downstream from the Project, and considering that nature and location of the Project, it is not considered to directly or indirectly impact any of these wetlands.

Table 6-1 Predicted wetlands of international importance

Ramsar site name	Proximity to Project
Gwydir Wetlands: Gingham and Lower Gwydir (Big Leather) Watercourses	200–300 km upstream from Ramsar site
Riverland	900–1,000 km upstream from Ramsar site
Banrock Station Wetland Complex	1,000–1,100 km upstream from Ramsar site
The Coorong, and Lakes Alexandrina and Albert Wetland	1,100–1,200 km upstream from Ramsar site
Hunter Estuary Wetlands	50–100 km upstream from Ramsar site

Threatened fish and key fish habitat

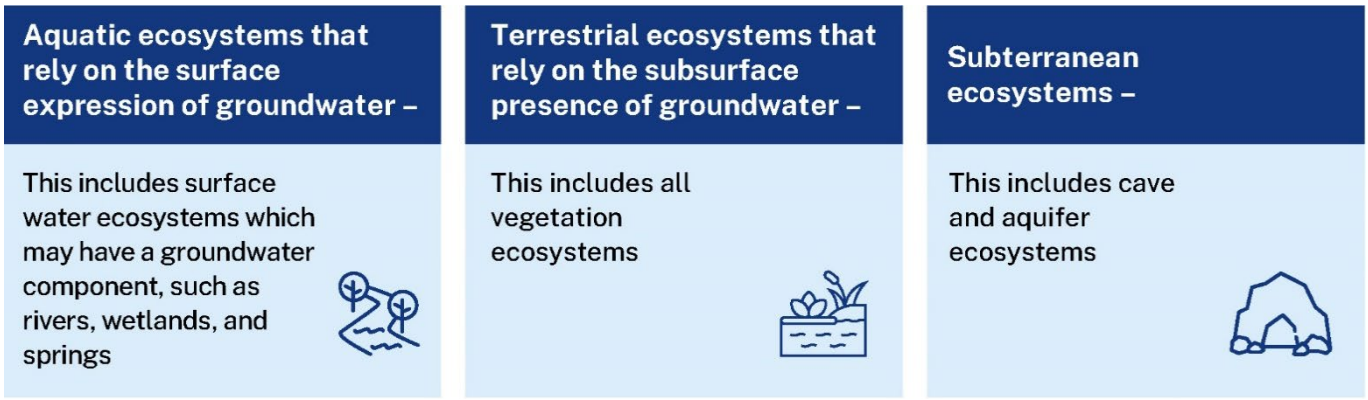
Aquatic habitats within the Preferred Study Corridor have been identified through desktop assessments.

There are a number of waterways that intersect the Preferred Study Corridor, some of which have been identified in Fisheries Spatial Data Portal (DPI 2023) as areas of threatened aquatic species or sensitive habitats including groundwater dependant ecosystems (GDEs). In addition, the PMST results identified two fish species that have the potential to occur within 10 km of the Preferred Study Corridor, *Bidyanus bidyanus* (Silver Perch, Bidyan), and *Maccullochella peelii* (Murray Cod).

Groundwater dependent ecosystems

GDEs rely on the presence of groundwater to function and sustain resident assemblages of species, populations, and ecological communities. The level of groundwater dependence of vegetation communities in the Preferred Study Corridor has been identified using the GDE Atlas (BoM 2017) and the Risk assessment guidelines for GDE (Serov et al. 2012).

The GDE Atlas delineates and provides information about three types of GDEs (BoM 2017):



Within the aquatic and terrestrial ecosystem type, an area of vegetation can be classified as either a high potential, moderate potential or low potential GDE. According to the GDEs Atlas, the Preferred Study Corridor contains areas that have been mapped as high, moderate or low potential for containing both aquatic and terrestrial GDEs and GDEs will therefore be subject to further assessment in the EIS.

Biodiversity Offset Areas

As noted in Section 6.1.6.1, parts of several proposed or established mining biodiversity offset areas (biodiversity stewardship agreement / conservation agreements) are located within the Preferred Study Corridor. In each case the Preferred Study Corridor intersects the edge of the biodiversity offset area with further corridor and design refinement aimed at avoiding or minimising impact to these areas where practicable.

The Preferred Study Corridor also intersects a wildlife refuge associated with WaterNSW land at Lake Glenbawn and a proposed biodiversity offset area associated with WaterNSW land at Chaffey Dam. These areas will be further considered in the corridor and design refinement as part of the EIS.

6.1.1.2 Potential impacts

Minimising impacts to biodiversity is one of the key planning principles which has guided the route selection and refinement process for the Project (refer to Section 1.4.3). The development and refinement of the Preferred Study Corridor has sought to avoid and minimise impacts on important biodiversity values where practicable.

Further avoidance and minimisation will be implemented as part of continued design development for the Project where practicable, informed by the further biodiversity surveys to be completed. It is also noted that there is a degree of flexibility for the micro-siting of transmission towers and other Project infrastructure which allows for ongoing avoidance of impacts as part of the implementation of the Project. The Project, however, traverses nearly 400 km and it will therefore not be possible for all biodiversity values to be avoided and impacts will occur.

A number of threatened flora and fauna species, TECs, migratory species, important habitat values and sensitive biodiversity environments, as documented above, could potentially be impacted by the Project. The EIS will assess direct and indirect biodiversity impacts relating to the construction and operation of the Project.

Residual and unavoidable biodiversity impacts will be offset in accordance with the NSW Biodiversity Offset Scheme (BOS). The BOS provides three main options for proponents to retire their biodiversity credit obligations:

- Establish a Biodiversity Stewardship Site with “like for like” biodiversity credits
- Purchase “like for like” credits from the biodiversity credit market
- Payment into the Biodiversity Conservation Fund.

6.1.1.3 Proposed further assessments

The EIS will include a detailed assessment of biodiversity impacts as a result of the Project. This assessment will be documented in a Biodiversity Development Assessment Report (BDAR) which provides:

- an assessment of the direct and indirect biodiversity impacts of the Project, in accordance with the requirements of the NSW BC Act and BAM 2020
- an assessment of the impacts of the Project on aquatic threatened species, populations or ecological communities listed under the *Fisheries Management Act 1994*
- a detailed description of the avoidance, minimisation and offset framework implemented for the Project, including detailed mitigation and management measures and a strategic biodiversity offset strategy that aims to ensure that the Project delivers good biodiversity and conservation outcomes for the region.

6.1.2 Aboriginal heritage

EnergyCo is committed to meaningful and genuine consultation and engagement with First Nations people and communities. EnergyCo will work closely with First Nations people and communities to identify and help secure the economic, community and environmental opportunities the Roadmap will enable for these communities, in accordance with EnergyCo's First Nations Guidelines (EnergyCo, 2022).

Minimising impacts to cultural heritage values is one of the key planning principles which has guided the route selection and refinement process for the Project (refer to Section 1.4.3). As a result of this refinement process, the Preferred Study Corridor avoids declared Aboriginal places and Aboriginal areas and minimises, where practicable, impacts to recorded Aboriginal sites.

6.1.2.1 Traditional Country

The Preferred Study Corridor intersects with five Local Aboriginal Land Councils (LALCs) (Wanaruah, Nungaroo, Tamworth, Amaroo and Armidale) and several First Nations groups have connection to the region and that the area the Project traverses holds cultural values. Based on traditional language group boundaries established by Tindale (1974) and the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS), the Project intersects with Wonnarua, Geawegal, Kamilaroi/Gomeroi, Biripi, Dainggatti and Anaiwan/Nganyaywana) language groups.

Initial Aboriginal community consultation as part of the Registration of Interest process to date indicates that Registered Aboriginal Parties (RAPs) are primarily from the following groups, noting these groups may change as the Project evolves:

- Anaiwan (Anēwan, Anaywan, Nganyaywana) — around the New England region.
- Gamilaroi (Kamilaroi, Gomeroi, Gamilaraay) — around the Tamworth region.
- Wonnarua (Wanarruwa) — around the Upper Hunter region.

6.1.2.2 Existing values

A review of relevant public databases and literature was undertaken to identify known Aboriginal sites and Native Title Listings relevant to the identification of known Aboriginal Cultural Heritage (and listings) across the Preferred Study Corridor.

The Preferred Study Corridor is not subject to any current Native Title Determinations, nor does the NSW Heritage Inventory have listings related to Aboriginal heritage in association with the Corridor (refer to Table 6-2). A search and analysis of the Aboriginal Heritage Information Management System (AHIMS), the primary database of registered Aboriginal sites across NSW, is addressed separately in the section below.

Table 6-2 Search of Aboriginal heritage database

Database	Relevant Listings and Implications
NSW Heritage Inventory, including the listings under Schedule 5 of the Muswellbrook LEP 2009, Upper Hunter LEP 2013, Liverpool Plains LEP 2011, Tamworth Regional LEP 2010, Walcha Shire LEP 2012, Uralla LEP 2012 and Armidale LEP 2012.	None.
National Native Title Tribunal	No Native Title Determinations. There is an active Native Title claim overlapping large portions of the Armidale/ Tamworth Area: **NC2011/006 – Gomeroi People.** This claim has not yet been determined. Gomeroi People are a RAP for the Project and will be consulted as detailed below.
AHIMS	44 within the Preferred Study Corridor

Searches of the AHIMS database were undertaken on 2 February 2024 and 28 March 2024 to identify previously recorded Aboriginal heritage sites within the Preferred Study Corridor. The search area included a 4 km wide search area around proposed transmission lines, centred on the Preferred Study Corridor (2 February 2024). A wider search was established around energy hubs (9 km diameter, on 28 March 2024). The AHIMS searches indicate that a total of 44 Aboriginal sites have been registered within the Preferred Study Corridor. These comprise of 38 artefact sites (three of which have been previously destroyed), three culturally modified trees, two Potential Archaeological Deposits (PADs), and one habitation structure. These sites are clustered around areas where previous archaeological investigations have taken place, including around Boorolong Creek, Chaffey Dam, and Lake Liddel.

6.1.2.3 Potential impacts and proposed further assessment

The previously recorded sites described above are concentrated in areas where previous archaeological assessments have been undertaken. Areas where few or no Aboriginal sites were identified in the AHIMS database does not necessarily correlate with a low frequency of sites being present, but rather is likely to represent the low number of archaeological surveys that have been completed in these areas. It is therefore expected that additional sites and values will be present within the Preferred Study Corridor.

The Preferred Study Corridor generally provides a degree of flexibility for the micro-siting of towers and other Project infrastructure to avoid or minimise impacts to Aboriginal sites. However, Project-related vegetation clearing and earthwork may result in impacts.

A detailed Aboriginal Cultural Heritage Assessment (ACHA) will be carried out for the Project generally in accordance with the following guidelines[3]:

- Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011).

[3] As noted in the DPHI Standard SEARs for CSSI, the guidelines listed are the current guidelines that may be applicable to a SSI project, however it is the responsibility of the Proponent to identify and justify which guidelines have been applied to a specific project.

- Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a).
- Code of Practice for Archaeological Investigation of Aboriginal Objects in New South Wales (the Code of Practice) (DECCW, 2010b).
- Skeletal Remains: Guidelines for Management of Human Remains (DPE, 2023c).

A cultural values assessment will be undertaken with regard to the outcomes of engagement with First Nations people, formal RAP consultation and archaeological fieldwork. The assessment will include:

A review of existing anthropological and ethno-biological literature in the region to provide context and allow verification of oral history

On-Country meetings with key Aboriginal knowledge holders (identified by the community through the consultation process) to capture oral history and areas/features of traditional/contemporary value

The ACHA will be done in consultation with the registered Aboriginal parties (RAPs) for the Project to identify and assess potential impacts. As of 22 July 2024, there are 81 Aboriginal parties registered to be involved in the ACHA process for the Project. Where impacts cannot be avoided, appropriate management strategies will be developed in consultation with RAPs, with varying levels of mitigation based of the nature of the potential impact, and the archaeological and Aboriginal cultural heritage significance of impacted sites/areas of potential.

6.1.3 Non-Aboriginal heritage

The Preferred Study Corridor has been developed and progressively refined to avoid State listed heritage items around Armidale and in the north east of the REZ and various local listed heritage items around Guyra, Walcha, Gostwyck and Hillgrove (refer to Section 1.4.3).

6.1.3.1 Existing environment

To identify any sites of potential non-Aboriginal heritage value that may have potential relevance to the Project, searches were carried out in the following heritage registers:

- World Heritage List
- the National Heritage List
- the Commonwealth Heritage List
- the State Heritage Register (SHR)
- heritage schedules from LEPs that apply to the LGAs in which the Project intersects.

The search area included a 4 km wide search area around proposed transmission lines, centred on the Preferred Study Corridor. A wider search was established around energy hubs (8 km diameter).

No items registered on the World Heritage List, National Heritage List or Commonwealth Heritage List were identified within the search area.

No State or local listed heritage items were identified within the Preferred Study Corridor. However, two State and 12 local listed heritage items were identified within the wider search area adjacent to the Preferred Study Corridor. Two local listed heritage items and one State listed heritage item were identified within the search area established around the energy hubs.

The State listed heritage items identified in the search area for the Preferred Study Corridor are detailed in Table 6-3 and shown in Figure 6-3. These heritage items are located south west of Uralla (adjacent to the proposed transmission lines connecting the Central and East Hubs) and relate to the history of Captain Thunderbolt as a famous bushranger.

Table 6-3 State heritage items in proximity to the Preferred Study Corridor

Item Name	Approximate Distance from Preferred Study Corridor (km)	Listing ID
The Captain Thunderbolt Sites – Blanch's Inn (former)	0.7	01889
The Captain Thunderbolt Sites – Thunderbolt's Rock	1.1	01889

A range of local listed heritage items were identified in the search area for the Preferred Study Corridor, which are detailed in Table 6-4 and shown in Figure 6-3. The majority of these relate to homesteads or residences and associated structures (such as woolsheds and barns), however, community facilities (e.g. Gostwyck Memorial Chapel & Precinct) and rail infrastructure (Walcha Road Railway Station and yard group) of local heritage significance are also located in proximity to the Preferred Study Corridor.

Table 6-4 Local heritage items in proximity to the Preferred Study Corridor

Item Name	Approximate Distance from Preferred Study Corridor (km)	Listing ID and Instrument
Bickham Homestead group, including woolshed and shearer's quarters	0.3	I208 Upper Hunter LEP 2013
Salisbury Court	0.6	I14 Uralla LEP 2012
Rosevale (Roseville)	0.7	I83 Upper Hunter LEP 2013
Bellevue and Barn	1.2	I64 Upper Hunter LEP 2013
Gostwyck Memorial Chapel & Precinct	1.2	I10 Uralla LEP 2012
Homestead and outbuildings, "Boorolong"	1.2	I245 Armidale Regional LEP 2012
Walcha Road Railway Station and yard group	1.2	I015 Walcha LEP 2012
Deeargee Woolshed	1.4	I11 Uralla LEP 2012
Residence	1.4	I537 Tamworth Regional LEP 2010

Item Name	Approximate Distance from Preferred Study Corridor (km)	Listing ID and Instrument
Bloomfield Homestead	1.4	I207 Upper Hunter LEP 2013
Residence	1.8	I538 Tamworth Regional LEP 2010
St Marys Anglican Church	1.9	I536 Tamworth Regional LEP 2010

There are two heritage items within the wider study area for the energy hubs, being the Walcha Railway Station' and 'Boorolong', as outlined in Table 6-5. 'Boorolong' is a homestead with outbuildings.

Table 6-5 Heritage items in proximity to the energy hubs

Item Name	Approximate Distance from Energy Hubs (km)	Listing ID and Instrument
Walcha Railway Station	4.1	Walcha LEP 2012 (ID I015) SHR (ID 01281)
Boorolong	2.9	Armidale Regional LEP 2012

In addition to listed heritage items outlined above, there is potential for as yet unlisted or unidentified buildings, structures, landscape elements and other features of potential heritage significance to be present within or near the Preferred Study Corridor. Any such items/features will be investigated and assessed as part of the Historical Heritage Assessment that will be prepared as part of the EIS (refer to Section 6.1.3.2 below).

6.1.3.2 Potential impacts and proposed further assessment

No direct impacts to State or local listed heritage items are anticipated as all items identified above are located outside the Preferred Study Corridor. However, potential indirect impacts to listed heritage items associated with any alteration of views or vibration caused by construction plant and equipment will be assessed in the EIS.

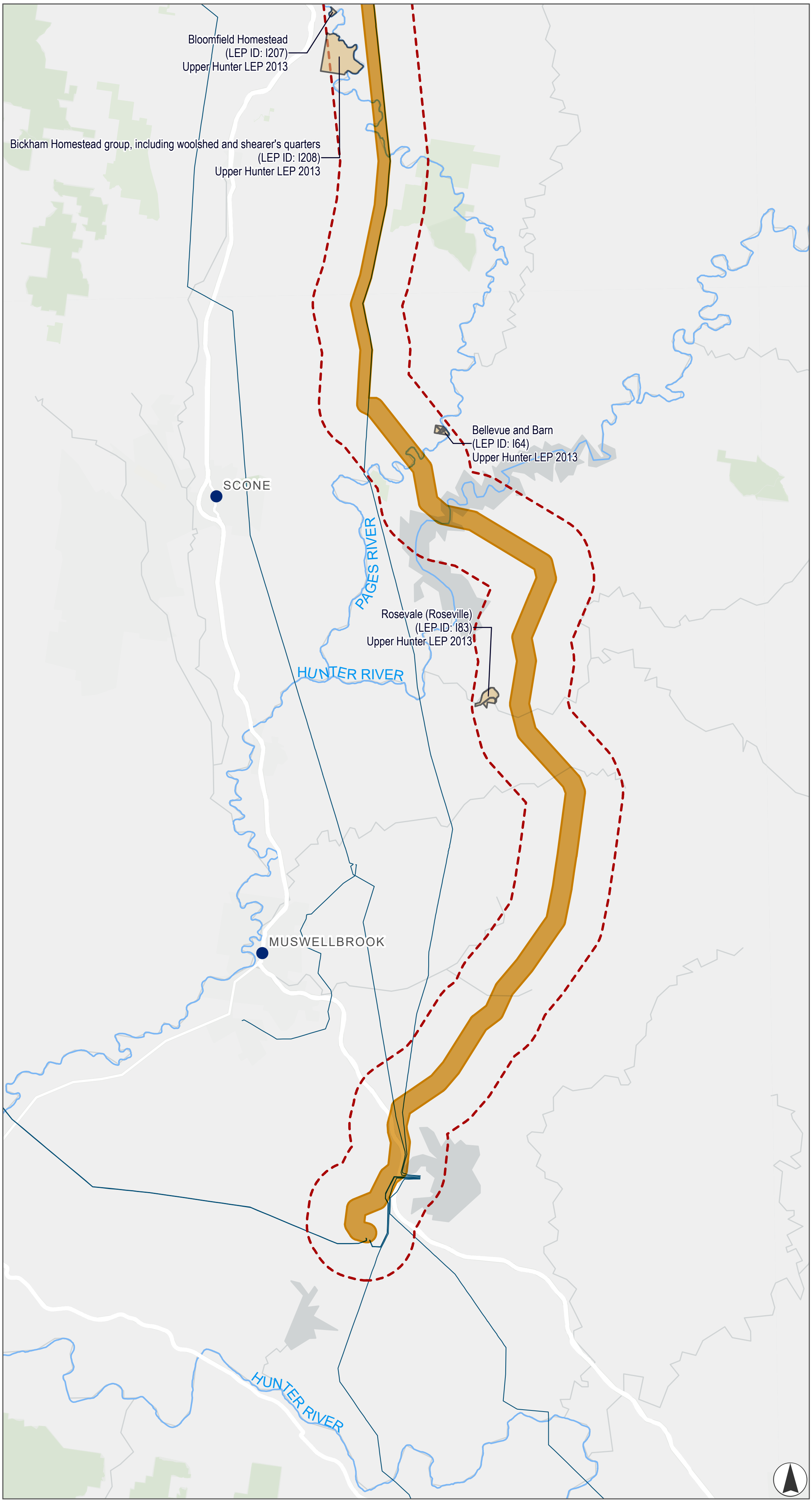
As noted above, there is potential for unrecorded buildings, structures or other features of non-Aboriginal heritage significance to occur within or near the Preferred Study Corridor. Potential impacts to unlisted/ as yet unidentified heritage values will also require further assessment as part of the Historical Heritage Assessment prepared as part of the EIS.

The detailed Historical Heritage Assessment prepared in support of the EIS will be prepared with consideration of the following guidelines:

- Burra Charter 2013 (The Australia ICOMOS Charter for Places of Cultural Significance).
- the NSW Heritage Manual (OEH) including the Guidelines for Preparing a Statement of Heritage Impact and Assessing Heritage Significance guidelines.
- Guidelines for preparing a statement of heritage impact (DPE, 2023b).

FIGURE 6-3-A

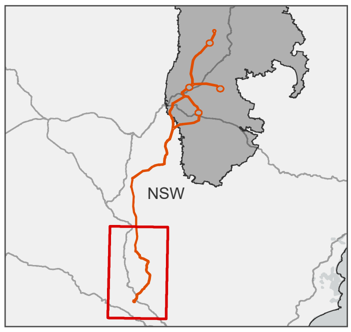
Non-Aboriginal heritage



Legend

- Locally Listed Heritage Item
- Seach Corridor 4km
- Dual 500kV Transmission Corridor
- Town
- NPWS Protected Area
- Existing high voltage lines
- Major Roads
- Watercourse

*This figure does not include World Heritage Properties, Commonwealth Heritage Places, or other in the mapping or legend as these have not been identified as occurring within the search corridor.



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Kilometres

Scale 1:300,000 at A4
GDA2020 MGA Zone 56

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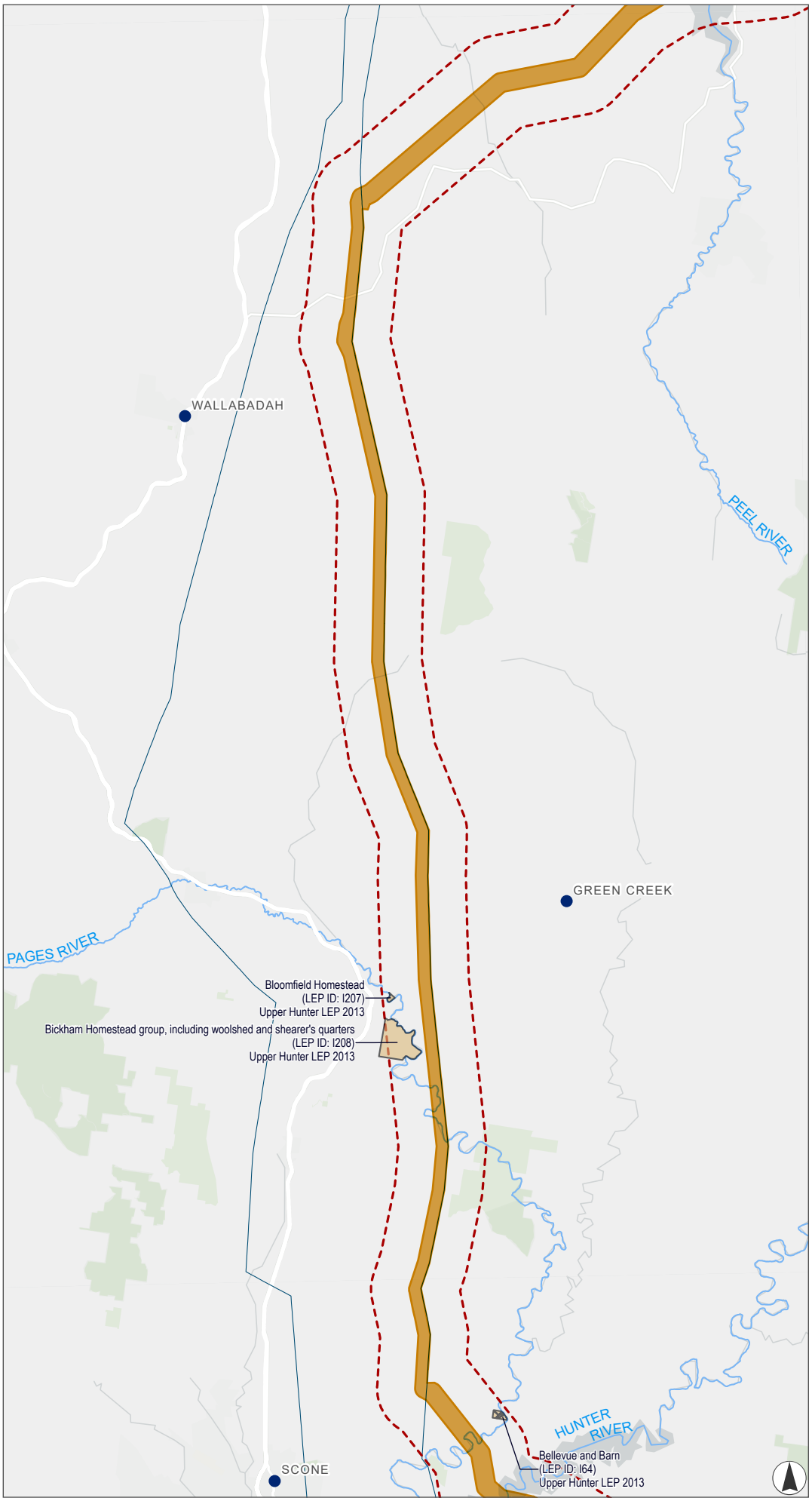
Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 6-3-B

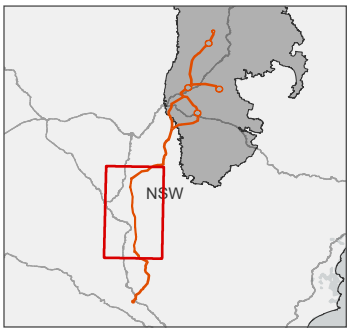
Non-Aboriginal heritage



Legend

- Locally Listed Heritage Item
- Seach Corridor 4km
- Dual 500kV Transmission Corridor
- Town
- NPWS Protected Area
- Existing high voltage lines
- Major Roads
- Watercourse

*This figure does not include World Heritage Properties, Commonwealth Heritage Places, or other in the mapping or legend as these have not been identified as occurring within the search corridor.



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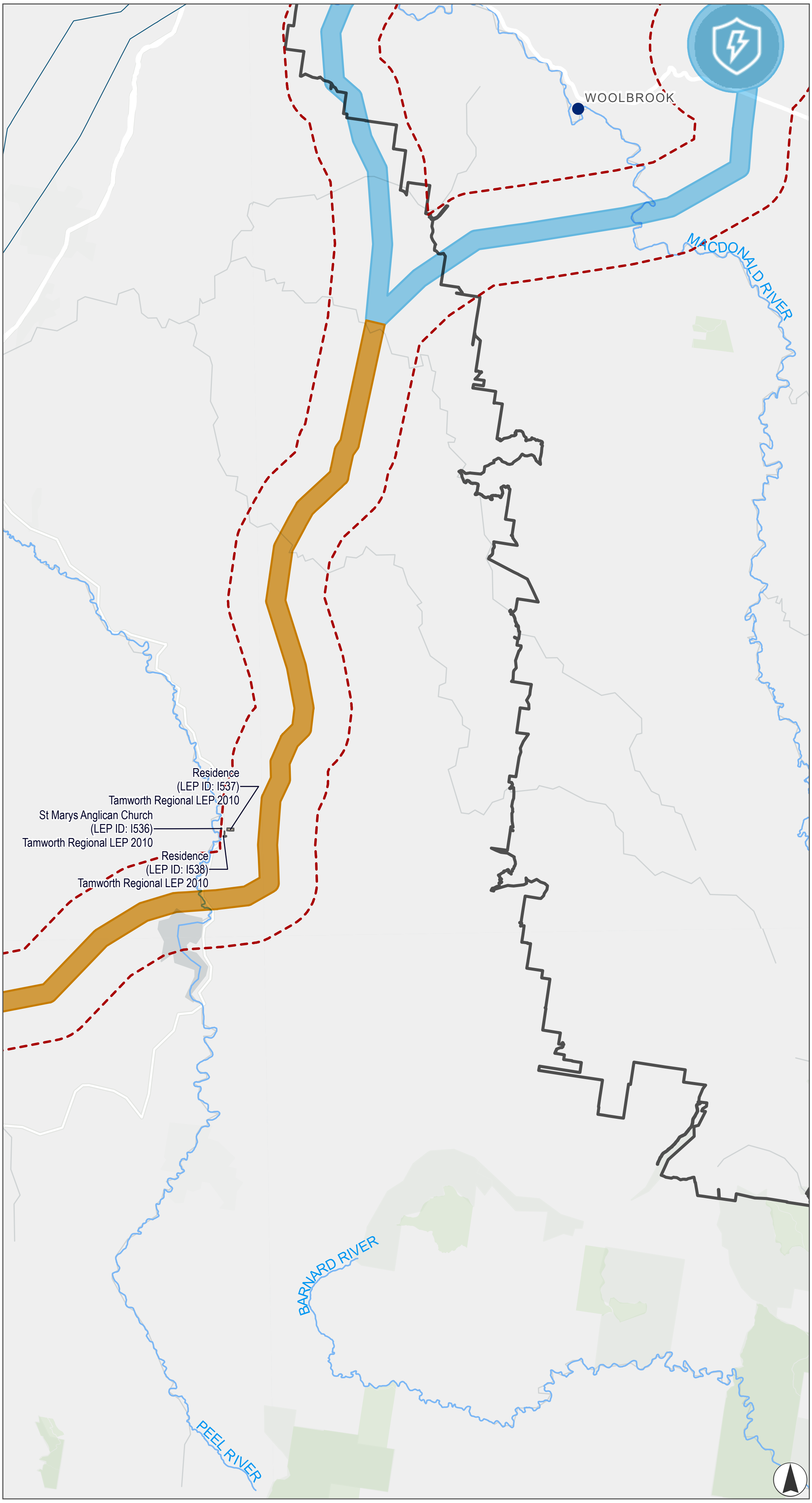
Kilometres

Scale 1:300,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 6-3-C

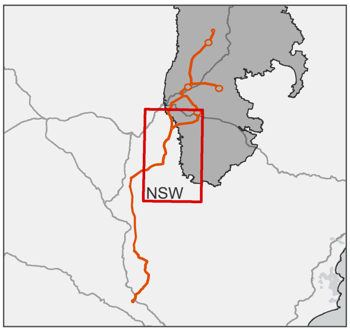
Non-Aboriginal heritage



Legend

- Locally Listed Heritage Item
- Seach Corridor 4km
- 500kV/330kV Hub
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Existing high voltage lines
- Major Roads
- Watercourse

*This figure does not include World Heritage Properties, Commonwealth Heritage Places, or other in the mapping or legend as these have not been identified as occurring within the search corridor.



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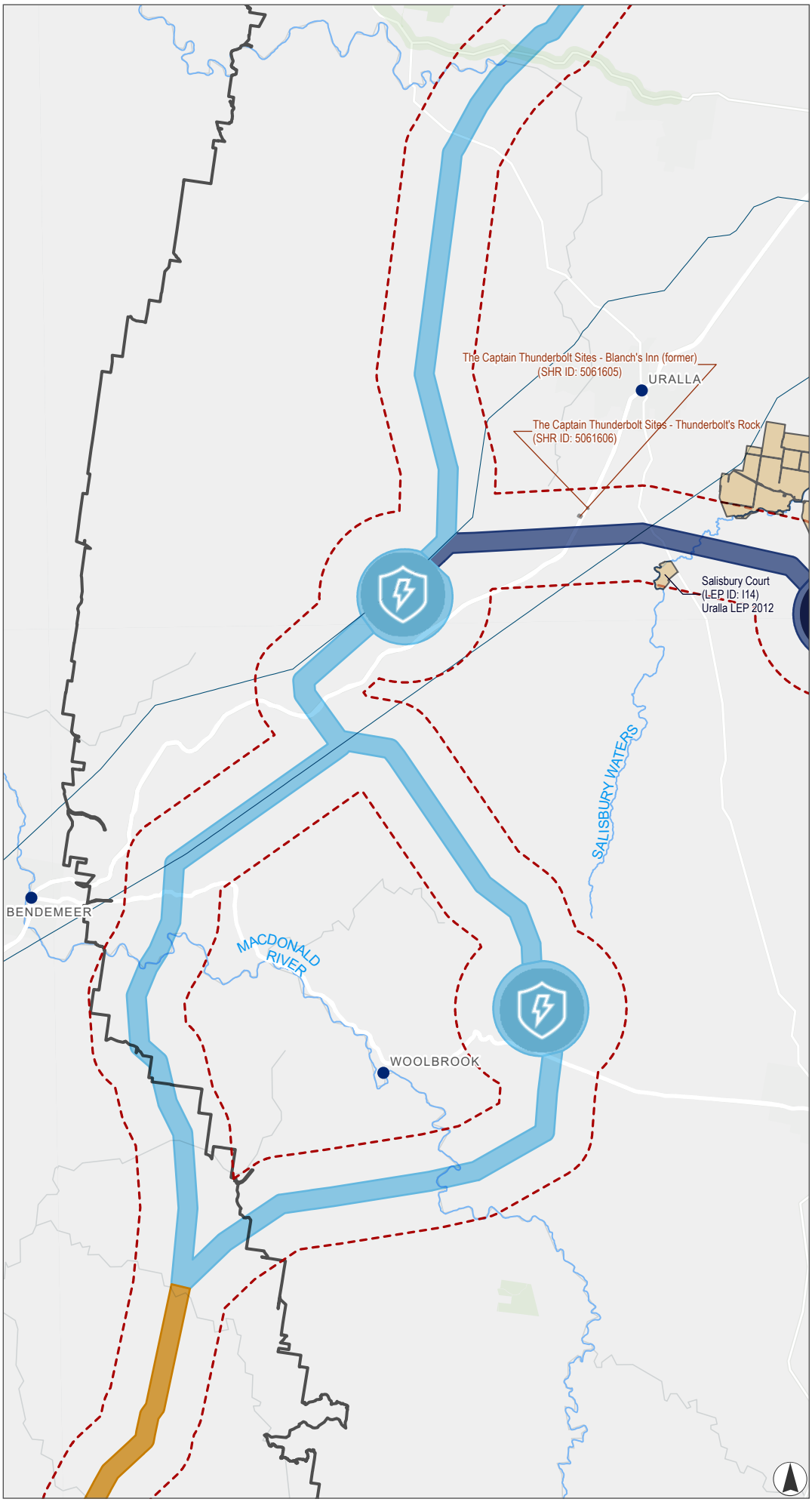
Kilometres

Scale 1:300,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 6-3-D

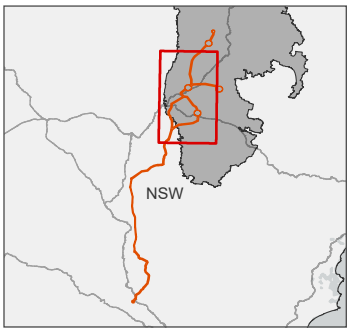
Non-Aboriginal heritage



Legend

- State Listed Heritage Item
- Locally Listed Heritage Item
- Seach Corridor 4km
- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Existing high voltage lines
- Major Roads
- Watercourse

*This figure does not include World Heritage Properties, Commonwealth Heritage Places, or other in the mapping or legend as these have not been identified as occurring within the search corridor.



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Kilometres

Scale 1:300,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

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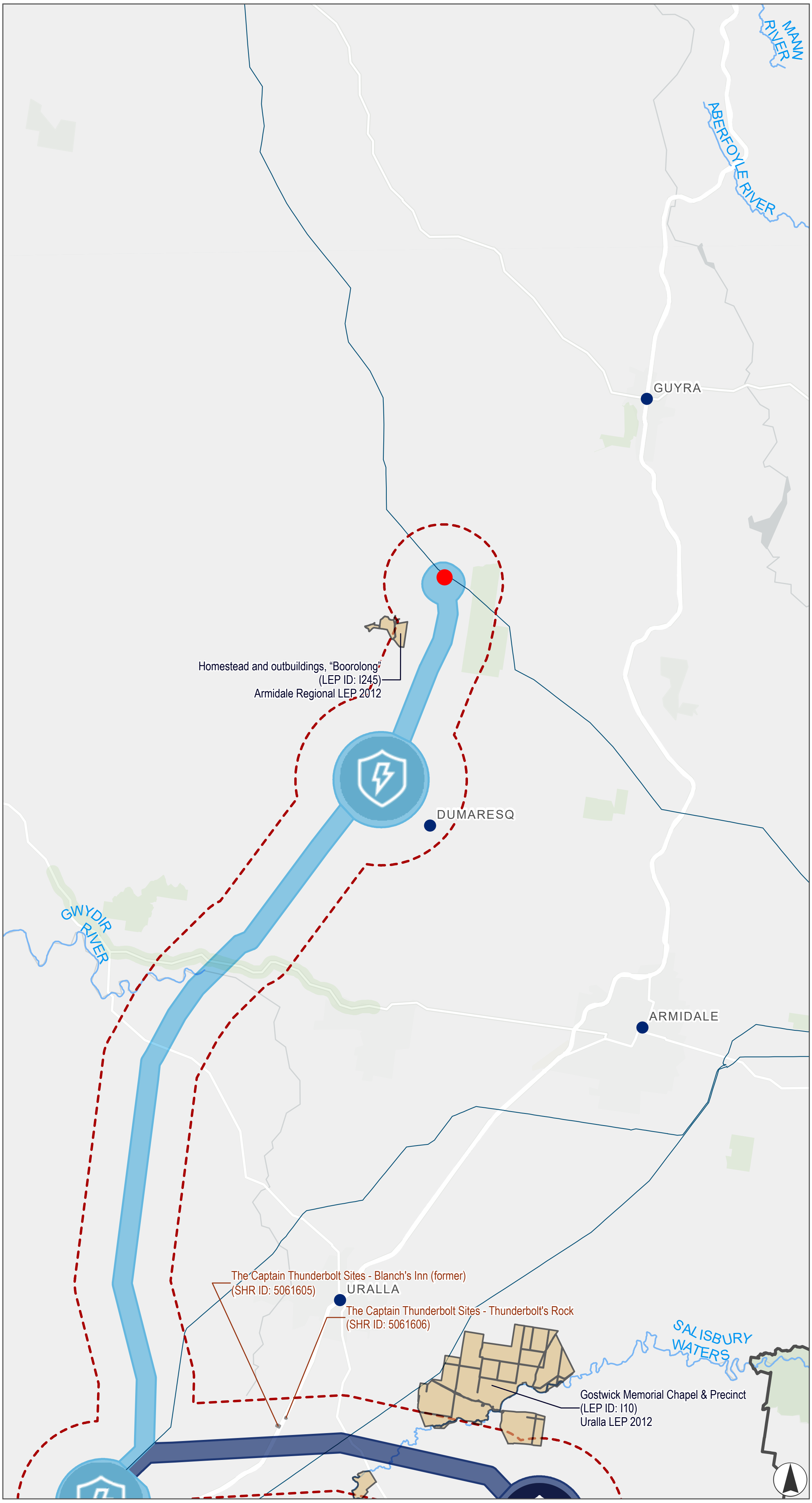
FIGURE 6-3-E

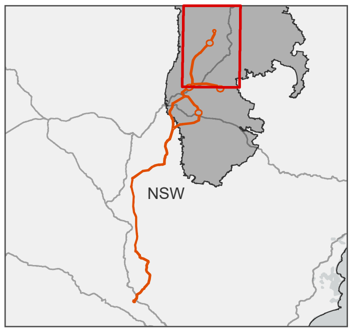
Non-Aboriginal heritage



Legend

- State Listed Heritage Item
- Locally Listed Heritage Item
- Seach Corridor 4km
- Northern Connection
- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Existing high voltage lines
- Major Roads
- Watercourse

*This figure does not include World Heritage Properties, Commonwealth Heritage Places, or other in the mapping or legend as these have not been identified as occurring within the search corridor.



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Kilometres

Scale 1:300,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

6.1.4 Social

Social impacts have been initially identified using the outcomes from community engagement and the social research and community profiling activities conducted as part of the preliminary Social Impact Assessment (SIA) process. EnergyCo recognises the issues, impacts and opportunities that have been raised by the community to date and is working to prioritise the development of a range of initiatives to minimise the impacts and enhance the social benefits. These will consider and seek to address the regional-wide and cumulative social impacts that may be associated with the Project. These considerations will inform the development of appropriate strategies which will be outlined as part of the Project's SIA.

The SIA process for the Project started in early 2023 and is being carried out in line with the SIA Guideline for State Significant Projects (DPE, 2023a). Social matters have been grouped based on the categories presented in Figure 6-4 below, aligning with the SIA Guideline. This section provides a summary of the preliminary SIA completed to date which includes an overview of the social baseline profile and the scoped social impacts and opportunities. The Social Impact Scoping Report is provided in Appendix C.

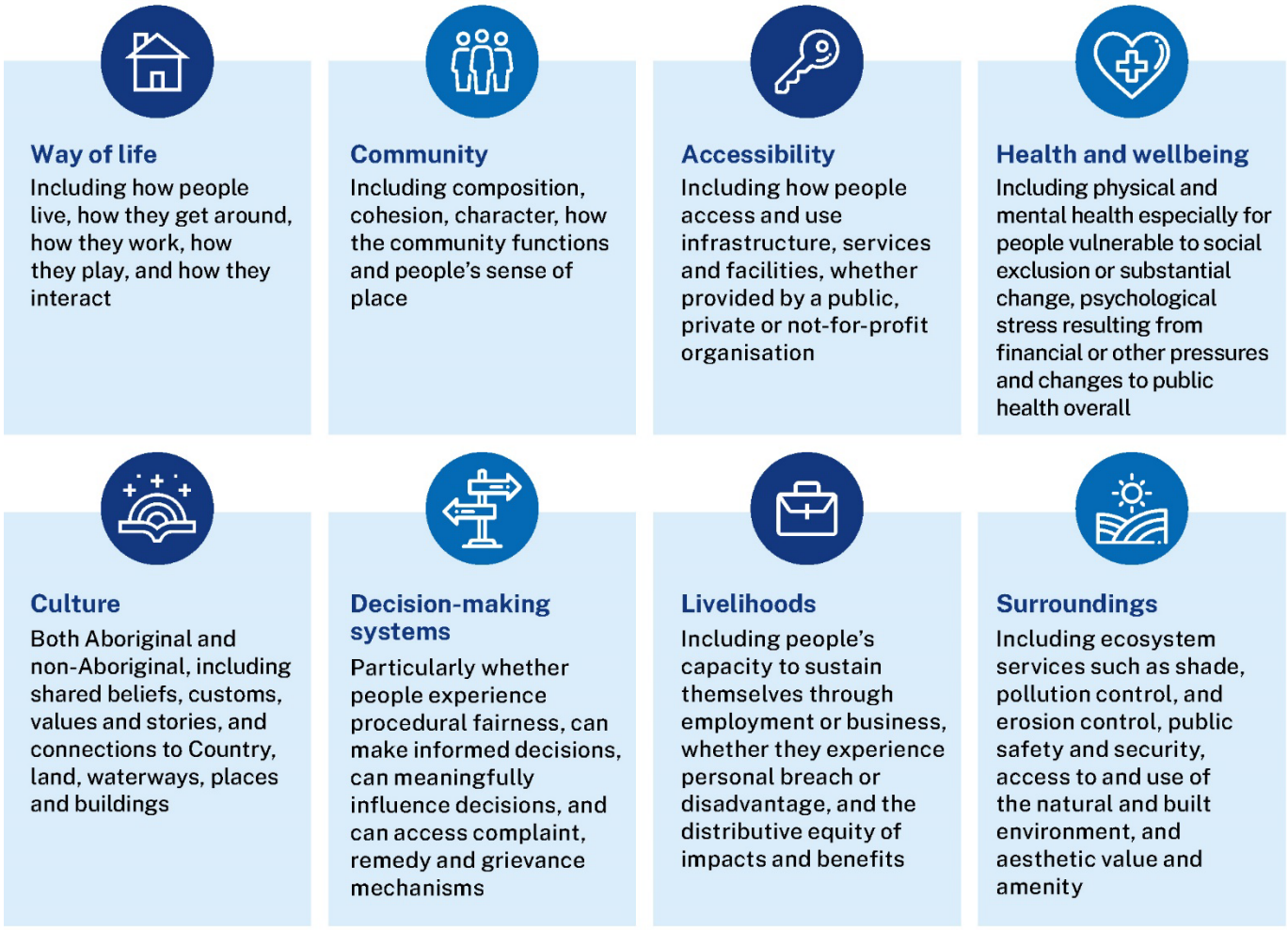

Figure 6-4 SIA categories (DPE, 2023a)

6.1.4.1 Existing environment

The social locality of the Preferred Study Corridor traverses large sections of the Hunter Valley Region and New England and North West Region, partially or completely passing through the Local Government Areas of Muswellbrook, Upper Hunter, Liverpool Plains, Tamworth, Walcha, Uralla and

Armidale. Across the seven LGAs, a total of 36 localities are host to the Preferred Study Corridor, as shown below in Figure 6-5.

Key regional population and service centres close to the Preferred Study Corridor which are expected to support the Project are the towns of Muswellbrook, Tamworth and Armidale. It is expected that these towns could play an important role in the sourcing of the Project workforce and contractors or suppliers, accommodation, and key social infrastructure and services.

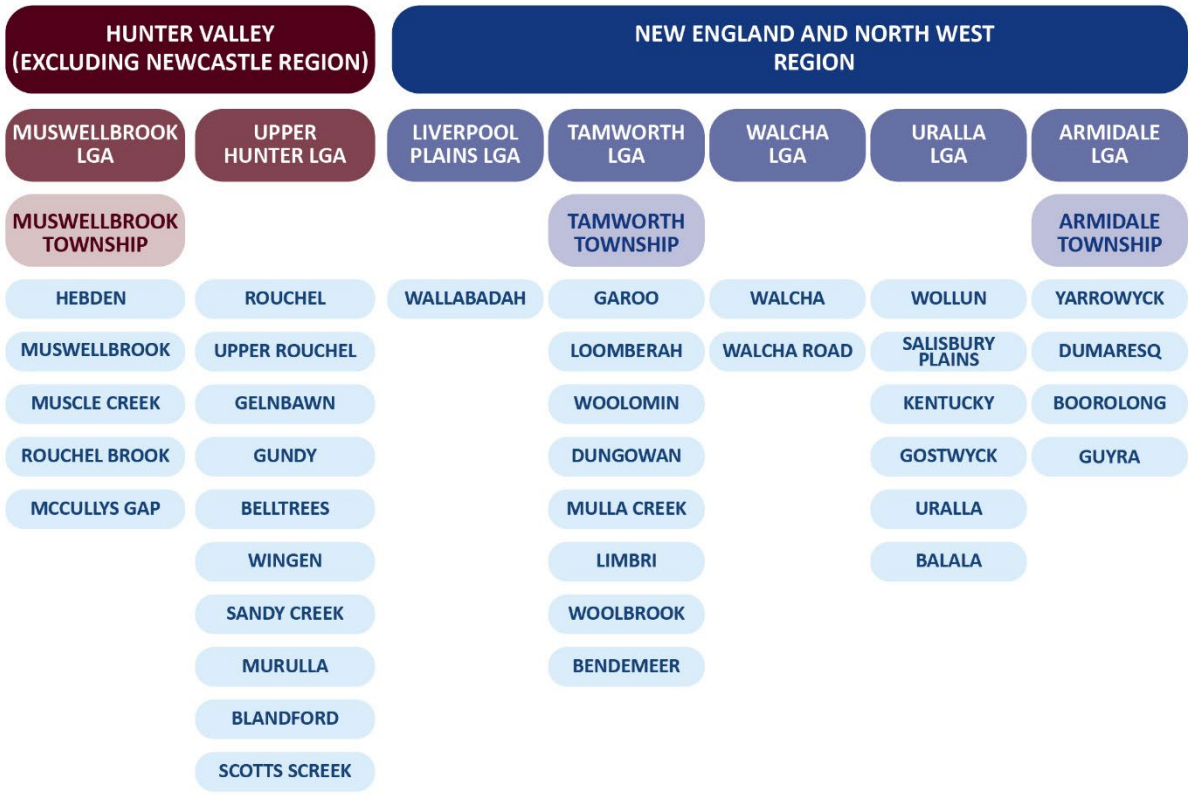

Figure 6-5 Social locality

Hunter Valley region

There are about 292,000 residents living in the Hunter Valley region (excluding Newcastle region) with key population centres being Singleton, Muswellbrook, and Scone. About 100,000 additional people are expected across the Region by 2041, representing a population increase of 35.2%. The region also has a high representation of First Nations residents (8.0%), 2.4 times the State of 3.4%.

The Hunter Valley is a diverse region, hosting a variety of natural features and land uses. Of most relevance to this Project is the Lower and Upper Hunter Valley, where competing industry needs have exacerbated land use conflict and sparked extensive discussion around regional identity, geographical indicators and values associated with rural landscapes (DPE, 2022c).

Despite 48% of the region being used for agricultural production, coal mining generates the greatest regional output and exports and highlights the industry's economic significance to the region. As of January 2024, there is historically low unemployment, high employment, and moderate participation rates across the region's economy. Residents across the region are highly engaged in the labour force, with a high portion of residents employed; with opportunities evident for residents to engage with the employment market (high job availability and low unemployment).

New England and North West region

The New England and North West region is home to approximately 185,000 people across approximately 76,000 households. Key population hubs within the region include the centres of Tamworth, Armidale, and Moree. The region has a high representation of First Nations residents, representing 11.9% of the resident population (3.5 times that of NSW).

Looking forward towards 2041, the region is expected to grow in population by 6.0% (approximately 11,000 people), well below the state average of 20.1%, and the neighbouring Hunter Valley region, with the increase in the population in the New England and North West region understood to be primarily driven by natural growth factors rather than economic development or other key drivers.

As of January 2024, there is limited unemployment, strong employment rates and high workforce participation rates across the Region. Collectively this suggests that residents across the Region are highly engaged in the labour force, there are a range of employment opportunities for residents to engage with and potential labour force shortfalls or staffing issues associated with an employee's market (i.e. high job availability and low unemployment). However, considering long term unemployment rates in the region, the current low unemployment and high labour force participation maybe a relatively new trend in the New England and North West regional economy.

The New England and North West region is defined by its quality soils, good rainfall and climate, establishing the region as an important agricultural area for the state both historically and in the present-day (DPE, 2022b). Currently, the region accounts for approximately a fifth of the state's agricultural production, focusing on beef, sheep and wool, poultry, broadacre crops, vegetables/fruits/nuts, grains, and cotton. A large proportion (80%) of the land in the region is used for agricultural production, covering an area of 80,066 km^2.

Water access and security are key issues for the region, specifically balancing the needs of existing industries (such as agriculture), emerging industries (such as renewable energy and intensive agriculture) and environmental conservation. Secure access to water is fundamental to the economic and environmental sustainability of the region and central to the future growth of the region (DPE, 2022b).

6.1.4.2 Potential impacts

Social impacts (both positive and negative) have been preliminarily identified in accordance with the categories as per the SIA Guideline. Impacts have been identified based on community engagement outcomes gathered via the Project to date together with the insights gathered from the social baseline profiling and secondary data analysis. A summary of social impacts is contained in Table 6-6 with the Scoping SIA contained in Appendix C.

Due to the large-scale nature of the Project traversing through two regions and numerous rural localities, social impacts will differ in importance or significance in the varying localities and by stakeholder group. It is also acknowledged that social impacts can occur from the time of Project commencement, as directly affected people and host communities can experience effect to their personal lives or change to their circumstances and perceptions as a result of the announcement of the Project. Appendix C provides further detail on the nuances between locality, stakeholder group and the expected timing and nature of impact.

Further, Project refinements are likely to alter the significance of social impacts and opportunities as the detailed planning and strategy development process progresses.

Potential social impacts are summarised below in Table 6-6.

Table 6-6 Summary of preliminary social impacts

Social impact category	Potential social issue or impact
Way of life 	• Changes to how people live, work and interact with their homes, land and landscapes. • Potential for nearby residents to relocate.
Community 	• Changes to community character and composition. • Changes to place attachment and sense of belonging. • Change in levels of community cohesion. • Changes to interpersonal relationships and distributive equity. • Opportunities for community development through benefit sharing investments.
Culture 	• Potential changes to connection to Country. • Potential physical effect on cultural heritage values, places, stories, sites or landscapes of Aboriginal cultural significance.
Accessibility 	• Increased pressure on social infrastructure and services, including health care and housing and accommodation. • Potential change in ability for emergency service response and recovery during natural disasters or hazards. • Changes to local roads may alter people's mobility. • Potential changes in how people use public recreation areas and natural resources. • Potential for improvements to public infrastructure and community facilities.
Health and wellbeing 	• Stress, anxiety and uncertainty about people's futures. • Perceived health effects relating to presence of EMFs.
Surroundings 	• Changes to rural landscape character may affect community values. • Changes in local amenity may cause disturbance for local residents. • Potential changes to levels of public safety.

Social impact category	Potential social issue or impact
Livelihoods 	• Opportunities for local and regional employment and economic diversification. • Potential for skills development. • Opportunities for local business development and increase in commercial activity across the region. • Potential disruption to agricultural operations. • Potential diversification of income streams. • Potential change in rural property values.
Decision making systems 	• Frustration and reduced trust in project planning and decision-making processes. • Perceived inequitable distribution of impacts between rural and urban communities, and rural communities and industry. • Concern associated with processes relating to compulsory acquisition of land and compensation payments.

6.1.4.3 Proposed further assessments

The SIA process will continue as part of the Project's planning and assessment. A detailed SIA will be included as part of the EIS and will be developed in accordance with the SIA Guideline. Targeted community and stakeholder consultation to inform the SIA will involve engagement with and input from a range of community stakeholders across the two regions and in the varied localities. Strategies to minimise, address or manage social impacts and opportunities (both positive and negative), as well as the cumulative social matters, will be considered and outlined within the SIA.

6.1.5 Visual amenity

Engagement with community stakeholders indicates that the existing landscape character and visual amenity is highly valued across the Project's geographic extent and that potential visual impacts are a key concern for these stakeholders. A detailed landscape character and visual impact assessment will be included in the EIS to assess impacts on visual amenity and identify appropriate management and mitigation measures.

6.1.5.1 Existing environment

The Preferred Study Corridor passes through a diverse landscape with a range of landscape character types, ranging from industrial lands at the southern end of the corridor, to open and gently rolling farmland, to densely vegetated areas with steep slopes and escarpments (see Figure 4-1). Elevations range between 128 m Australian Height Datum (AHD) (i.e., above mean sea level) near Muswellbrook in the south and, gradually increasing to 1,270 m AHD near Dumaresq in the north.

The southern end of the corridor is mainly characterised by heavily disturbed landscapes used for mining and coal fired power generation activities. The visual landscape in the southern portion of the corridor (between Gundy and Garoo) includes the existing Liddell to Tamworth 330 kV transmission line with the Project to be co-located with large sections of this existing line. The visual character of the majority of the corridor is partially cleared grazing land with areas of native vegetation in particular on steeper slopes, ridgelines and along drainage lines (see Figure 2-3).

In the central and northern portions of the Preferred Study Corridor (including the Liverpool Plains, Tamworth and Armidale regions), the landscape varies from generally flat grasslands to rolling hills. Much of this land has been extensively cleared for agricultural purposes, including broad acre cropping and grazing. There are large areas of remnant native vegetation amongst this agricultural land, typically found along roads, rivers and creeklines and in stands of native vegetation within paddocks (see Figure 2-3).

There are several large national parks in the broader area, particularly to the east of the Preferred Study Corridor, containing large areas of intact native vegetation of high quality (see Figure 2-4). The broader landscape through which the Preferred Study Corridor traverses has predominately rural and natural features ranging from small rural towns and settlements through to isolated homesteads on large scale grazing properties. The Preferred Study Corridor also traverses large areas of NSW Government lands dedicated for water supply purposes which are a combination of cleared land and native vegetation.

There are no major or regional towns within or in proximity to the Preferred Study Corridor from a visual catchment perspective and the key main roads in proximity to the Preferred Study Corridor include the New England and Oxley Highways (see Figure 6-7). The design process has been focusing on avoiding these areas to minimise overall visibility and visual impacts. The majority of potential sensitive visual receivers for the Project are residents of rural landholdings, road users and recreational users of dedicated lands such as Lake Glenbawn and Chaffey Dam (see Figure 3-1).

6.1.5.2 Potential impacts

The Project will result in the introduction of new structures, clearing of vegetation for the easements and energy hubs and the temporary presence of construction ancillary sites. This will result in some changes to the existing landscape character and visual amenity of the Preferred Study Corridor and surrounding landscape. EnergyCo has sought to minimise these impacts through the design process by avoiding more densely populated areas, co-location with existing transmission lines where appropriate, using topographic shielding and minimising impacts on forest/woodland vegetation areas where practical.

As the key Project infrastructure will be permanent, including the transmission towers, lines and energy hubs, there is potential for visual impacts, however, the extent of visibility and visual impact in the Preferred Study Corridor and surrounding areas will be influenced by the characteristics of the existing landform and vegetation cover which will provide a degree of screening for some residences and viewpoints.

Viewshed mapping (also referred to as zone of visual influence mapping) is a spatial analysis technique which calculates potential visibility of the Project transmission lines based on topography alone. The viewshed mapping does not take into account obstructions such as vegetation coverage or built form. The process eliminates the need to assess viewpoints within the study area that do not have a line of sight to the preferred study corridor.

Viewshed mapping is illustrated in Figure 6-6, and provides an overview of the potential visibility (percentage) of the transmission towers within surrounding areas.

The viewshed mapping has been prepared based on a nominal tower height of 70 m, with tower locations plotted along the centre line of the Preferred Study Corridor at nominal 400 metre intervals. Preliminary mapping of dwelling locations was based on publicly available mapping and aerial photograph analysis. The dwelling locations will be verified through consultation and field work prior to and during the EIS Phase of the Project.

The viewshed mapping has been prepared out to approximately 2,000 m from the centre line of the corridor. Viewshed mapping does not take into account the energy hubs, however, these will be considered in the visual assessment.

The viewshed mapping indicates the highest number of towers visible to a viewer within 2,000 m is up to 29 towers. Due to the undulating topography typical of the region, the extent of visibility varies across the study area. For the most part, views to the towers are limited by topography, with large areas of land within 2,000 m having no visibility. The highest areas of visibility are generally close to the centre line, elevated positions and where the line diverges near Kentucky and Limbri.

Temporary impacts on landscape character and visual amenity resulting from Project construction may include:

- construction compounds, laydown areas and workforce accommodation camps and other associated ancillary work
- construction plant and vehicles accessing construction areas via public and private access roads
- light spill from construction sites at night
- clearing of vegetation and ground disturbance.

EnergyCo will continue to focus on minimising visual impacts as part of the ongoing design refinement for the Project, including both through the final siting of infrastructure and visual impact controls such as screening, infrastructure design, infrastructure colouring and lighting management.

6.1.5.3 Proposed further assessments

A detailed landscape and visual impact assessment (LVIA) will be carried out for the EIS which will identify the landscape character and visual impacts of the Project, including consideration of public and private viewpoints along the corridor.

The LVIA will assess the sensitivity of the landscape and visual receivers, predict the change that each would experience as a result of the Project and assess the visual impacts of this change. The assessment will include development of representative photomontages to determine how the transmission infrastructure and energy hubs will appear in the landscape from residences and public viewing locations. The assessment will identify the proposed mitigation measures to minimise the visual impacts of the Project, where practicable.

The following guidelines will be considered in the landscape and visual impact assessment:

- Guideline for Landscape Character and Visual Impact Assessment – Environmental impact assessment practice note EIA-N04 (Transport for New South Wales, 2020a).
- Guidelines for Landscape and Visual Impact Assessment (GLVIA3) Third Edition (Landscape Institute and Institute of Environmental Management and Assessment (LIIEMA), 2013).
- Guidance Note for Landscape and Visual Assessment (Australian Institute of Landscape Architects, 2018).

A large scale transmission line guideline (inclusive of visual assessment technical supplement) is currently being developed by DPHI. This is anticipated to be finalised in late 2024 following public exhibition of the draft in late 2023 / early 2024. Subject to the timing of the guideline finalisation, the Project will consider the requirements of this new guideline for the LVIA.

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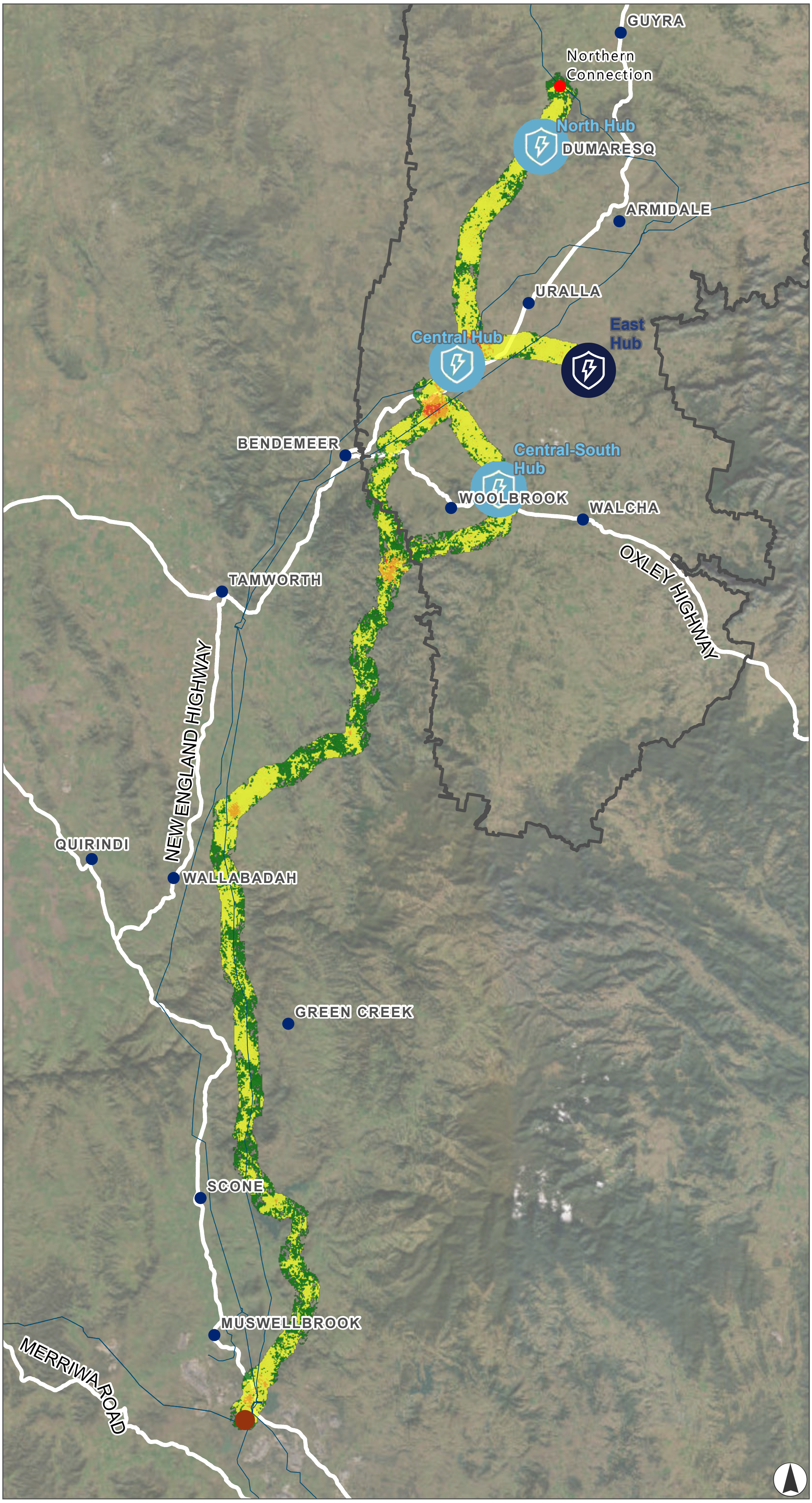


FIGURE 6-6-Overview

Zone of visual influence

Legend

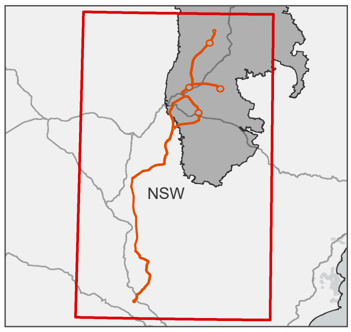
- Indicative dwelling locations within visual study corridor (subject to further verification)
- Bayswater Substation
- Northern Connection
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.



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Kilometres

Scale 1:1,000,000 at A4

GDA2020 MGA Zone 56

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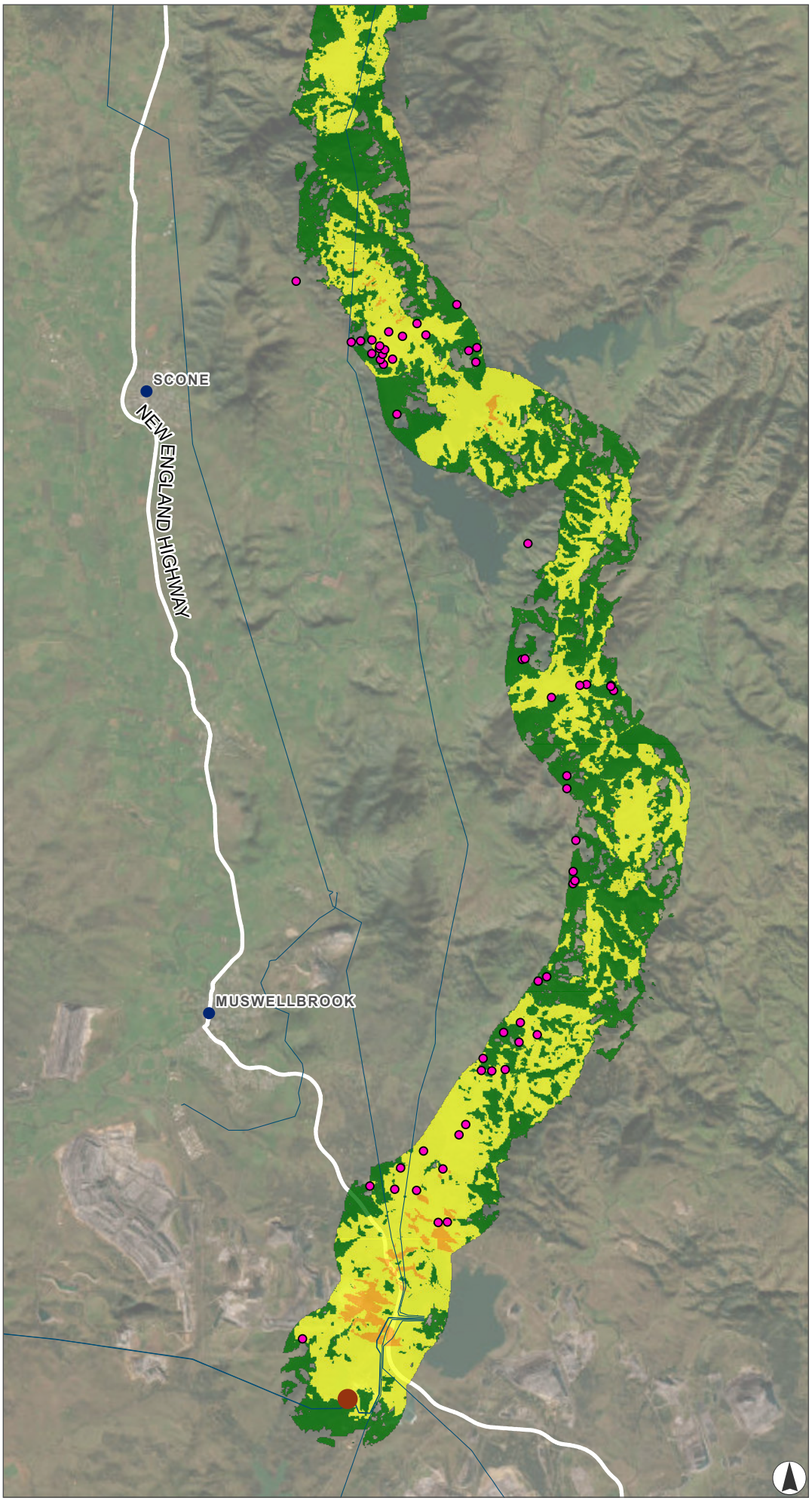


FIGURE 6-6-A

Zone of visual influence

Legend

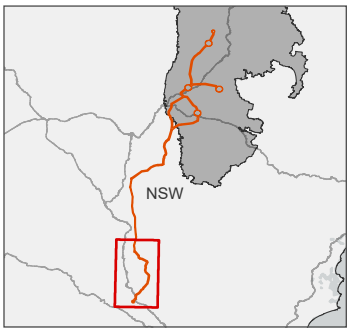
- Indicative dwelling locations within visual study corridor (subject to further verification)
- Bayswater Substation
- Town
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.



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Scale 1:220,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

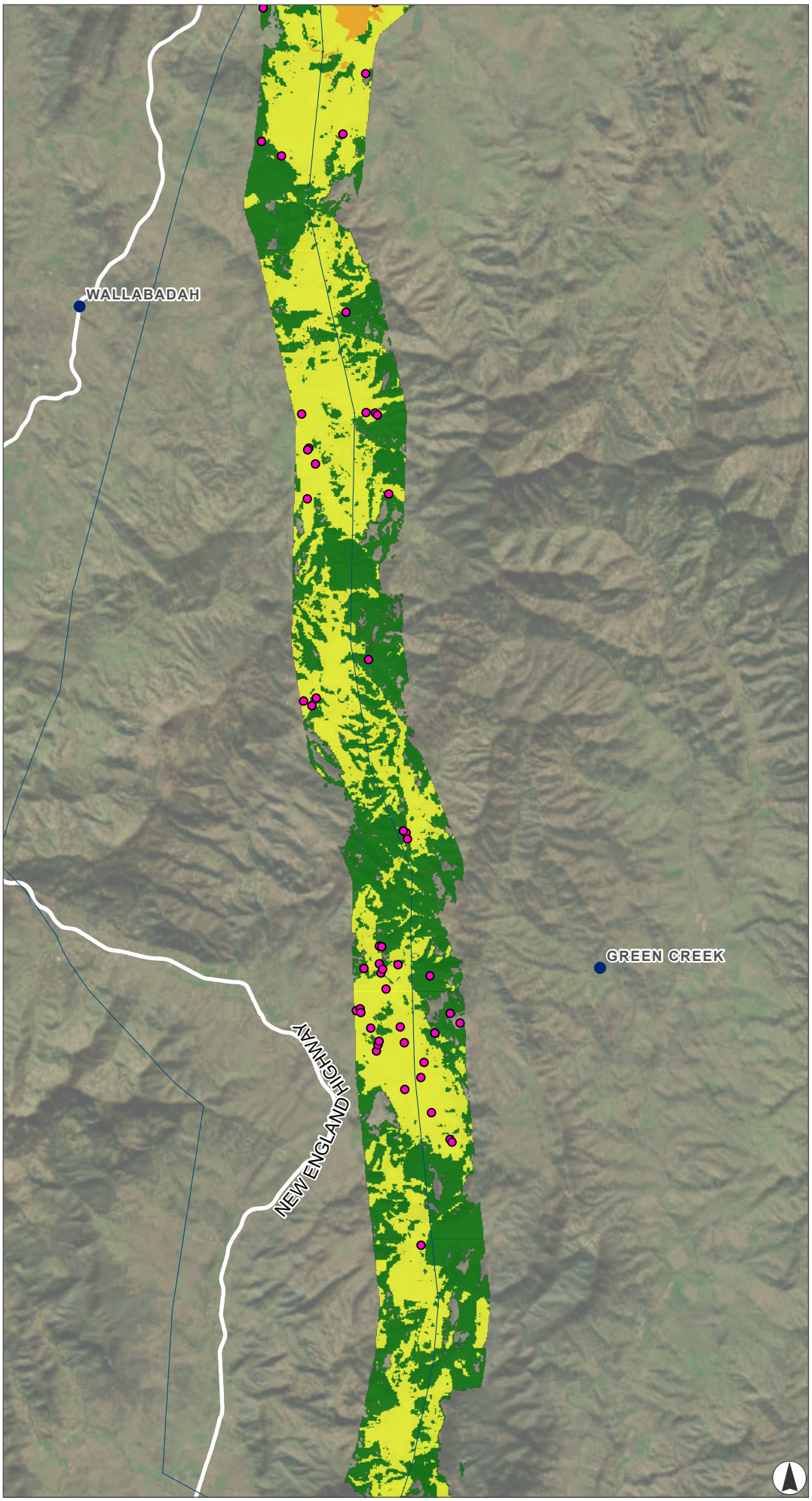

FIGURE 6-6-B

Zone of visual influence

Legend

- Indicative dwelling locations within visual study corridor (subject to further verification)
- Town
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.

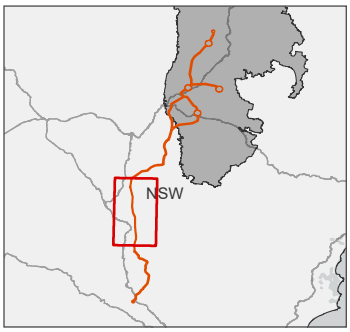

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Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

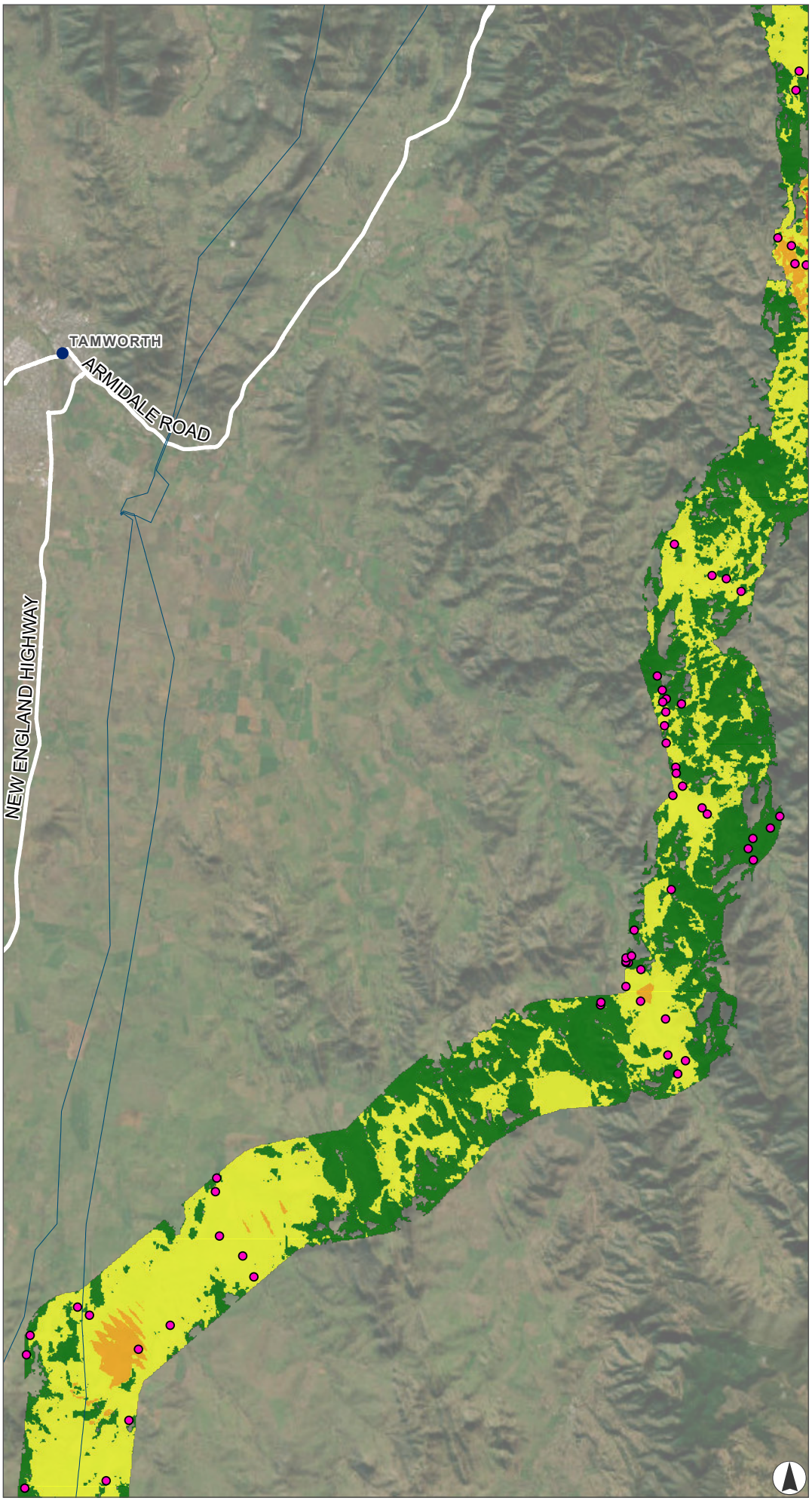


FIGURE 6-6-C

Zone of visual influence

Legend

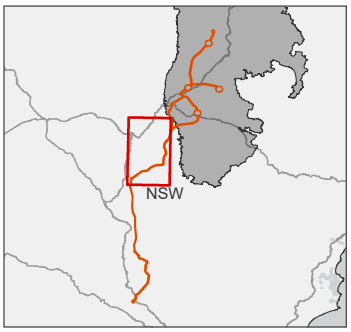
- Indicative dwelling locations within visual study corridor (subject to further verification)
- Town
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.



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GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

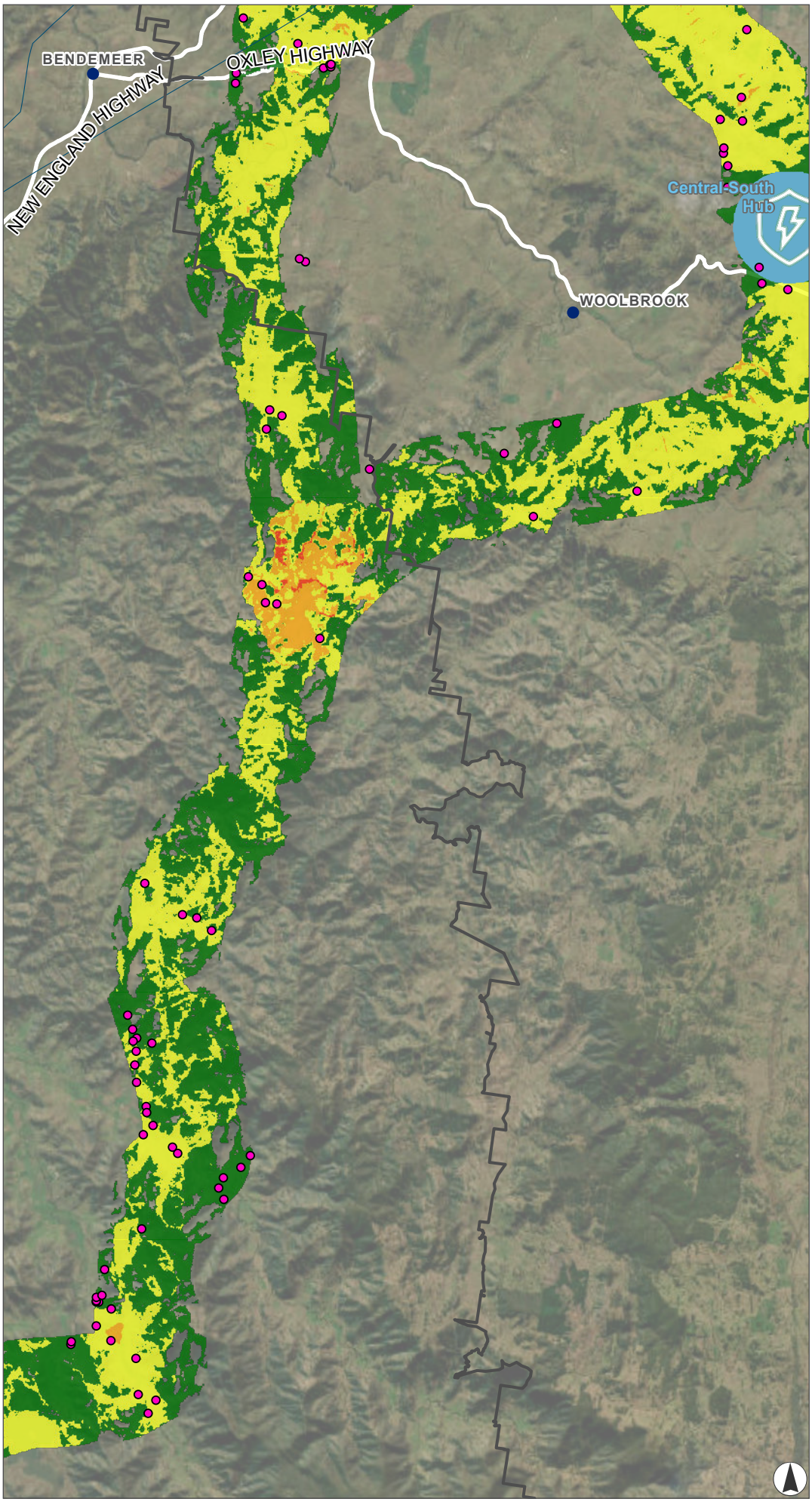


FIGURE 6-6-D

Zone of visual influence

Legend

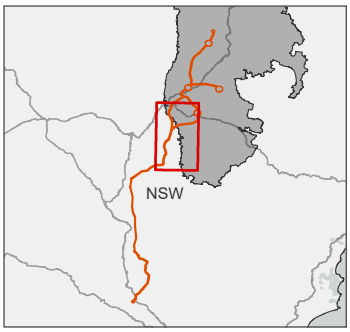
- Indicative dwelling locations within visual study corridor (subject to further verification)
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.



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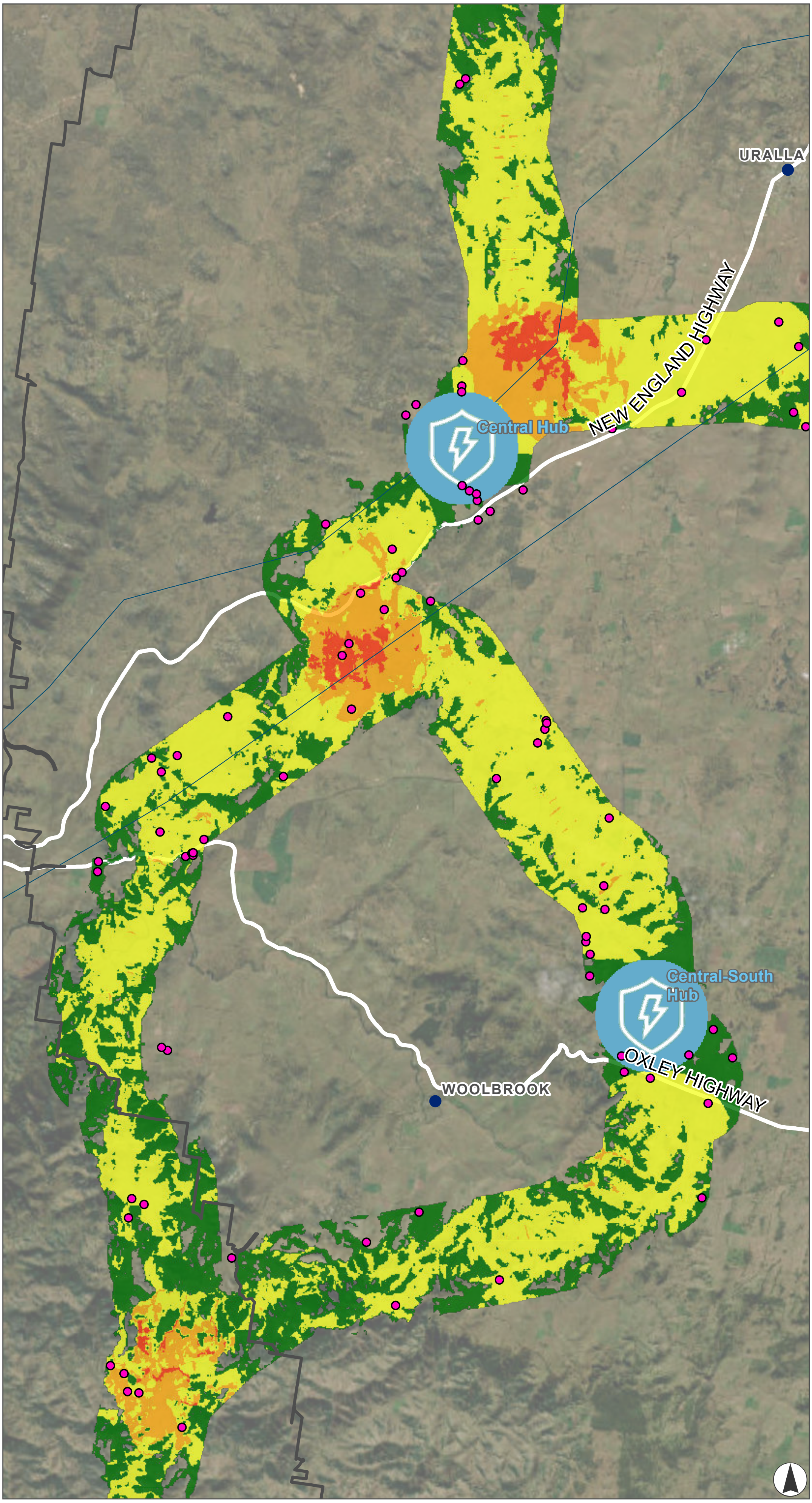
Kilometres

Scale 1:220,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 6-6-E

Zone of visual influence



Legend

- Indicative dwelling locations within visual study corridor (subject to further verification)
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.

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Scale 1:220,000 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

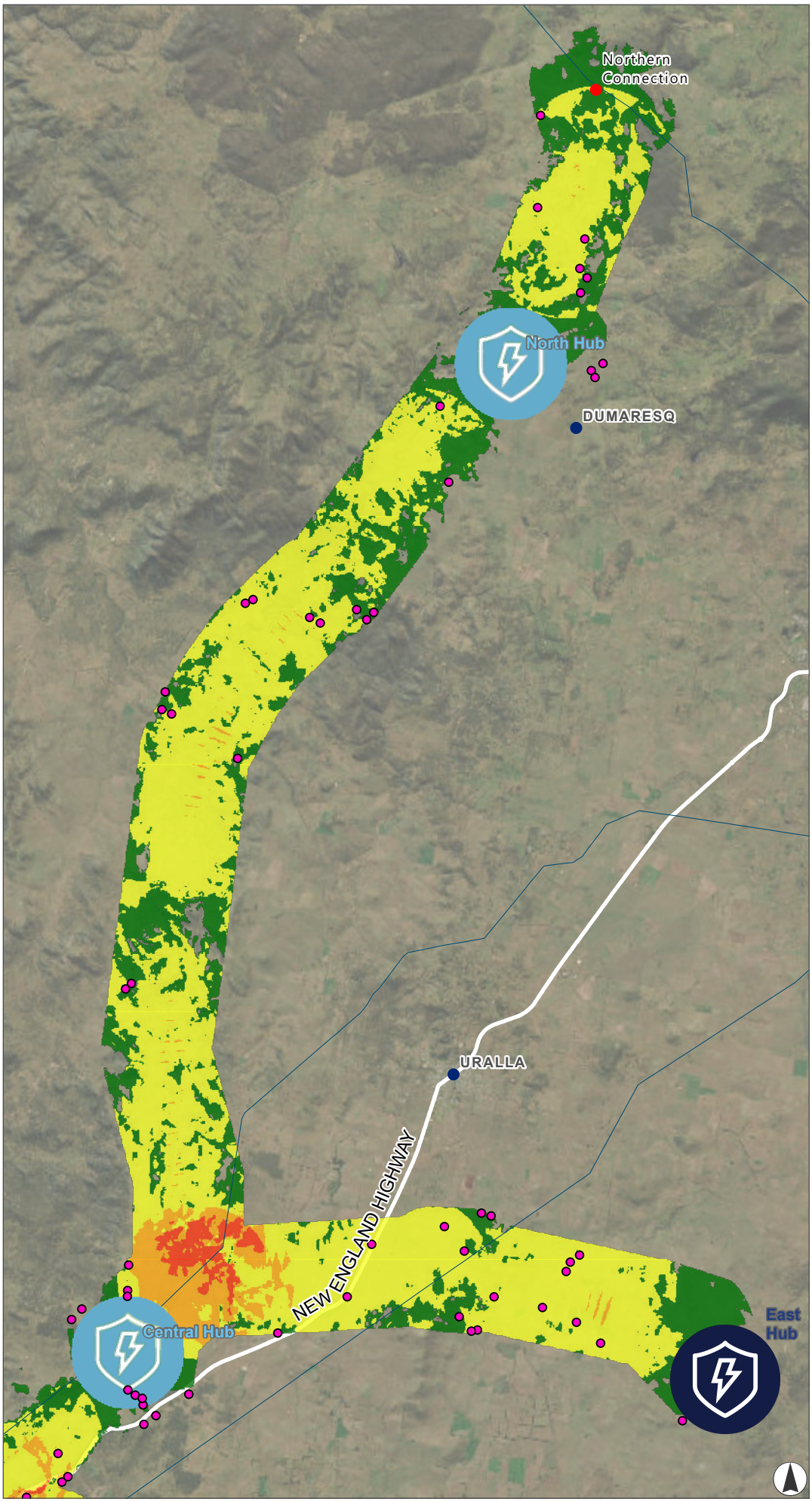


FIGURE 6-6-F

Zone of visual influence

Legend

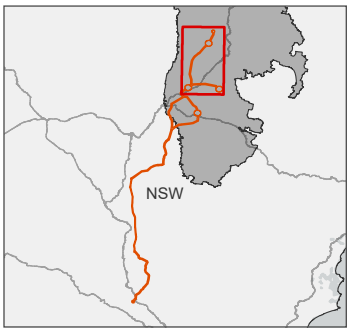
- Indicative dwelling locations within visual study corridor (subject to further verification)
- Northern Connection
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Percentage of Corridor Visible

- 1%-25%
- 25%-50%
- 50%-75%
- 75%-100%

*This ZVI excludes energy hubs which will be subject to detailed visual assessment in the EIS.

**Note: The ZVI is a preliminary assessment tool that represents a bare ground scenario, i.e. a landscape without screening or vegetation. As accurate information on the height and coverage of vegetation and buildings is unavailable, it is important to note the ZVI is based solely on topographic information. As a result, this and the assumption of a uniform transmission line height along the length of the centreline of the Preferred Study Corridor (in the absence of tower siting) should therefore be acknowledged as representing a highly conservative assessment.



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Kilometres

Scale 1:220,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

6.1.6 Land use and property

Minimising impacts to existing land uses and property has been a guiding principle in the route selection and refinement process. Where practicable, the Preferred Study Corridor avoids residential areas, rural residences and national parks and estates, maximises the use of available industrial land, mining land and Government-owned land, and provides for the co-location with existing transmission infrastructure.

6.1.6.1 Existing environment

Land use

Land uses within the Preferred Study Corridor are shown in Figure 2-3 (NSW Landuse 2017 v1.2). The majority of the Preferred Study Corridor comprises agricultural land used for livestock grazing and cropping activities. Other key land uses in the Preferred Study Corridor and its surrounds include:

- transport infrastructure
- electrical infrastructure
- renewable energy developments (generation and storage)
- protected environments, including national parks and conservation areas
- mining and exploration
- biodiversity offset areas and wildlife refuge
- uncertified aerodromes.

The Preferred Study Corridor crosses a network of transport infrastructure, including two state roads, being the New England Highway and Oxley Highway, as well as several regional roads, including Lindsays Gap Road, Thunderbolts Way, Ogunbil Road, Nundle Road, Kingstown Road, Bundarra Road, Wollun Road, Hebden Road, Timor Road and Gundy Road. There are also local Council roads and privately-owned roads within the Preferred Study Corridor. The key transport infrastructure within the Preferred Study Corridor is shown in Figure 6-7.

The Preferred Study Corridor also intersects several areas used for electrical infrastructure, including the existing Bayswater Power Station and several existing medium and HV transmission lines, including the Liddell to Tamworth line (330 kV), Tamworth to Muswellbrook line (330 kV) and Armidale to Tamworth line (330 kV), refer to Figure 6-7. There are also several renewable energy infrastructure projects that are either proposed or approved within or near the Preferred Study Corridor, which are identified in Section 6.1.17.

The Preferred Study Corridor is located approximately 500 m to the west of a National Park estate area, being the Camerons Gorge Nature Reserve, which is located near Waverly. The Project has been designed to avoid interacting with this area. There are several other National Park estate areas in the vicinity of the Preferred Study Corridor (refer to Figure 6-7). There are no State Forests within the Preferred Study Corridor.

There are several current mining and exploration titles within the Preferred Study Corridor. Exploration titles are predominantly located across the central and northern sections of the corridor, with one mining title within the Muswellbrook Shire LGA in the southern section of the corridor, being the Maxwell Mine.

Several proposed or established mining biodiversity offset areas (biodiversity stewardship agreement / conservation agreements) are located within the Preferred Study Corridor, including ‘Clifton’ and ‘Hillcrest’ from Ravensworth Mine, ‘Mitchell Hill’ from Hunter Valley Operations, ‘Mitchell Hills’ from Mount Owen Mine and ‘Black Mountain’ from Bengalla Mine. In each case the

Preferred Study Corridor intersects the edge of the biodiversity offset area with further corridor and design refinement aimed at avoiding or minimising impact to these areas where practicable.

The Preferred Study Corridor also intersects a wildlife refuge associated with WaterNSW land at Lake Glenbawn and a proposed biodiversity offset area associated with WaterNSW land at Chaffey Dam. These areas will be further considered in the corridor and design refinement as part of the EIS.

The Preferred Study Corridor is located about 20 km west and north of Armidale Airport and about 13 km east of the Scone Memorial Airport. The location of certified aerodromes near the Preferred Study Corridor are shown in Figure 6-7.

Property

Land tenure in the Preferred Study Corridor is predominantly freehold, with some areas of Crown Land, including travelling stock reserves, commons, road reserves and rail corridors. There are also several lots controlled by the applicable Council or NSW Government. The number of landowners affected by the Preferred Study Corridor is around 240 landowners.

Searches of the registers maintained by the National Native Title Tribunal identified one known native title claim under the *Native Title Act 1993* in the Preferred Study Corridor, being the 'NC2011/006 – Gomeroi People'. The status of this claim has not been determined as of 12/03/2024 and will be further confirmed as part of the EIS. There are no Indigenous Land Use Agreements that apply to the Preferred Study Corridor.

6.1.6.2 Potential impacts

Many existing land uses within and adjacent to the Preferred Study Corridor can coexist with a transmission line easement. Agricultural activities that can occur within or in proximity to a transmission line easement include grazing, cropping, ploughing, irrigation and movement of farm vehicles and machinery. The potential impacts on land use and property during construction and operation of the Project that will require further assessment in the EIS include:

- temporary changes in land use due to the leasing and use of land for construction activities, including site establishment, access, laydown areas and compounds, and workforce accommodation camps
- permanent removal of land, and/or restrictions on current land use, due to land acquisition to accommodate permanent infrastructure, including energy hubs and permanent access tracks
- temporary impacts to agricultural operations for areas within the Project corridor during construction
- temporary impacts on access to properties during construction
- interactions with aviation activities at uncertified aerodromes
- interactions with mining leases and licences, due to the construction of permanent infrastructure
- impacts on services and utilities during construction.

Transmission line easements will preferentially be acquired through an agreement with landowners, or where necessary by compulsory acquisition (refer to Section 2.5). The 'transmission line easement' is the area surrounding the transmission line, which provides a legal 'right of way' and allows for ongoing access and maintenance of the transmission line. Whilst agriculture and grazing is permitted within transmission line easements, they may be subject to some restrictions for safety and operational reasons. These will be considered in the EIS.

The disturbance area footprint required for construction and operation of the Project will be confirmed and assessed as part of the EIS. Temporary disturbance areas that are not required for operation of the Project will be rehabilitated following completion of construction to a condition similar to pre-disturbance.

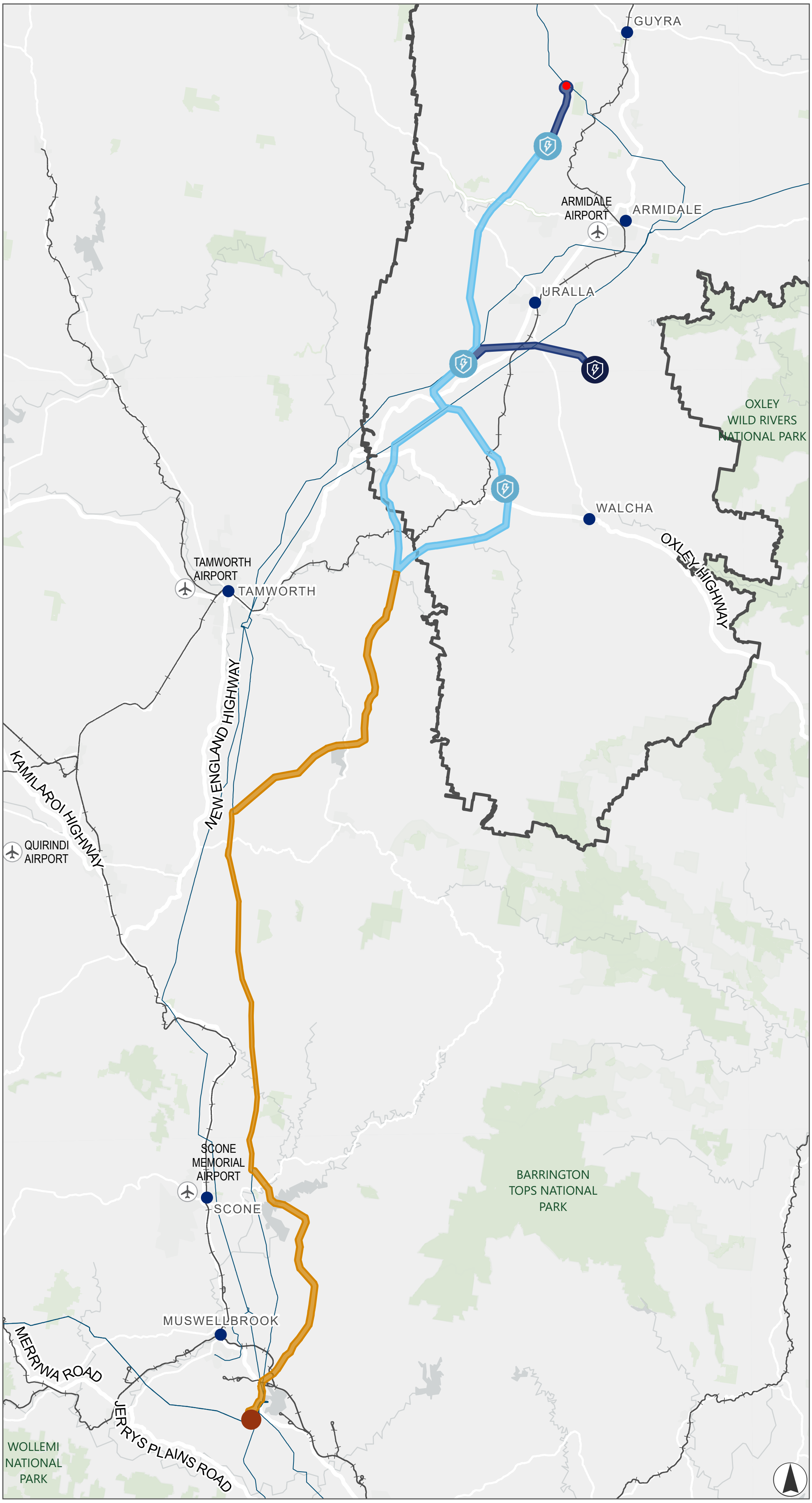

FIGURE 6-7

Infrastructure, Airports and Conservation Areas

Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Estate
- Airport
- Existing high voltage lines
- Railway
- Major Roads
- Secondary Roads

0 25 50

Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

6.1.6.3 Proposed further assessments

The EIS will include a detailed assessment of potential land use and property impacts as a result of the Project, which will include:

- an assessment of potential property and land use impacts (including agricultural land, commercial, mining and industrial operations, protected environments and biodiversity offset areas), due to temporary and permanent land requirements for the Project
- assessment of any impacts to agricultural, commercial and industrial productivity due to restrictions or changes in operations as a result of construction or operational activities
- assessment of potential impacts on mineral resources
- assessment of any potential impacts on aviation operations including air traffic routes, aircraft operating heights, approach / departure procedures, radar interference, communication systems, navigation aids, use of emergency helicopter access, aerial baiting and culling, safe and efficient aerial application of agricultural fertilisers and pesticide
- identification of potential utilities that may require adjustment to accommodate the Project
- mitigation measures to avoid, minimise and manage any identified potential impacts of the Project on property and land use.

EnergyCo will continue to consult with landowners and Native Title land claimants during continued design development to further avoid or minimise impacts on land use and property, where practicable.

The assessment of impacts to aviation operations will include consultation with Airservices Australia and the Civil Aviation Safety Authority (CASA) to ensure the Project will not compromise safe aviation operations and that the proposed new transmission lines will be represented on aeronautical charts for the benefit of pilots conducting low level operations.

6.1.7 Agriculture and soils

Minimising impacts to high value agricultural land is one of the key planning principles which has guided the route selection and refinement process for the Project (refer to Section 1.4.3). The potential for impacts to agricultural practices is also a key community concern, as discussed in Section 5.3. The Preferred Study Corridor has been selected to maximise the use of available industrial and mining land and co-locate the Project with existing transmission infrastructure, and to avoid the most productive agricultural land where practicable.

6.1.7.1 Existing environment

The New England region is one of Australia's most productive agricultural regions (DPE, 2022b), with the geology of the region supporting good soil fertility. The Preferred Study Corridor traverses a range of different agricultural land uses, however, it is predominantly situated within agricultural land used for livestock grazing and cropping.

Strategic agricultural land

There are several areas of mapped BSAL and CIC land within the Preferred Study Corridor, as shown in Figure 6-8. As discussed in Section 2.3.1, BSAL includes land with high quality soil and water resources capable of sustaining high levels of productivity. Areas of BSAL are typically found along watercourses near the Preferred Study Corridor, primarily around Armidale, Uralla and Tamworth, as well as a large area within the Upper Hunter Shire LGA.

CICs are concentrations of highly productive industries within a region that are related to each other, contribute to the identity of that region, and provide significant employment opportunities (DPI, 2013a). CIC areas are located within Upper Hunter Shire LGA and Muswellbrook Shire LGA and

are primarily associated with the Upper Hunter Equine CIC, a highly concentrated cluster of thoroughbred and stock horse breeding centres and support infrastructure which produces approximately 80% of the total value of stud horses exported by Australia (DPI, 2012b). There are some smaller areas of viticulture CIC outside the Preferred Study Corridor, which are associated with the vineyards and wineries around Muswellbrook, located about 9.5 km west of the Preferred Study Corridor. The equine and viticulture CICs are integral to tourism within the Upper Hunter Valley.

Minimising impacts to BSAL, CIC land and other highly productive agricultural areas was a key design consideration in selection of the Preferred Study Corridor. The corridor intersects mapped BSAL and Upper Hunter Equine CIC. However, of the total length that intersects the CIC, a significant portion has been co-located with existing 330 kV and 132 kV transmission lines to minimise potential impacts. Due to the location and expanse of the CIC mapping, it was not practicable to completely avoid the CIC area, however, the location of horse studs within the CIC was taken into consideration to seek to avoid and minimise impacts on stud operations.

Travelling stock reserves

Livestock grazing in the region uses a network of travelling stock reserves to move livestock across the land, which are managed by Local Land Services (LLS). Travelling stock reserves are important for the agricultural industry as it ensures that livestock can safely move between grazing areas, particularly in emergency situations including times of drought, bushfires and flooding. In addition to moving livestock, these travelling stock reserves are significant for providing landscape connectivity and biodiversity conservation across the region. As such, these travelling stock reserves have been assessed by the LLS for their conservation values, depending on the quality of biodiversity contained within the reserve (LLS, 2017). There are 10 travelling stock reserves within the Preferred Study Corridor of high conservation value.

Land and soil capability

Land capability is the inherent physical capacity of the land to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources (OEH, 2012a). In NSW, the land and soil capability (LSC) assessment scheme provides the framework for assessing the environmental impact of clearing native vegetation based on biophysical features of the land (including soil type, slope, landform position, acidity, salinity, drainage, rockiness and climate) and the capability of the land to sustain its current land use. Under the framework, LSC classes range between Class 1 (extremely high capability) to Class 8 (extremely low capability).

The Preferred Study Corridor consists of land classified as LSC classes ranging from Class 2 to Class 8, as shown in Figure 6-9. The majority of the Preferred Study Corridor is situated within Class 4 (moderate capability) to Class 7 (very low capability) land.

Acid sulfate soils

Acid sulfate soils are naturally occurring soils that contain high concentrations of iron sulfide. When disturbed or exposed to air, these soils can become acidic, which can lead to impacts to water, soils and biodiversity. Acid sulfate soils are typically formed in regions that are subjected to long term waterlogged conditions, as such these soils are found in every coastal estuary in NSW and commonly found on inland wetlands, waterways and drainage lines.

The Atlas of Australian Acid Sulfate Soils was developed by CSIRO to map the probability of acid sulfate soil occurrence across Australia. According to this mapping, there is a low to extremely low probability of encountering inland acid sulfate soils across the majority of the Preferred Study Corridor. High probability of acid sulfate soil occurrence within the Preferred Study Corridor is limited to Lake Glenbawn and Lake Liddell in the Muswellbrook area and Chaffey Dam near Dungowan.

Naturally occurring asbestos

Asbestos is a naturally occurring mineral across various regions of NSW, which is comprised of fibrous silicate crystals found in rock, sediment or soil. Microscopic fibres of asbestos can become airborne when disturbed and cause illness in humans.

The term Naturally Occurring Asbestos (NOA) distinguishes natural occurrences of asbestos from manufactured products that contain asbestos. The Department of Regional NSW developed state-wide mapping of the potential for NOA to be found within 10 m of the surface. This mapping determined the probability of encountering NOA in the Preferred Study Corridor and surrounds to be generally low to nil.

Salinity

Salinity occurs in many areas of NSW and includes dryland salinity, irrigation and river salinity, and urban salinity. The Statewide DPE eSPADE portal suggests the salinity hazard within Preferred Study Corridor varies between very low to very high, with the area of very high salinity hazard generally located east of Muswellbrook and south of Scotts Creek.

6.1.7.2 Potential impacts

The potential impacts on agriculture and soils during construction and operation of the Project are outlined below.

Agriculture

- Temporary or permanent changes to land available for agriculture due to the leasing or acquisition of land for the Project.
- Impacts on agricultural operations that may result in a decrease in productivity:
  - interference with agricultural operations during construction
  - safety risks and limitations on the use of agricultural machinery and aerial agricultural practices in the easement during construction and operation
  - impacts on farm infrastructure and layout, including dams and paddocks, and the efficient movement of livestock, vehicles and machinery due to the development of the Project
  - impacts on access to travelling stock reserves during construction
  - limitations to the height of vegetation permitted in the easement during construction and operation
  - impacts on soil and water quality during construction and operation
  - potential for biosecurity risks during construction and operation, with increased movements through properties.

Soils

- Soil erosion from the exposure of the ground surface, particularly during the removal of vegetation and excavation work.
- Physical changes to soil quality and composition, including compaction from movement of vehicles and machinery.
- During construction there is the potential for acid sulfate soils to be exposed to air during excavations if not properly identified and managed.
- Potential for salinity impacts including encountering high salinity soil and potential impacts due to local impacts of the water table during construction.

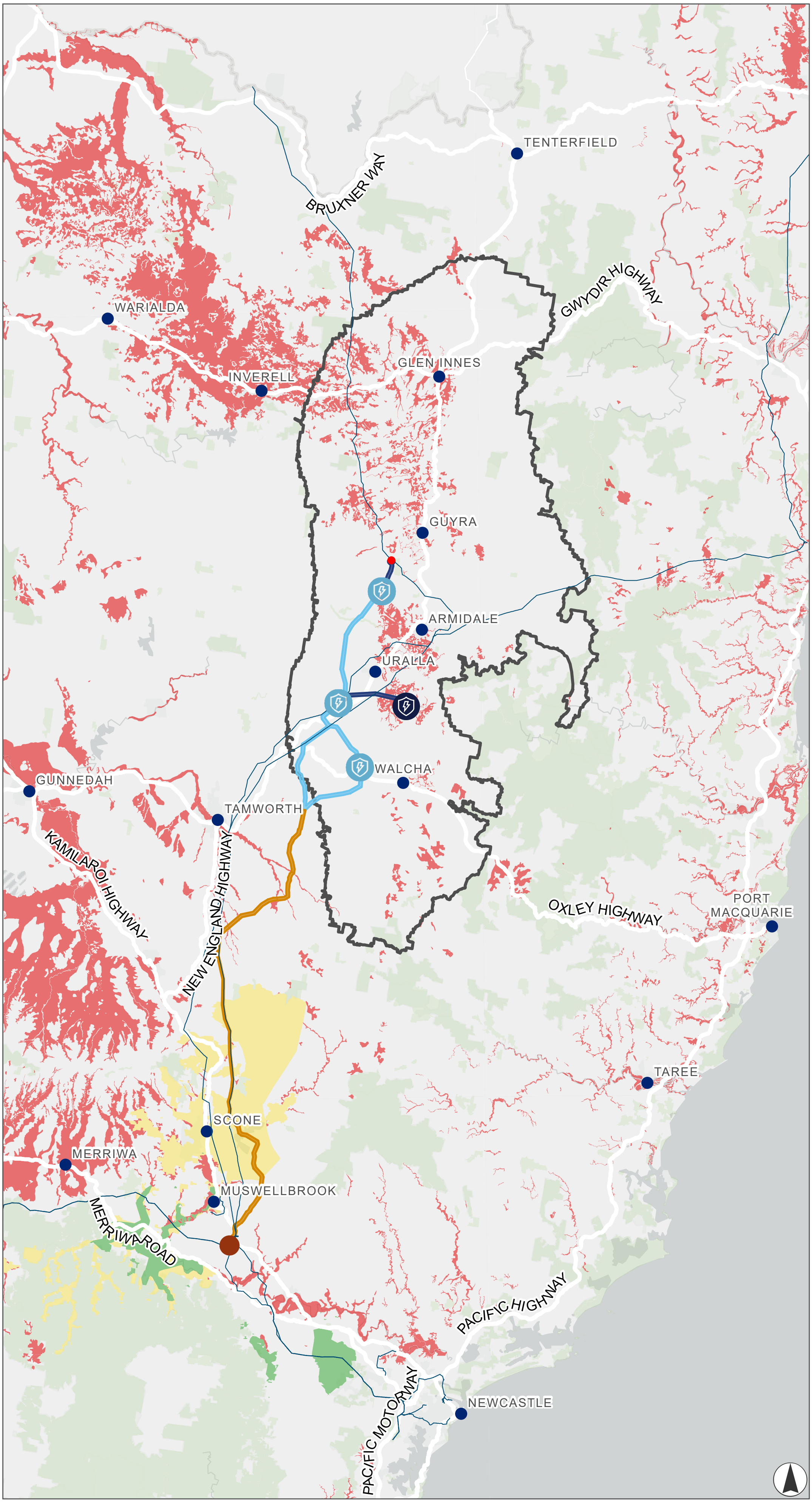

FIGURE 6-8

Strategic agricultural land (BSAL and CIC)

Legend

- Bayswater Substation
- 500kV/330kV Hub
- 330kV Hub
- Northern Connection
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- NPWS Protected Area
- Biophysical Strategic Agricultural Land
- Critical Industry Cluster Land (Equine)
- Critical Industry Cluster Land (Viticulture)
- Existing high voltage lines
- Major Roads

0 25 50

Kilometres

Scale 1:1,946,913 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

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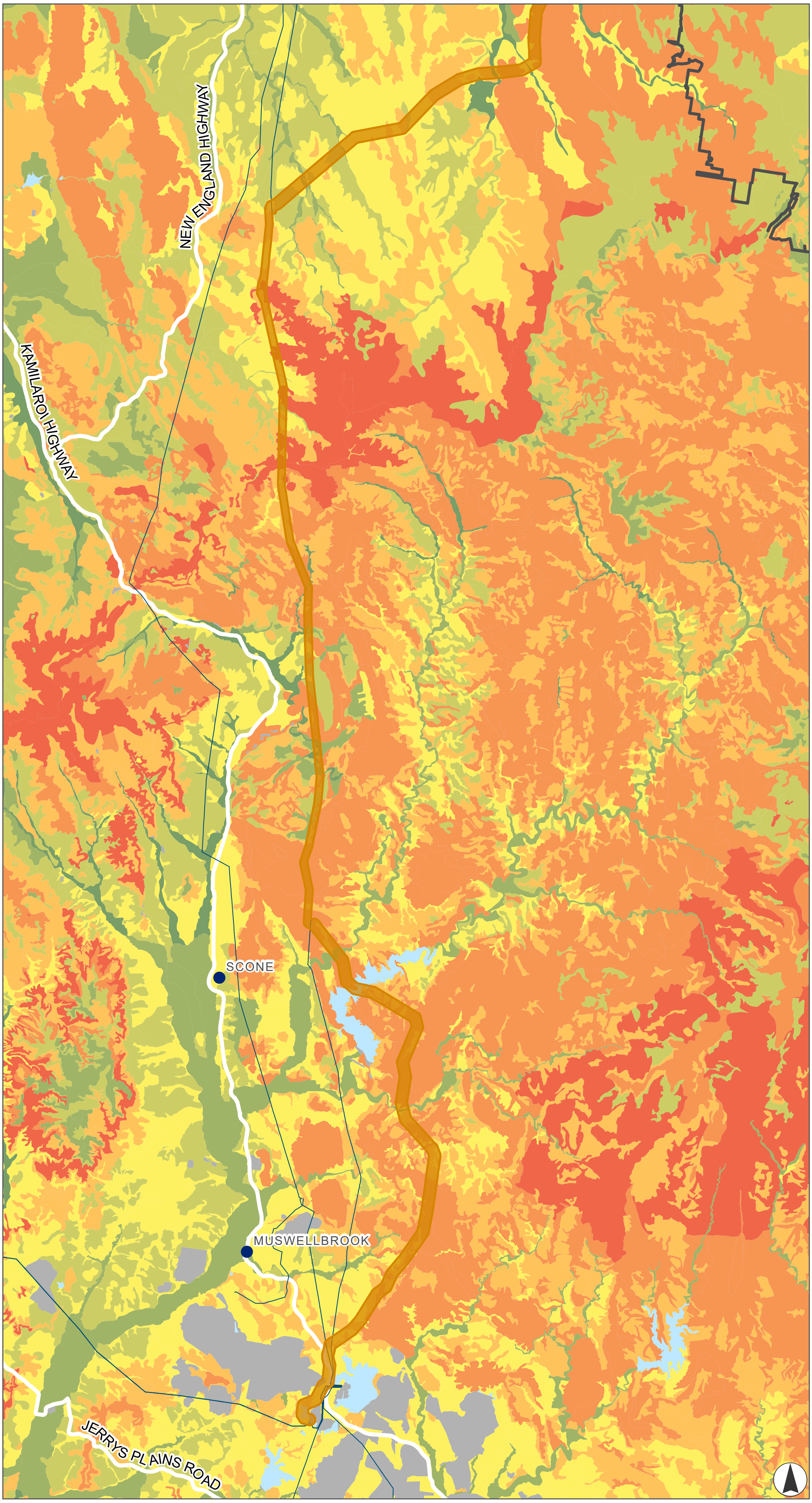
FIGURE 6-9-A

Land and Soil Capability



Legend

- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Land and soil capability

- 1 - Very slight to negligible limitations
- 2 - Slight but significant limitations
- 3 - Moderate limitations
- 4 - Moderate to severe limitations
- 5 - Severe limitations
- 6 - Very severe limitations
- 7 - Extremely severe limitations
- 8 - Extreme limitations
- Not assessed (98)
- Water (99)

0 10 20

Kilometres

Scale 1:500,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

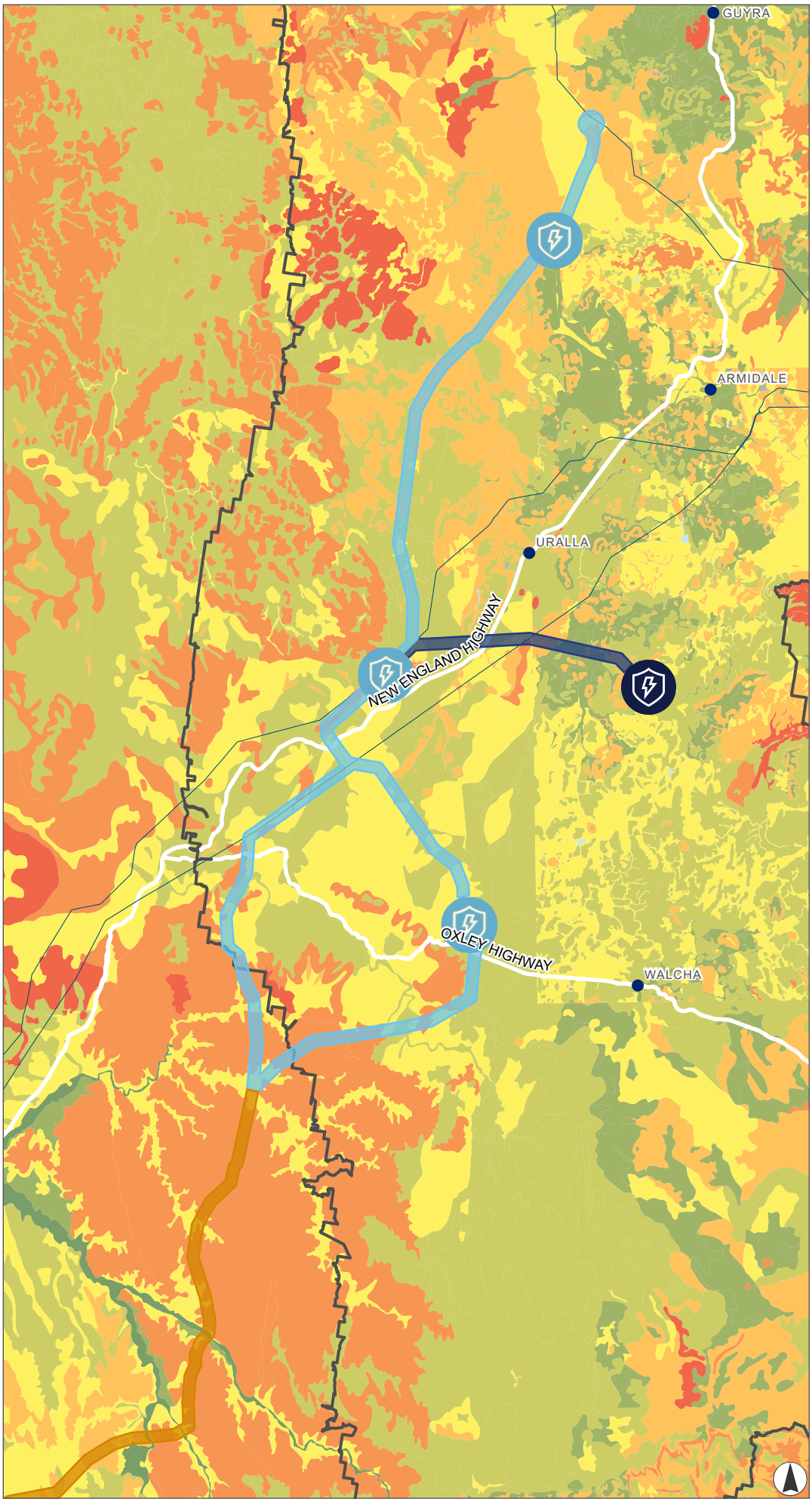


FIGURE 6-9-B

Land and Soil Capability

Legend

- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

Land and soil capability

- 1 - Very slight to negligible limitations
- 2 - Slight but significant limitations
- 3 - Moderate limitations
- 4 - Moderate to severe limitations
- 5 - Severe limitations
- 6 - Very severe limitations
- 7 - Extremely severe limitations
- 8 - Extreme limitations
- Not assessed (98)
- Water (99)

0 10 20

Kilometres

Scale 1:500,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

6.1.7.3 Proposed further assessments

The EIS will include a detailed assessment of potential agriculture and soil impacts as a result of the Project, which will include:

- a review of the existing information on the soil characteristics and land capability in the Preferred Study Corridor, including strategic agricultural lands, erosion potential, acid sulfate soils and salinity
- identification of construction and operation activities that have the potential to damage soil characteristics and/or cause erosion, salinity or acid sulfate soil risks
- an assessment of the potential impacts of the Project (during construction and operation) on:
  - agricultural operations
  - BSAL and CIC, with a particular focus on potential impacts to the Upper Hunter Equine CIC
  - land and soil capability
  - travelling stock reserves
- mitigation measures to avoid, minimise and manage any identified potential impacts of the Project on agriculture and soil.

6.1.8 Economic

Economic impacts are a key issue of concern for the community, as discussed in Section 5.3. Specific concerns raised during community engagement include increased pressure on regional workforces and impacts to key industries (primarily agriculture). However, engagement has also highlighted potential economic benefits of the Project, including diversification of income streams for landholders and re-skilling and upskilling of local workforces.

It is estimated that delivery of the New England REZ will:

- attract more than $24 billion in private sector investment by 2035, supporting over 6,000 construction jobs and 2,000 ongoing operational jobs
- provide up to $660 million for landholders in lease payments[4].

EnergyCo has also committed to develop a Community Benefits Scheme which is planned to invest millions into the New England REZ economy over the next 20 years (refer to Section 2.1.5).

The Project has the potential to negatively impact local economies through increased competition for labour and resources, and through the impact on productive agricultural due to the construction of Project infrastructure and associated land use conflicts.

The EIS will include a detailed assessment of potential economic benefits and impacts as a result of the Project, which will include:

- characterisation of the regional economies (New England and Upper Hunter) and key industries that could be beneficially or adversely impacted by the Project, with a particular focus on agriculture
- an assessment of the economic impacts of the Project (including cumulative impacts) during construction and operation associated with:
  - employment, including direct employment in local communities and indirect employment due to increased expenditure by local and non-local workers

[4] NSW Department of Planning, Industry and Environment (DPIE) (2020) NSW Electricity Infrastructure Roadmap.

  - non-labour project expenditure in the regional economy (e.g. expenditure due to demand for plant and equipment, accommodation, and services)
  - impacts on other industries, including the displacement or restriction on key land use (e.g. agriculture), impacts on tourism and accommodation providers, impacts to demands on housing and temporary accommodation, and other cost of living factors (e.g. food)
- mitigation measures to avoid, minimise and manage economic impacts generated by the Project.

The assessment will be supported by an input-output analysis of impacts to the NSW and regional economies due to employment and non-labour expenditure, and impacts to key industries.

6.1.9 Noise and vibration

Potential noise impacts are a key issue of concern for the community, as discussed in Section 5.3, in particular the potential for changes to the local amenity during both construction and operational phases of the Project.

6.1.9.1 Existing environment

Ambient noise levels in the vicinity of the Project are likely to be variable, reflecting the land use patterns along the corridor, but are expected to be generally reflective of a rural environment.

Key noise sources in the Preferred Study Corridor are likely include:

- natural noise sources, such as wildlife calls, wind-blown vegetation and watercourses
- human activity
- domestic animals
- agricultural machinery
- transport noise on road and rail networks
- mining operations and existing power station and associated infrastructure at Bayswater (at the southern-most extent of the Project).

The highest concentrations of sensitive receivers are located within the regional centres, which are substantially separated from the Preferred Study Corridor by distance and topography. Several smaller settlements and scattered rural dwellings typically surround the Preferred Study Corridor.

Other potential sensitive receivers within or in proximity to the Preferred Study Corridor include horse breeding facilities in the Upper Hunter Equine CIC (as discussed in Section 6.1.7.1), as well as several cemeteries, places of worship and accommodation areas (including motels, caravan parks and camping sites).

Sensitive receivers within the Preferred Study Corridor and its surrounds will be identified and assessed as part of the EIS.

6.1.9.2 Potential impacts

Construction of the Project has the potential to result in the following noise and vibration impacts:

- noise generating activities, including:
  - the operation of construction plant and equipment
  - the potential use of helicopters or drones for the stringing of the transmission lines or delivery of equipment and materials
  - use of construction compounds and workforce accommodation camps

- potential vibration impacts during excavation works or blasting for rock breaking during earthworks (subject to further ground condition investigations and assessment as part of the EIS)
- increased road traffic noise along transport routes and near workforce accommodation due to heavy vehicle and light vehicle movements transporting construction staff, equipment and materials to and from the construction areas.

Construction of the Project is generally not expected to cause significant noise and vibration impacts due to the relatively short duration of work at each location, as well as the distance of works from noise sensitive receivers. However, there are some construction activities that will occur over a longer period of time, including the construction of the energy hubs. Sensitive receivers are present at some locations along the Preferred Study Corridor, which may experience higher noise levels during construction.

The operation of the Project has the potential to result in the following noise impacts:

- Operation of noise generating equipment within the energy hubs.
- Operation of live transmission lines, for which noise is typically associated with corona discharge. Noise from corona discharge is highest during certain weather conditions, such as light rain, mist or fog.
- Movement of vehicles, plant and equipment for maintenance activities at energy hubs and along the transmission line easements.

Operational activities are not anticipated to generate significant noise, with the Project to be designed in accordance with relevant standards for minimising noise. Maintenance activities are expected to be infrequent, short in duration and localised. Potential vibration impacts from operation of the Project are also anticipated to be minimal.

6.1.9.3 Proposed further assessments

The EIS will include a detailed assessment of potential noise and vibrational impacts as a result of the Project, which will include:

- establishing the background noise environment and noise catchment areas
- identifying representative construction scenarios, locations and working times
- estimating potential increases to road traffic noise on key local transport routes and near workforce accommodation camp sites
- predicting construction and operational noise at nearby sensitive receivers
- analysing noise impacts in accordance with the relevant policies and guidelines
- identifying potential vibration impacts
- identifying the management and mitigation measures required to reduce the noise and vibrational impacts from the construction and operation of the Project.

Operational noise modelling will be carried out in areas where operational noise sources are predicted, including corona noise from HV transmission lines and operation of energy hubs.

6.1.10 Hazard and risk

Hazards and risks, primarily bushfire and associated emergency management, are a key issue of concern for the community, as discussed in Section 5.3. Table 6-7 below provides an overview of key potential hazards and risks relevant to the Project, and outlines the proposed approach to assessment of these potential hazards as part of the EIS.

Table 6-7 Overview of key Project hazards and risks

Hazard/Risk	Potential Impact	Proposed Further Assessments
Bushfire 	Most of the Preferred Study Corridor is identified as bushfire prone land (predominantly Vegetation Category 1 (high risk) and Category 3 (medium risk)) as shown in Figure 6-10. Effective management of bushfire risk is a key design consideration for EnergyCo and will be considered in the detailed design of the Project and consideration of construction techniques and controls. During operation, the occurrence and spread of a bushfire within the Preferred Study Corridor has the potential to impact on Project infrastructure. Vegetation within the transmission line easement will need to be regularly maintained to minimise the potential fuel load and Asset Protection Zones (APZs) would be established and maintained around the energy hubs to minimise bushfire risk.	A detailed bushfire assessment will be undertaken to consider potential risks to public safety, property and Project infrastructure. The assessment will identify suitable management approaches including emergency planning and implementation of suitable APZs having regard to Planning for Bush Fire Protection (NSW Rural Fire Service, 2019).
Mine subsidence 	Mine subsidence occurs on land above underground coal mines. The Preferred Study Corridor does not intersect any declared Mine Subsidence Districts (MSD). The Preferred Study Corridor is located about 1.6 km from the Patrick Plains MSD (generally east of Lake Liddell) and about 1.7 km west of the Muswellbrook MSD (near Muscle Creek) at their closest points. As such, subsidence impacts to proposed Project infrastructure are considered unlikely.	The EIS will include a qualitative assessment of potential mine subsidence impacts.
Electro magnetic fields (EMF) 	The proposed construction of new HV transmission lines and energy hubs would introduce new and additional sources of EMF along the Preferred Study Corridor. The proposed transmission lines and energy hubs would be designed and built to ensure that exposure levels are within the limits recommended by the International Commission on Non-Ionizing Radiation Protection (ICNIRP) guidelines for limiting exposure to EMF (ICNIRP, 2020).	A detailed EMF assessment will be undertaken for the Project, which considers the ICNIRP Guideline. This will include consideration of the required management controls to mitigate potential risks.

Hazard/Risk	Potential Impact	Proposed Further Assessments
Dangerous goods and hazardous materials 	Significant volumes of dangerous goods or hazardous materials are not likely to be required during the operation of the Project. All dangerous goods and hazardous materials used onsite during construction and operation of the Project would be stored and handled in accordance with the *Work Health and Safety Act 2011* and the Storage and Handling of Dangerous Goods Code of Practice (WorkCover NSW, 2005).	A preliminary risk screening will be undertaken for the Project in accordance relevant guidelines, codes of practice and Australian Standards (refer to Appendix A).
Land contamination 	The Preferred Study Corridor is situated in a predominately agricultural landscape. As such, the primary contamination risks for the Preferred Study Corridor are likely to be related to farming activities and pesticide use. There is also potential for localised contamination from unregistered landfill and waste storage and agricultural chemicals storage, or associated with mining and power generation activities at the southern end of the corridor. A search of the NSW EPA Contaminated Land Record of Notices and list of notified sites was undertaken on 13 March 2024 for the seven LGAs within the Preferred Study Corridor. This search identified no known contaminated sites within the study corridor. The closest known contaminated site is 'Woolomin Gold Rush Store', located 1.9 km west of the Preferred Study Corridor in the township of Woolomin.	A preliminary contamination assessment will be undertaken for the Project. This assessment will use both publicly available data and risk-based soil sampling to identify and assess potential contamination risks associated with the construction and operation of the Project and identify any additional investigations/and or remediation activities required to avoid, minimise and manage contamination risk.
BESS 	The key potential impact resulting from a BESS is a battery fault leading to thermal runaway and fire. BESS facilities are designed with technical and design features to prevent such events from occurring. BESS facilities also incorporate appropriate automated systems to detect potential faults and shutdown equipment prior to conditions that would result in a fire.	A Preliminary Hazards Analysis (PHA) will be prepared for the Project incorporating an assessment of BESS facilities and the associated risk and hazard level as well as identification of management and mitigation measures to reduce potential hazards.

Hazard/Risk	Potential Impact	Proposed Further Assessments
Aviation 	Potential aviation impacts are discussed in Section 6.1.6 of this report.	Refer to Section 6.1.6
Utilities 	The construction of the Project has the potential to create disruption to services if utilities are not accurately identified and protected during works. The potential risk associated with utility related hazards will be minimised by carrying out utility checks (i.e. dial before you dig) and consulting with the relevant utility providers prior to commencing work.	An assessment of risks to utilities will be included in the EIS. This will be informed by further engagement with relevant utility owners and implementation of standard management practices during construction. Refer to Section 6.1.7.

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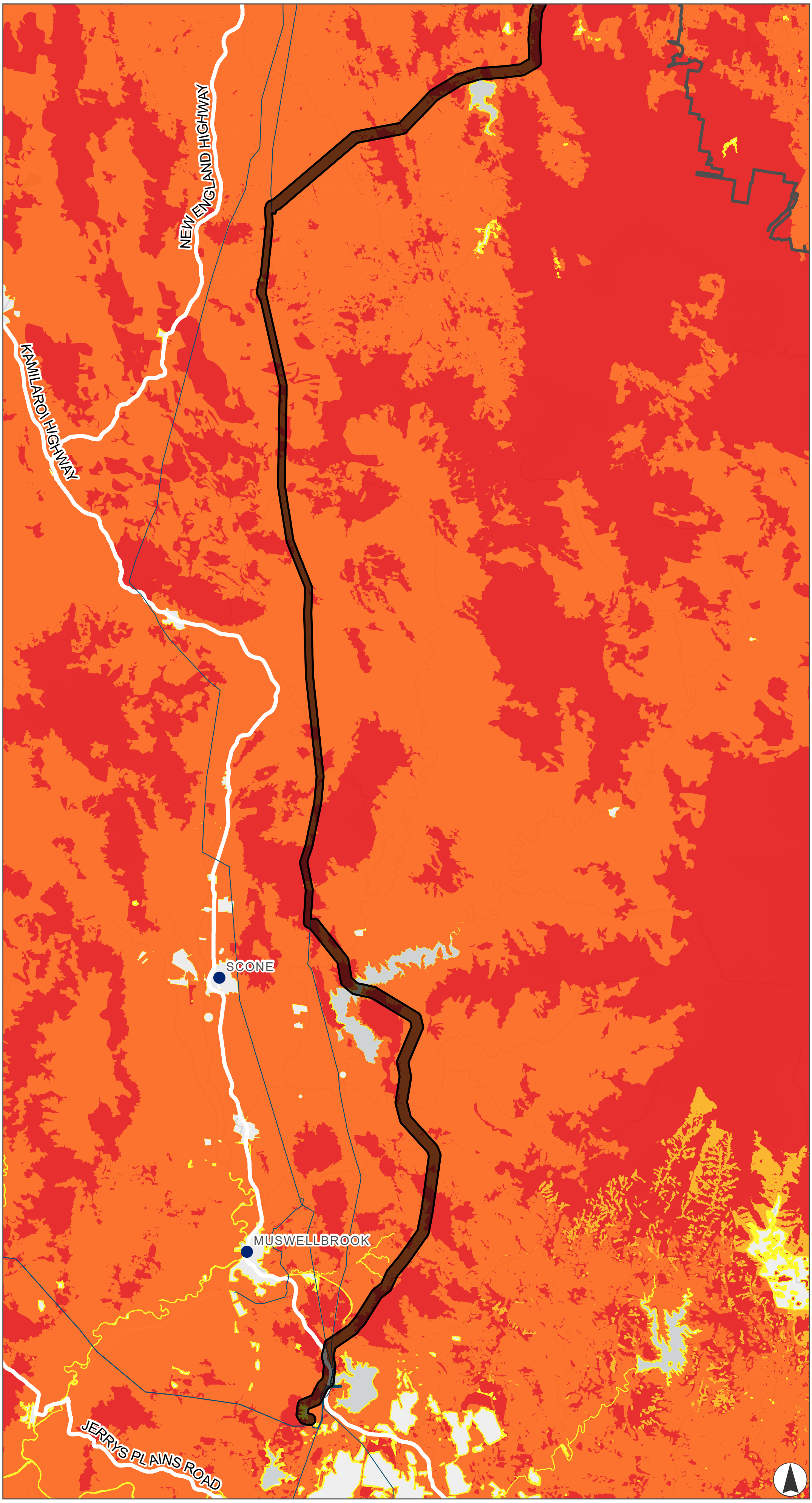
FIGURE 6-10-A

Bushfire Prone Land



Legend

- Preferred Study Corridor

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Vegetation Buffer
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

0 10 20

Kilometres

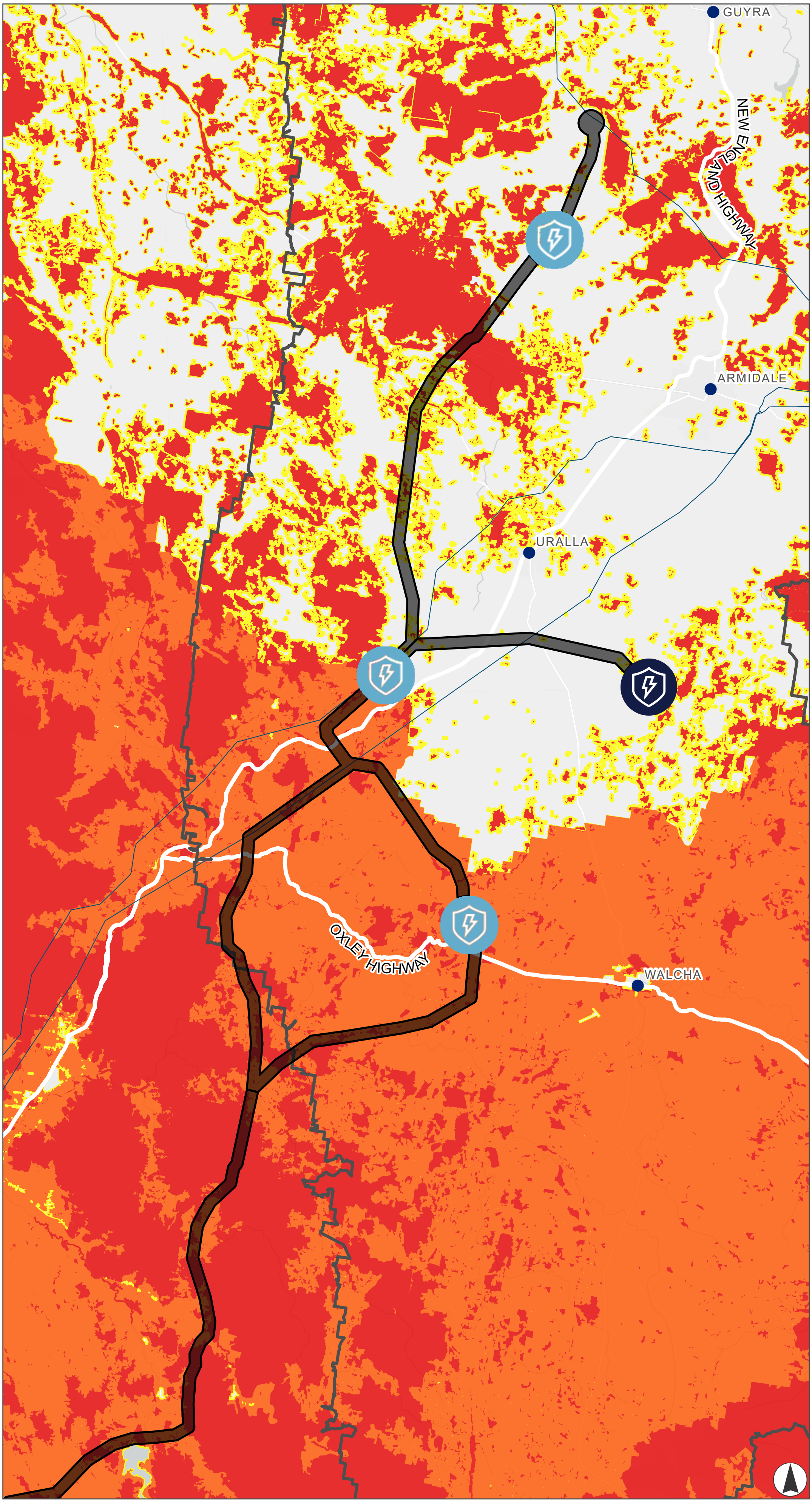
Scale 1:500,000 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

FIGURE 6-10-B

Bushfire Prone Land



Legend

- 500kV/330kV Hub
- 330kV Hub
- Preferred Study Corridor

Bushfire Prone Land

- Vegetation Category 1
- Vegetation Category 2
- Vegetation Category 3
- Vegetation Buffer
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads

0 10 20

Kilometres

Scale 1:500,000 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

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6.1.11 Traffic and transport

Traffic and transport matters are a key issue for the Project and an important aspect in consideration of potential cumulative impacts associated with the REZ, other traffic generating developments and other road users. Factors such as the road upgrades required are being considered as part of the design process taking into account other projects within the NE REZ and projects outside the NE REZ but in proximity to the Preferred Study Corridor. EnergyCo, in conjunction with Transport for NSW and relevant councils, are investigating the existing road network to determine the specific road upgrade requirements to facilitate the REZ, including the Project.

6.1.11.1 Existing environment

Primary access to the Project is proposed via the existing road network, namely the New England Highway and Oxley Highway, both of which are state roads. The New England Highway provides a north-south connection between the Project and surrounding areas, running from Newcastle, NSW, to Toowoomba, Queensland (QLD). The Oxley Highway provides an east-west connection between the Project and surrounding areas, running from Nevertire to Port Macquarie in NSW. From these highways, the regional and local road network will be used to access various areas along the Preferred Study Corridor. Regional roads may include Lindsays Gap Road, Thunderbolt Way, Ogunbil Road, Nundle Road, Kingstown Road, Bundarra Road, Wollun Road, Hebden Road, Timor Road and Gundy Road.

Access tracks within the Preferred Study Corridor will be constructed to access the transmission line infrastructure. Additionally, new roads and upgrades to existing roads may be required if the existing road is not of a sufficient standard to accommodate heavy vehicle movements.

The proposed transportation routes for the construction and operation of the Project will be confirmed and assessed as part of the EIS.

The Preferred Study Corridor intersects two railway lines, including:

- Main Northern Railway: a major north-south directional freight and passenger railway line, which connects the Central Coast to the Hunter and New England regions. This railway is intersected by the Project near Muscle Creek, Danglemah Road, Kentucky and Walcha Road
- Drayton Junction Balloon Loop: provides a freight network for the transportation of coal to and from the mines in Muswellbrook.

The road and rail network surrounding the Project is illustrated in Figure 6-7.

6.1.11.2 Potential impacts

Construction of the Project would temporarily introduce additional heavy and light vehicle traffic movements to the local road network. This would include heavy vehicles required to deliver plant, equipment and materials, as well as the removal of waste, and light vehicles mostly associated with transporting construction personnel and minor light construction materials.

Potential construction traffic and transport impacts associated with these heavy and light vehicle movements include:

- an increase in local traffic movements using the road network, which may result in an increase in congestion along local roads and at intersections, particularly near construction compounds and accommodation camp sites
- temporary disruptions to traffic movements during the transmission line stringing works above or near public roads, and during the delivery of large Project components
- road detours due to road upgrades and construction of new roads

- temporary property access restrictions for areas within and in the vicinity to the Preferred Study Corridor
- impacts on the condition of roads due to increased construction traffic
- potential disruptions to rail movements along the Main Northern Railway and Drayton Junction Balloon Loop lines when construction works are being completed around this rail infrastructure.

Aerial transportation modes may be used during construction, including helicopters for the delivery of some equipment and materials, and helicopters and/or drones for stringing of the transmission lines in certain areas. Coordination of aerial activities would be completed in consultation with local landowners, Airservices Australia and CASA to minimise potential air traffic conflicts.

Traffic impacts during operation are expected to be minimal, as transportation requirements would generally be limited to light vehicles used for maintenance activities, as well as travel by operational staff to energy hub and switching station sites.

6.1.11.3 Proposed further assessments

The EIS will include a detailed assessment of potential traffic and transport impacts as a result of the Project, which will include:

- a description of the existing traffic and transport environment along the Preferred Study Corridor, including traffic volumes, road regulations (speed limits, heavy vehicle restrictions), crash history, as well as active and public transport provisions
- identification of key transport routes, including OSOM routes, and access points for construction compounds, laydown and accommodation camp sites
- identification of daily and peak traffic movements likely to be generated from construction of the Project
- assessment of the Project's construction and operational traffic on the performance of key roads and intersections within the surrounding road network and potential impacts on road condition
- consideration of potential impacts of the Project on active and public transport infrastructure and services, where relevant
- an assessment of impacts on local events, agricultural shows and tourist events, and consideration of agricultural and industrial traffic and peak periods for the region
- consideration of the potential impacts on property access by the Project during construction, such as access adjustments and/or temporary disruptions
- mitigation measures to avoid, minimise and manage any identified potential impacts of the Project.

A qualitative assessment of the potential operational traffic impacts of the Project will be carried out to consider the potential impacts of maintenance vehicles on the public road network along the Preferred Study Corridor, public and active transport infrastructure and property access. As aerial operations will be annual or on an ad-hoc basis, no further assessment is proposed.

6.1.12 Hydrology, water quality and flooding

6.1.12.1 Existing environment

Surface water and hydrology

The Preferred Study Corridor extends across the Hunter, Namoi, Gwydir and Macleay River catchments, as shown in Figure 6-11. The Preferred Study Corridor crosses Glenbawn Dam on the

Hunter River, along with a number of other rivers, including the Pages River, Peel River, Macdonald River and Gwydir River (Rocky River), and various named and unnamed creeks.

Key fish habitat is present throughout the Preferred Study Corridor, within both named and unnamed watercourses.

Surface water within the Preferred Study Corridor is regulated under a range of Water Sharing Plans, as shown in Table 6-8 below.

Table 6-8 Relevant water sharing plans – surface water

Water Sharing Plan	Water Sources
Water Sharing Plan for the Hunter Regulated River Water Source 2016	Hunter Regulated River Water Source
Water Sharing Plan for the Peel Regulated River Water Source 2022	Hunter Regulated River Water Source 2016
Water Sharing Plan for the Hunter Unregulated and Alluvial Water Sources 2022	Isis River Water Source Jerrys Water Source Muswellbrook Water Source Pages River Water Source Rouchel Brook Water Source Upper Hunter River Water Source
Water Sharing Plan for the Gwydir Unregulated River Water Sources 2012	Boorolong Creek Water Source Laura Creek Water Source Rocky River Water Source Roumalla Creek Water Source
Water Sharing Plan for the Macleay Unregulated and Alluvial Water Sources 2016	Apsley River Water Source Salisbury Waters Water Source
Water Sharing Plan for the Namoi and Peel Unregulated Rivers Water Sources 2012	Mid Macdonald River Water Source Quirindi Creek Water Source Upper Macdonald River Water Source Chaffey Water Source Cockburn River Water Source Goonoo Goonoo Creek Water Source Upper Peel River Tributaries Water Source

Flooding

There is no mapped flood prone land identified within the Preferred Study Corridor, which likely reflects the lack of previous flood studies within the vicinity of the Project. As outlined in Section 6.1.12, the Preferred Study Corridor intersects a number of rivers including the Hunter River (at Glenbawn Dam), Pages River, Peel River, Macdonald River and Gwydir River (Rocky River) and their associated floodplains, as well as a number of named and unnamed creeks.

6.1.12.2 Potential impacts

Surface water and hydrology

Construction of the Project has the potential to impact surface water and hydrology through modification of surface water flows (for example volume, rate, timing and velocity) and/or drainage patterns, due to the impact of earthworks during construction and the need for possible new access ways across creeks within the Preferred Study Corridor. Construction activities with the potential to impact surface water and hydrology include:

- construction of transmission line infrastructure and associated access tracks within watercourses and riparian zones
- earthworks including flow diversions, the establishment of bunding and material stockpiles and temporary drainage infrastructure during construction
- detention and potential reuse of stormwater captured in temporary construction sediment basins
- potential release of groundwater inflows from construction excavations into watercourses.

Earthworks within watercourses and associated construction activities have the potential to impact aquatic habitat and impede fish passage within areas of key fish habitat.

The introduction of additional areas of hardstand associated with energy hub and switching station sites may also result in minor localised impacts to surface water and hydrology by altering the characteristics of local surface water flows and/or drainage patterns during operation of the Project.

Water quality

Construction and operation of the Project has the potential to impact surface water quality through:

- increased sediment load and the potential for spills (e.g. fuel, oil) associated with construction sites or with oils and other material from energy hub and switching station sites
- discharge of water from construction phase concrete batching plants
- potential exposure of saline and/or acid sulfate soils during construction.

These impacts are expected to be manageable through appropriate design of drainage and water quality controls, siting new infrastructure away from floodplains or watercourses where practicable, and implementation of standard environmental management measures during construction and operation.

Flooding

During construction of the Project, potential flooding impacts include:

- interruption of overland flow paths by temporary structures (ancillary facilities), materials, plant and equipment
- altered stream flows due to the establishment of temporary access tracks.

During operation, there is potential for Project related infrastructure such as energy hubs to obstruct flow paths and alter flood behaviour, including flood depth and velocity. No permanent Project infrastructure or structures will be located within major watercourses, however, they may be located within floodplains. Structures will be designed to not impede flood flows and whilst material impacts on flooding are not expected, an assessment will be completed as part of the EIS.

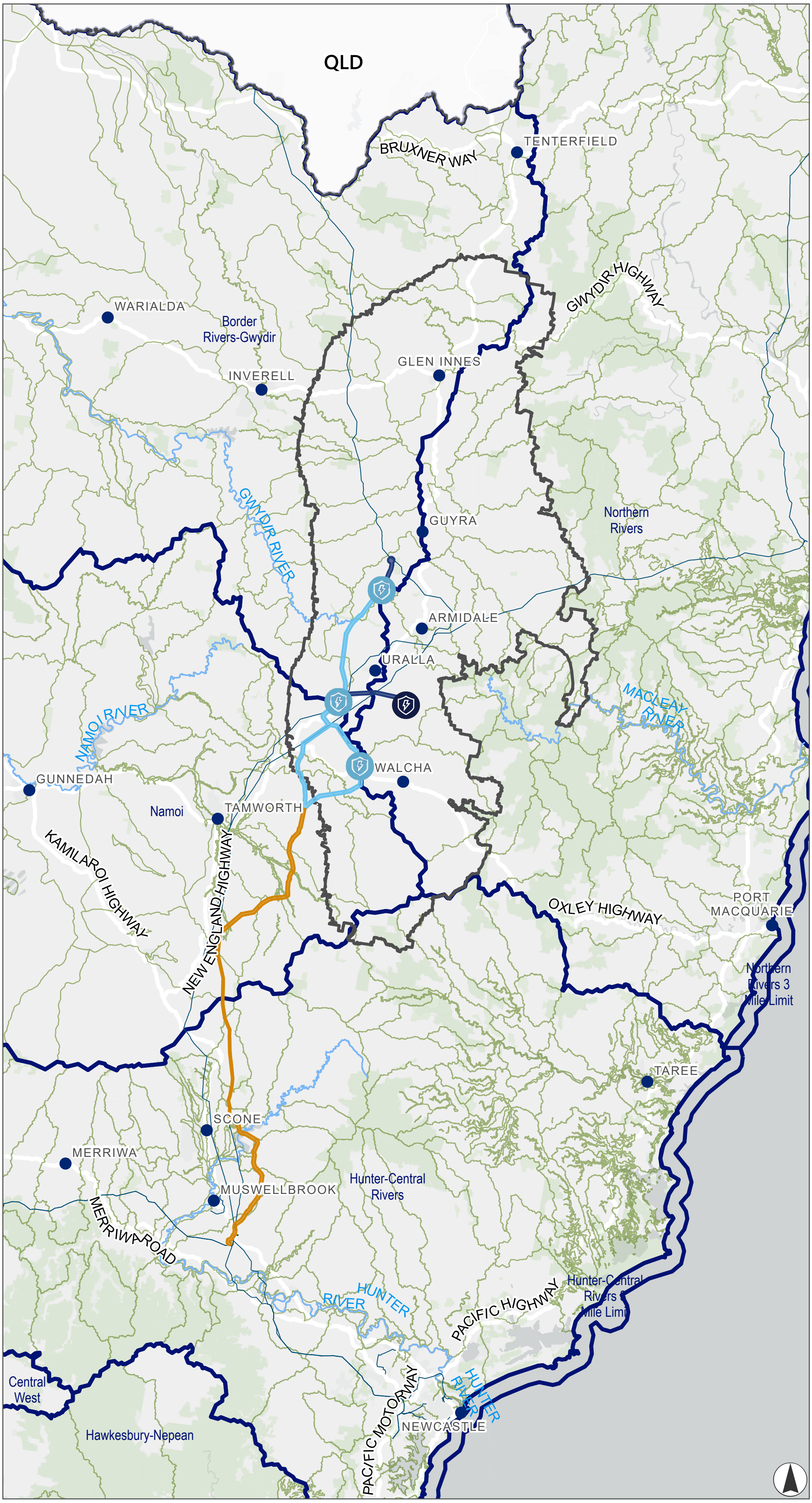

FIGURE 6-11

Surface Water Catchment Areas and Sharing Plans

Legend

- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads
- Watercourse
- Catchment Management Authority
- Surface Water Sharing Plan Boundaries

0 10 20
Kilometres

Scale 1:1,946,913 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

6.1.12.3 Proposed further assessments

The EIS will include a standard assessment of potential hydrology, water quality and flooding impacts as a result of the Project, which will:

- Determine existing conditions relevant to hydrology, water quality and flooding for the Preferred Study Corridor and surrounds.
- Provide an assessment of the impacts of the Project on the water quantity and quality, having regard to NSW Water Quality Objectives.
- Include an assessment of geomorphology, including review of the existing geomorphic condition of waterways, and qualitative assessment of potential changes in surface water flows and impacts to geomorphology from the Project.
- Provide details of Project water demand, proposed water supply and wastewater disposal arrangements for construction and operation.
- Describe the existing hydrologic and flood environments across a range of flood events.
- Identify likely impacts to waterfront land (where works are proposed within 40 m of the high bank of any river, lake or wetlands) and describe how impacts to waterfront land would be managed, having regard to relevant DPI guidelines.
- Include a water security and wastewater assessment, including details of water requirements, supply arrangements and wastewater disposal arrangements for construction and operation including review of indicative demand for water from construction and operation of the Project and assessment of potential impacts to water availability for the construction and operation of the Project.
- Describe the erosion and sediment control measures that would be implemented to mitigate any impacts aligned with Managing Urban Stormwater: Soils & Construction series, including Volumes 1, 2A and 2C (the Blue Book).
- Provide a qualitative assessment of potential flood impacts and risks.

As discussed in Section 2.4, EnergyCo has begun a series of targeted studies relating to potential opportunities and constraints associated with the anticipated future development across the REZ, including the Project. These studies will assist EnergyCo in coordinating tailored management strategies to realise the potential benefits and opportunities, along with mitigating the potential cumulative impacts of development in the REZ. This will include an assessment of water and wastewater security to understand the current capacity of these services and likely peak demands during development in the REZ and identifying the measures required to ensure an adequate supply of water and treatment of wastewater.

An assessment of impacts to aquatic habitat (including key fish habitat) will be provided in the biodiversity assessment supporting the EIS (refer to Section 6.1.1.3).

6.1.13 Groundwater

The potential for adverse groundwater impacts associated with the Project is low based on the likely extent of excavation required and the temporary nature of Project construction. While impacts to groundwater during construction and operation will require further assessment in the EIS, these are likely to be minor and able to be managed through a range of standard mitigation measures which will be detailed in the EIS.

6.1.13.1 Existing environment

Groundwater resources within the Preferred Study Corridor include fractured rock and porous aquifers and as well as alluvial aquifers associated with the Hunter River, Pages River, Peel River, Macdonald River and Gwydir River (Rocky River) and various named and unnamed creeks. While fractured and porous rock aquifers within the Preferred Study Corridor are typically low yielding, with low to moderate connection with surface water (DPE, 2022h; DPI Water, 2016a), alluvial aquifers are of high value for local communities and agricultural production. In particular, the Tamworth Regional Council extracts groundwater from the Peel River alluvium for its town water supply. Additionally, the Pages River alluvium is utilised for irrigation purposes by horse studs within the Upper Hunter Equine CIC (DPI Water, 2016b).

The Preferred Study Corridor avoids vulnerable groundwater resources identified under the Upper Hunter LEP 2013. These mapped vulnerable groundwater resources include areas of the Hunter and Pages River alluvium south, southeast and east of Scone (and in the vicinity of the Upper Hunter Equine CIC) as shown in Figure 6-12. No other mapped vulnerable groundwater resources are identified in the vicinity of the Preferred Study Corridor.

The Preferred Study Corridor contains areas that have been mapped as high, moderate or low potential for containing both aquatic and terrestrial GDEs. Section 6.1.1 provides further detail regarding potential impacts to GDEs and the proposed approach to assessment in the EIS.

Groundwater within the Preferred Study Corridor is regulated under a range of Water Sharing Plans, as shown in Table 6-9 below.

Table 6-9 Relevant water sharing plans – groundwater

Water Sharing Plan	Water Sources
Hunter Unregulated and Alluvial Water Sources 2022	Unnamed Upriver Alluvium in WSP in the Pages River Water Source Unnamed Upriver Alluvium in WSP in the Rouchel Brook Water Source
Namoi Alluvial Groundwater Sources 2020	Peel Alluvium Water Source
North Coast Fractured and Porous Rock Groundwater Sources 2016	Sydney Basin-North Coast Groundwater Source
NSW Murray Darling Basin Fractured Rock Groundwater Sources 2020	New England Fold Belt MDB Groundwater Source

6.1.13.2 Potential impacts and proposed further assessment

During construction, potential impacts to groundwater may include:

- impacts on groundwater associated with extraction of groundwater for use in construction works and/or the potential interception of groundwater during excavation
- impacts on groundwater quality associated with any spills or leakage of fuels, chemicals or wastewater entering shallow aquifers (noting that these risks can be readily managed with appropriate controls)
- impacts on GDEs and riparian areas, due to the extraction of groundwater for use during construction and/or impacts on groundwater quality and flows.

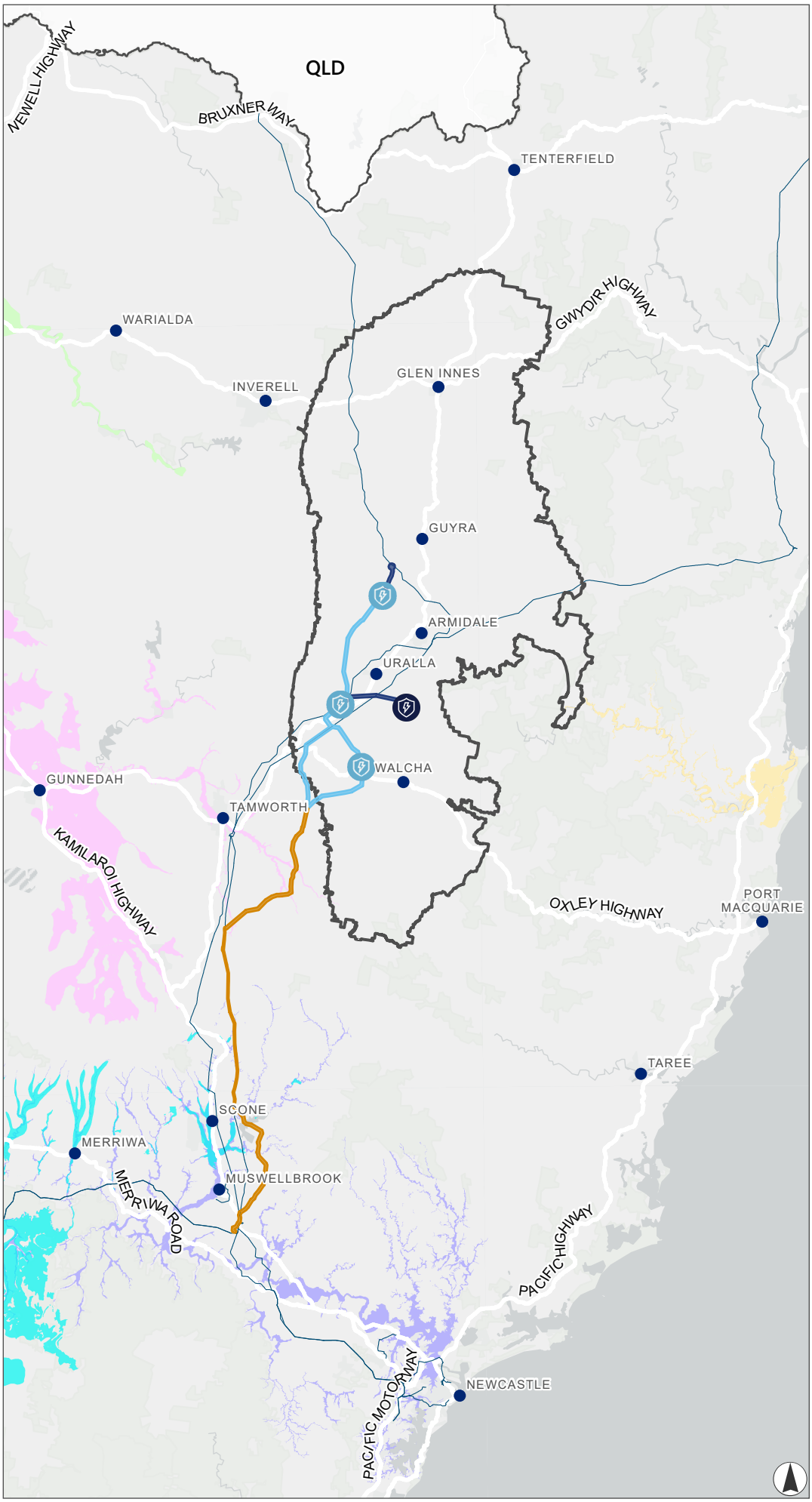

FIGURE 6-12

Vulnerable Groundwater Resources and Groundwater Sharing Plans

Legend

- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Town
- Renewable Energy Zone
- Existing high voltage lines
- Major Roads
- Groundwater Vulnerability

Water Sharing Plan - Groundwater Sources

- Gwydir Alluvial Groundwater Sources 2020
- Hunter Unregulated and Alluvial Water Sources 2022
- Macleay Unregulated and Alluvial Water Sources 2016
- Namoi Alluvial Groundwater Sources 2020

0 25 50

Kilometres

Scale 1:2,000,000 at A4

GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) | **Data Source:** NSW DFSI (2024), NSWSS (2024)

Groundwater impacts during operation are expected to be minor, and primarily associated with reduced recharge at the energy hub locations due changes to natural drainage and increased impervious area.

The EIS will include an assessment of potential groundwater impacts as a result of the Project, which will:

- Review publicly available geological and hydrogeological information and data from completed geotechnical investigations in the Preferred Study Corridor to:
  - Determine the existing groundwater environment (including groundwater levels, hydraulic conductivity, groundwater flow directions and groundwater quality).
  - Identify existing boreholes, groundwater users and GDEs that could potentially be impacted by the Project.
  - Provide an assessment of potential impacts to groundwater resources and groundwater dependent ecosystems during the construction and operation of the Project, including an estimation of groundwater inflow to excavations based on the identified characteristics of the existing groundwater environment and Project construction methodology, having regard to the NSW Aquifer Interference Policy and relevant Water Sharing Plans.
- Detail proposed mitigation measures to minimise the potential impacts to groundwater resources and groundwater dependent ecosystems during construction and operation.

6.1.14 Air quality

The Project is not anticipated to result in significant or widespread air quality impacts during construction or operation. Standard measures to control emissions such as dust from construction sites would be implemented during the construction phase and detailed in the EIS.

6.1.14.1 Existing environment

Air quality in the vicinity of the Project is likely to be variable, reflecting the varied land use patterns along the Preferred Study Corridor. This includes the regional centres of Armidale, Tamworth and Muswellbrook, smaller settlements (including Uralla, Walcha and Kentucky), scattered rural dwellings and agricultural operations, along with mining operations and the Bayswater Power Station in the Upper Hunter region.

Outside of the regional centres (which are more heavily influenced by pollutants such as vehicle exhausts and woodsmoke) and areas affected by mining, ambient air quality is generally characteristic of a rural area and is affected by a number of factors including topography, prevailing meteorological conditions and local dust sources, including farming.

6.1.14.2 Potential impacts

During construction, local air quality in the vicinity of the Project may be temporarily affected by particulate (dust) emissions associated with clearing of vegetation, earthworks, material stockpiling, concrete batching, access track construction, and the movement of vehicles, plant and equipment along unsealed roads and tracks. There is also the potential for localised gaseous emissions generated by the combustion of fuel in construction plant, machinery and emissions.

The main sensitive receivers for air quality impacts during construction would be residences within 100 m of proposed construction works. Air quality impacts associated with transmission line construction are expected to be relatively localised and of short duration in any one location, due to the small scale of construction works required at each transmission line structure location, distance from sensitive receivers, and the progressive nature of the construction works. However, potential air quality impacts associated with construction of the energy hubs would be sustained over a longer period of time and increased earthworks at these locations.

During operation, the Project is expected to have a negligible impact on air quality, subject to the implementation of standard environmental management measures.

6.1.14.3 Proposed further assessments

The EIS will include a standard assessment of potential air quality impacts as a result of the Project, which will include:

- A description of the background air quality environment and identification of sensitive receivers, based on a desktop assessment and review of existing information.
- Identification of activities and sources of air emissions that have the potential to impact air quality during the construction and operation of the Project.
- A semi-quantitative, risk based assessment for particulate matter, based on guidance provided by the Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management (IAQM), 2014). The risk assessment will consider the area of disturbance, materials and equipment, vehicle movements, scheduling, and distance to sensitive receiving environments to potential emission sources such as the new construction areas, compounds, stockpile areas and concrete batching plants.
- A qualitative assessment of dust impacts along construction haulage routes. This will consider the risk for amenity impacts considering the nature of the proposed haulage activity, the distance of the sensitive receiver to the road and whether or not the road is sealed.
- A quantitative assessment of crushing and screening activities at Project earthwork material sites and/or construction compounds (including temporary concrete batching plants).
- Mitigation measures to minimise the potential impacts to air quality during construction.

6.1.15 Greenhouse gas and climate change

The Project is a key piece of strategic transmission infrastructure that would enable the transition to a lower emissions economy and would contribute towards achieving the target of net-zero carbon emissions by 2050. Section 1 and Section 2 of this report provide a detailed discussion of the background and need for the Project, having regard to climate change considerations.

6.1.15.1 Potential impacts

Notwithstanding the strategic importance of the Project for emissions reduction, its construction will generate greenhouse gas emissions through vegetation removal, combustion of fuels by plant and vehicles, consumption of electricity, use of materials including steel and concrete and from waste. The use of construction equipment and the manufacture of materials for use in the Project would consume resources associated with greenhouse gas emissions. The volume of greenhouse gas emissions during construction will depend on a range of factors, including design development of the Project, the type and quantity of construction materials used, construction methods and equipment.

There is also the potential for climate change related risks to impact the construction phase, including more frequent and/or more severe weather events, such as extreme temperature, flooding, changes in rainfall patterns and fire risk. This would place increased pressure on control measures to prevent flooding, erosion and sedimentation and bushfire ignition. Extreme weather could delay construction of the Project, damage materials and cause adverse health impacts for the Project workforce.

During operation, minor greenhouse gases emissions would occur through fuel or electricity consumed by operational systems, plant or vehicles as well as the consumption of materials or removal of vegetation during maintenance activities.

During operation, climate change related risks may include:

- an increase in the number and severity of weather-related electricity outages
- higher temperatures causing increased demand for electricity, while at the same time causing thermal expansion of power lines (resulting in line sag), increased resistance of transmission, decreased amount of power that can be securely transmitted and accelerated aging of transformers
- potential flood damage to Project infrastructure, including potential inundation of energy hubs and weakening of the transmission line towers due to erosion or debris impact
- bushfire damage to Project infrastructure, often coinciding with the increased demand for electricity from high temperatures.

6.1.15.2 Proposed further assessments

Opportunities to reduce greenhouse gas emissions during construction and operation will be explored further during design development, with emissions reduction commitments to be documented in the EIS.

The greenhouse gas assessment for the Project will:

- identify the likely sources of greenhouse gas emissions associated with construction of the Project
- quantify the greenhouse gas emissions associated with each greenhouse gas source
- identify opportunities to reduce greenhouse gas emissions, which will form the basis of emissions reduction commitments to be outlined in the EIS.

Climate change risks will be considered within relevant technical reports, including the assessment of bushfire and flooding impacts. The EIS main report will draw together the findings of the relevant technical assessments and provide an overall assessment of climate change related matters.

6.1.16 Waste management and resource use

Waste management and resource use associated with the construction and operation of the Project is not anticipated to result in significant adverse environmental impacts, subject to the implementation of standard environmental management measures which would be detailed in the EIS.

Project construction is expected to generate a range of solid and liquid waste materials typical of large-scale infrastructure developments, including:

- vegetation waste from clearing of easements, access roads and energy hub sites
- excess spoil from excavations and access track works that cannot be reused on-site
- surplus construction materials such as steel, concrete, construction off-cuts and packaging
- general domestic waste generated by construction and maintenance personnel
- wastewater produced at construction compounds and workforce accommodation camps
- small quantities of waste oils, greases, chemicals and lubricants from operation of plant and equipment.

Construction waste would be segregated and stockpiled on site, with materials such as clean excavated soil, concrete, timber, plastic and metals separated for reuse or recycling. Any potentially contaminated or hazardous materials would be segregated to minimise the risk of cross-contamination.

During operation, limited waste would be generated by ongoing maintenance activities consisting primarily of green waste from vegetation trimming in the transmission line easement, as well as small quantities of other waste materials (such as the replacement of fittings and equipment) and general domestic waste from operation and maintenance personnel.

Construction and operational waste would be managed and handled in accordance with the EPAs Waste Classification Guidelines. Waste requiring disposal during construction and operation would be directed to an authorised waste management facility, in consultation with facility operators. EnergyCo recognises that regional waste disposal capacity is a key issue for local Council's and the broader community and will work with Council's as part of its cumulative impact studies for the New England REZ it identifies appropriate strategies to facilitate appropriate waste management capacity.

Whilst waste disposal capacity is a key issue to be investigated and resolved as part of cumulative impact studies, it is expected that waste generation, management and disposal associated with the construction and operation of the Project can be appropriately managed subject to the implementation of standard environmental management measures which will be detailed in the EIS.

Key resources required for the construction of the Project will include fill material, water, fuel, concrete, steel and electricity. During the operational phase, resource demand would largely be limited to electricity for the operation of the energy hubs, along with small quantities of potable and non-potable water for worker amenities, material to maintain access tracks (e.g. road base and aggregates) and fuel, oils and the like to maintain machinery and vehicles.

While Project construction would result in some increased demand on local and regional resources, it is unlikely that the Project alone would result in any of these resources becoming scarce or in short supply, with the potential exception of construction water. Potential sources of construction water will be identified and assessed as part of the EIS and also considered in EnergyCo's cumulative impact assessments for the broader New England REZ.

The EIS will include a standard assessment of potential waste management and resource use as a result of the Project. This assessment will include:

- Identification of potential waste streams that would be generated during construction and operation of the Project.
- Standard management practices compliant with relevant legislation, policies and guidelines to avoid or minimise waste from the Project. This will include material reuse and recycling measures (where practicable), and disposal practices.
- Identification of the types and sources of resources expected to be required for construction and operation of the Project, having regard to relevant legislation (including the *Water Management Act 2000* and relevant WSPs) and likely cumulative demand for resources in proximity to the Project (refer to Section 6.1.17 below).

6.1.17 Cumulative impacts

As discussed in Section 2.4, EnergyCo understands the community and other stakeholder focus on potential cumulative impacts and the need for these to be appropriately assessed and managed for the New England REZ. In recognition of the importance of the effective management of cumulative impacts, EnergyCo has commenced a series of targeted studies relating to potential cumulative impacts associated with the REZ which also consider the Project. These studies will assist EnergyCo in developing tailored management strategies to mitigate potential cumulative impacts in consultation with key stakeholders including the Council's, government agencies and the community and will form the basis of the cumulative impact management measures identified in the EIS.

The Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022d) define the requirements for cumulative impact assessment (CIA) and will be addressed by the cumulative

impact assessment completed for the EIS. The guideline requires assessment that is proportionate to the scale and potential significance of the cumulative impacts of a project combined with the impacts of other relevant future projects, with a focus on key matters that could be materially affected.

The Preferred Study Corridor is approximately 350 km in length and extends from the existing Bayswater substation in the Upper Hunter, connecting to the New England REZ. There are a number of proposed or approved renewable energy developments within the New England REZ and along the broader bulk corridor. Additionally, a number of large-scale approved and proposed infrastructure, mining and extractive industry developments within the Upper Hunter region and elsewhere along the Preferred Study Corridor have the potential to overlap with the planned construction phase of the Project.

Relevant future projects that may be considered (but not necessarily limited to) in the CIA as part of the EIS are identified in Table 6-10 based on a review of DPHI's Major Projects Portal. Relevant future projects that will be subject to the CIA are subject to ongoing review as part of the EIS. In regard to the New England REZ, the total planned generation capacity of the REZ will be considered in addition to particular projects known at the time of EIS preparation. This approach will ensure that potential cumulative impacts associated with the REZ are considered at an appropriate scale in the EIS.

Table 6-10 Possible relevant future projects for cumulative impact assessment

Area of Project	Possible relevant future projects (subject to ongoing review during EIS)	
Bulk Corridor	• Hunter Transmission Project • Liddell Future Land Use and Enabling Works Project • Liddell Battery and Bayswater Ancillary Works Project • Bayswater Power Station Upgrade • Mount Pleasant Optimisation Project • Mount Pleasant Modification 7 • Mt Arthur Coal Mod 2 (Pathway to 2030) • HVO South Open Cut Coal Continuation Project • Muswellbrook Bypass Project • Queensland – Hunter Gas Pipeline • Muswellbrook Pumped Hydro and Energy Storage Project • Muswellbrook Solar Farm.	• Bowmans Creek Wind Farm • Hunter River Solar Farm • Upper Hunter South Solar Farm • Upper Hunter Battery Energy Storage System • Maxwell Solar Farm • Muswellbrook Battery Energy Storage System • Willowtree Gravel Quarry Extension • Hills of Gold Wind Farm • Middlebrook Solar Farm • Tamworth Battery Energy Storage System • Kingswood Battery Energy Storage System • Lambruk Solar Farm • Nottingham Park Solar Farm • Tangaratta Feedmill.
REZ	• Bendemeer Solar Farm	• Armidale Battery Energy Storage System

Area of Project	Possible relevant future projects (subject to ongoing review during EIS)	
	• Bendemeer Wind Farm • Thunderbolt Wind Farm • New England Solar Farm • Deeargee Solar Farm • Oven Mountain Pumped Hydro • Doughboy Wind Farm • Rangoon Wind Farm • Boorolong Wind Farm • Salisbury Solar Farm • Oxley Solar Farm.	• Eathorpe Battery Energy Storage System • Armidale East Battery Energy Storage System • Sundown Solar Farm • Tilbuster Solar Farm • Ruby Hills Wind Farm • Yarrowyck Wind Farm • UNE New Wright Block • Glenn Innes Battery Energy Storage System.

Given the proximal location of these projects to the proposed Project, there is potential for cumulative impacts across key environmental and social matters. The impacts would be dependent on the final size, timing and duration of the construction and operation of the surrounding projects. These key matters (as well as other relevant environmental matters) will be subject to a detailed cumulative impact assessment during the preparation of the EIS for the Project. Appendix A outlines where a CIA will be undertaken for the relevant matters including the level of assessment and associated engagement.

Table 6-11 provides a summary of the key considerations in CIA under the guideline.

Table 6-11 Cumulative impact assessment considerations

Scoping Cumulative Impact Assessment	Detail
What to assess?	Key cumulative impacts which may arise in relation to the Project and its interactions with relevant future projects for consideration in the EIS include (also refer to Appendix A): • biodiversity • Aboriginal heritage • visual amenity • agriculture and soils • social, including workers accommodation, health and other services, noting broader EnergyCo REZ wide studies as discussed in Section 2.4 • noise and vibration • traffic and transport • water and water supply • waste and resources • economic.

Scoping Cumulative Impact Assessment	Detail
What study area?	The study area will vary depending on the specific characteristics of the assessment matter and the scale and nature of the potential impacts on the matter resulting from the Project with other relevant future projects. Each CIA will be undertaken in accordance with the relevant guidelines, where applicable, and broad enough to capture all relevant cumulative impacts.
Over what time period?	Life of the Project including construction, operation and decommissioning.
What projects to include?	The effects of past developments and actions, as well as currently operating projects will be captured in the baseline environmental and social studies for the Project. The CIA will consider the cumulative impacts of the Project on key matters with other proposed developments including the REZ, which may include those outlined in Table 6-10, as relevant. This includes changes to existing projects (modifications), approved projects or projects under assessment. Relevant future projects for consideration in the CIA will be reviewed throughout the preparation of the EIS.
What is the approach to assessment?	All CIAs will be undertaken in accordance with approved assessment methods for relevant matters.
What are the key uncertainties?	Key uncertainties to undertaking the CIAs will include availability and quality of data on proposed future projects at the time of preparation of assessments. Relevant CIAs will identify realistic development scenarios with the relevant future projects over the life of the Project.

A detailed cumulative impact assessment will be presented in the EIS, which will:

- confirm relevant future projects that could be included in the cumulative impact assessment. This will consider:
  - spatial relevance to the Project and/or impacts of the Project
  - timing (e.g. if works are to occur concurrently)
  - scale and nature of the potential impacts of the relevant State or regional projects.
- provide an assessment of the potential cumulative impacts, including identification of relevant issues likely to have material cumulative impacts during construction and/or operation of the Project, using a combination of quantitative and qualitative assessment methods
- identify a range of mitigation and management strategies to address potential cumulative impacts.

The cumulative impact assessment will consider developments that have publicly accessible information sufficient to inform a cumulative impact assessment at the time of preparing the EIS.

The Cumulative Impact Assessment Guidelines establish two types of assessment: issue-specific and combined methods. The matters requiring an issue-specific or a combined cumulative impact assessment will be informed by the further development of the Project and construction methodology, and progression of the EIS.

6.2 Matters requiring no further assessment

Table 6-12 below outlines the matters that are considered to not require further assessment in the EIS based on the scoping phase of the assessment.

Table 6-12 Matters requiring no further assessment in the EIS

Issue	Comment
Coastal hazards	The Project is not located within a coastal zone and will not result in any impacts to coastal zones.
Odour	The Project is not expected to cause any odour.

7 Conclusion

EnergyCo is seeking approval for the construction and operation of new high voltage electricity network infrastructure that is required to connect renewable energy generation and storage projects within the New England REZ to the existing electricity network. The Project comprises the following key features:

- New transmission infrastructure including new dual double circuit 500 kV transmission lines and associated infrastructure to connect the New England REZ to the to the NEM to the west of Singleton NSW; and new double circuit 330 kV and 500 kV single lines to connect to the proposed energy hubs within the New England REZ.
- Four energy hubs (including substations and switching stations) to connect future energy generation and storage projects within the New England REZ to the new 500 kV transmission infrastructure.
- Establishment and upgrade of access tracks and public roads, and other ancillary works such as laydown and staging areas, earthworks material sites with crushing and screening plants, concrete batching plants, stringing sites, site offices and workforce accommodation camps.
- Adjustments to the existing transmission line and utility infrastructure required for construction of the new network infrastructure.

The Project is planned to be delivered in two stages over a period of approximately 6 years. Staging the Project enables EnergyCo to commit to unlocking a transfer capacity of 2.4 GW in the New England REZ by approximately 2031 through Stage 1 with an additional 3.6 GW to be delivered during Stage 2 by 2033.

The avoidance of environmental, social and cultural impacts has informed the development of an ongoing revision to the alignment of the Project. This will continue throughout the preparation of the EIS as further design, environmental, social and cultural studies are completed.

The Project is CSSI and will be assessed by the NSW Minister for Planning and Public Spaces under Division 5.2, Part 5 of the EP&A Act. The Project also requires consideration under the EPBC Act and a referral under this Act will be submitted to DCCEEW (Commonwealth). Should the Project be determined to be a controlled action that requires approval under the EPBC Act, it is proposed to be assessed in accordance with the NSW Assessment Bilateral Agreement.

The environmental, cultural and social matters identified as key issues requiring further assessment as part of the EIS to fully understand the potential impacts and identify Project specific mitigation measures and / or alternatives include:

- biodiversity
- Aboriginal heritage
- non-Aboriginal heritage
- social
- visual amenity
- land use and property
- agriculture
- traffic and transport.

Other matters that are expected to generate minimal or low impacts include economic, noise and vibration, hazards and risk, hydrology, water quality and flooding, groundwater, contamination, waste management and resource use, air quality and greenhouse gas and climate change.

The EIS will be prepared in accordance with the SEARs issued for the Project and will be publicly exhibited by DPHI. This will provide all stakeholders (including the community, stakeholder organisations and government agencies) the opportunity to provide formal submissions regarding the Project. The EIS is currently expected to be exhibited in the second half of 2025.

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Appendix A: Scoping Summary Table

Matter	Key issue	Level of assessment	CIA	Level of engagement	Relevant Government plans, policies and guidelines	Scoping Report reference
Biodiversity	Yes	Detailed	Yes	Specific	• Biodiversity Assessment Method (DPIE, 2020) • NSW Threatened Species Survey and Assessment Guidelines (various) • Matters of National Environmental Significance Significant Impact Guidelines 1.1 (Commonwealth of Australia, 2013) • Commonwealth Department of the Environment – Nationally Threatened Ecological Communities and Threatened Species Guidelines (various) • Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various) • Developments adjacent to National Parks and Wildlife Service lands – Guidelines for consent and planning authorities (National Parks and Wildlife Service, 2020) • NSW Groundwater Dependent Ecosystem Policy (DLWC, 2002a) • Policy and guidelines for fish habitat conservation and management (DPI, 2013b) • Aquatic Ecology in Environmental Impact Assessment (Department of Planning, 2003) • Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (Fairfull and Witheridge, 2003).	Section 6.1.1
Aboriginal heritage	Yes	Detailed	Yes	Specific	• Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH, 2011) • Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010a) • Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010b).	Section 6.1.2
Non-Aboriginal heritage	No	Detailed	No	Specific	• The Burra Charter: The Australia ICOMOS Charter for Places of Cultural Significance (Australia ICOMOS (International Council on Monuments and Sites), 2013) • Statements of Heritage Impact Guidelines (Heritage Office and Department of Urban Affairs and Planning, 2002) • Investigating Heritage Significance (Heritage Council of NSW, 2021) • Assessing Heritage Significance (Heritage Office, 2001) • Assessing Significance for Historical Archaeological Sites and 'Relics' (Heritage Branch Department of Planning, 2009) • Archaeological Assessments: Archaeological Assessment Guidelines (Heritage Office, Department of Urban Affairs and Planning, 1996).	Section 6.1.3
Social	Yes	Detailed	Yes	Specific	• Social Impact Assessment Guideline (DPE, 2023a).	Section 6.1.4
Visual amenity	Yes	Detailed	Yes	Specific	• Guideline for Landscape Character and Visual Impact Assessment - Environmental impact assessment practice note EIA-N04 (Transport for NSW, 2020a) • Guidelines for Landscape and Visual Impact Assessment (GLVIA3) Third Edition (Landscape Institute and Institute of Environmental Management and Assessment, 2013) • Guidance Note for Landscape and Visual Assessment (Australian Institute of Landscape Architects, 2018).	Section 6.1.5
Land use and property	Yes	Detailed	Yes	Specific	Regional Plans and Strategies: • New England North West Regional Plan 2041 (DPI, 2012a)	Section 6.1.6

Matter	Key issue	Level of assessment	CIA	Level of engagement	Relevant Government plans, policies and guidelines	Scoping Report reference
					• New England North West Regional Plan 2041 (DPE, 2022b) • Hunter Regional Plan 2041 (DPE, 2022c) • Strategic Regional Land Use Plan – Upper Hunter (DPI, 2012b). LEPs: • Muswellbrook Local Environmental Plan 2009 • Upper Hunter Local Environmental Plan 2013 • Liverpool Plains Local Environmental Plan 2011 • Tamworth Regional Local Environmental Plan 2010 • Uralla Local Environmental Plan 2012 • Walcha Local Environmental Plan 2012 • Armidale Regional Local Environmental Plan 2012. Community Strategic Plans: • Muswellbrook Shire 2022–2032 Community Strategic Plan (Muswellbrook Shire Council, 2022) • Community Strategic Plan – Upper Hunter 2023 (Upper Hunter Shire Council, 2023) • Liverpool Plains Shire Council Community Strategic Plan 2022–2032 (Liverpool Plains Shire Council, 2022) • Tamworth Regional Council Blueprint 100 Our Community Plan 2023–2033 (Tamworth Regional Council, 2023) • Uralla Shire Community Strategic Plan 2022–2031 (Uralla Shire Council, 2022) • Walcha 2032 Community Strategic Plan (Walcha Shire Council, 2022) • Armidale Community Strategic Plan 2017–2027 (Armidale Regional Council, 2017). Local Strategic Planning Statements: • Muswellbrook Shire Council Local Strategic Planning Statement 2020–2040 (Muswellbrook Shire Council, 2020) • Draft Upper Hunter Shire Local Strategic Planning Statement 2020 (Upper Hunter Shire Council, 2020) • Liverpool Plains Local Strategic Planning Statement 2040 (Liverpool Plains Shire Council, 2020) • Tamworth Regional Blueprint 100 Part Two, Local Strategic Planning Statement 2020 (Tamworth Regional Council, 2020) • Uralla Shire Local Strategic Planning Statement (Uralla Shire Council, 2021) • Walcha Local Strategic Planning Statement 2036 (Walcha Shire Council, 2019) • Armidale Regional Council Local Strategic Planning Statement 2020 (Armidale Regional Council, 2020). Other plans and strategies: • New England Development Strategy 2010 (WorleyParsons, 2010) • Liverpool Plains Shire Growth Management Study and Strategy 2009 (Edge Land Planning, 2009) • National Airport Safeguarding Framework, National Airports Safeguarding Framework (NASF) Guideline F: Managing the Risk of Intrusions into the Protected Operational Airspace of Airports (Department of Infrastructure, Transport, Regional Development, Communications and the Arts, various) • Advisory Circular 139.E-01v1.0: Reporting of Tall Structures (Civil Aviation Safety Authority, 2021)	

Matter	Key issue	Level of assessment	CIA	Level of engagement	Relevant Government plans, policies and guidelines	Scoping Report reference
					• AS 3891.1:2021, Air Navigation – Cables and their supporting structures – Marking and safety requirements: Part 1 Marking of Overhead Cables and Supporting Structures (Standards Australia, 2021a) • AS 3891.1:2021, Air Navigation – Cables and their supporting structures – Marking and safety requirements: art 2: Low level aviation operations (Standards Australia, 2021b) • ISO 31000:2018 Risk management – Guidelines (ISO, 2018a).	
Agriculture and soils	Yes	Detailed	Yes	Specific	• Infrastructure Proposals on Rural Land (DPI, 2013c) • Land and soil capability assessment scheme: second approximation (OEH, 2012a) • Biosecurity Risk Management in Land Use Planning and Development Guide (DPI, 2020) • Managing Urban Stormwater: Soils and construction – Volume 1 (Landcom, 2004) • Soil and Landscape Issues in Environmental Impact Assessment (DLWC, 2000) • Acid Sulfate Soils Manual (Stone et al., 1998) • Acid Sulfate Soils Laboratory Methods Guidelines (Ahern et al., 2004) • Urban and regional salinity – guidance given in the Local Government Salinity Initiative booklets (http://www.environment.nsw.gov.au/salinity/solutions/urban.htm) which includes Site Investigations for Urban Salinity (DLWC, 2002b) • Guidelines for managing salinity in rural areas (OEH, 2015) • Naturally Occurring Asbestos – Asbestos Management Plan Guide (Asbestos Awareness and the Asbestos Education Committee, 2021) • How to manage and control asbestos in the workplace – Code of Practice (Safe Work Australia, 2020) • Managing asbestos in or on soil (WorkCover NSW, 2014).	Section 6.1.7
Economic	Yes	Standard	Yes	General	N/A	Section 6.1.8
Noise and vibration	Yes	Standard	Yes	Specific	• Noise Policy for Industry (NSW Environment Protection Authority (EPA), 2017a) • Interim Construction Noise Guideline (DECC, 2009) • Draft Construction Noise Guideline (EPA, 2020a) • NSW Road Noise Policy (DECCW, 2011) • Environmental Noise Management – Assessing Vibration: A Technical Guideline (DECC, 2006).	Section 6.1.9
Hazard and risk	Yes	Standard	No	Specific (bushfire) General (other)	• Bushfire: — Planning for Bush Fire Protection (NSW Rural Fire Service, 2019) — AS3959:2018 – Construction of buildings in bushfire-prone areas (Standards Australia, 2018). • EMF: — Guidelines for Limiting Exposure to Time-varying Electric and Magnetic Fields (1Hz to 100 kHz) (ICNIRP, 2010) — C95.6-2002 – IEEE Standard for Safety Levels With Respect to Human Exposure to Electromagnetic Fields, 0-3 kHz (Institute of Electrical and Electronics Engineers, 2002). • Hazardous and offensive industry: — Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (NSW Department of Planning, 2011)	Section 6.1.10

Matter	Key issue	Level of assessment	CIA	Level of engagement	Relevant Government plans, policies and guidelines	Scoping Report reference
					— Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' (DPE, 2011a) — Assessment Guideline: Multi-Level Risk Assessment (DPE, 2011b) — Australian Code for the Transport of Dangerous Goods by Road and Rail (National Transport Commission, 2020) — AS1940:2017 The storage and handling of dangerous and combustible liquids (Standards Australia, 2017). • Contamination: — Managing Land Contamination: Planning Guidelines SEPP 55 –Remediation of Land (DUAP and EPA, 1998) — National Environment Protection (Assessment of Site Contamination) Measure (National Environment Protection Council, 2013) — Consultants reporting on contaminated land – Contaminated Land Guidelines (EPA, 2020b) — Contaminated Land Management – Guidelines for the NSW Site Auditor Scheme (EPA, 2017b) — Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997 (EPA, 2015).	
Traffic and transport	Yes	Detailed	Yes	Specific	• NSW Heavy Vehicle Access Policy Framework (Transport for NSW, 2018) • 2026 Road Safety Action Plan (Transport for NSW, 2022a) • Traffic control at work sites – Technical Manual (Transport for NSW, 2022b) • Guide to Pavement Technology Part 6: Unsealed Pavements (Austroads, 2009) • Austroads Guide to Traffic Management (Austroads, 2020) • Transport Management Plans for oversize and/or overmass movements in NSW (Transport for NSW, 2013) • Additional Access Conditions, Oversize and Overmass Heavy Vehicles and Loads (Transport for NSW, 2020b).	Section 6.1.11
Hydrology, water quality and flooding	No	Standard	Yes	General	• Relevant Water Sharing Plans (refer to Table 6-8 in Section 6.1.12.1 of this Report) • Managing Urban Stormwater: Soils and Construction Volume 1 (Landcom, 2004) • Managing Urban Stormwater: Soils and Construction Volume 2 (DECC, 2008) • Guidelines for Controlled Activities on Waterfront Land (DPI, 2018) • Approved methods for the sampling and analysis of water pollutants in NSW (EPA, 2022) • Policy and guidelines for fish habitat conservation and management (NSW DPI, 2013b) • Risk-based Framework for Considering Waterway Health Outcomes in Strategic Landuse Planning Decisions (OEH, 2017) • National Water Quality Management Strategy (Department of Agriculture and Water Resources, 2018) • Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ, 2000) • NSW Water Quality and River Flow Objectives (DECCW, 2006) • Erosion and Sediment Control on Unsealed Roads – A field guide for erosion and sediment control maintenance practices (OEH, 2012b) • The NSW Floodplain Development Manual 2005 (NSW Government, 2005) • Flood risk management guidelines - Practical Consideration of Climate Change (DECC, 2007).	Section 6.1.12
Groundwater	No	Standard	No	General	• NSW Aquifer Interference Policy (NSW DPI, 2012c) • Relevant Water Sharing Plans (refer to Table 6-9 in Section 6.1.13.1 of this Report)	Section 6.1.13

Matter	Key issue	Level of assessment	CIA	Level of engagement	Relevant Government plans, policies and guidelines	Scoping Report reference
					• NSW DPE Groundwater Assessment Toolbox for major projects in NSW, including: — Groundwater assessment toolbox for major projects in NSW – Overview document (DPE, 2022i) — Guidelines for Groundwater Documentation for SSD/SSI Projects – Technical guideline (DPE, 2022j) — Minimum Groundwater Modelling Requirements for SSD/SSI Projects – Technical guideline (DPE, 2022k) — Cumulative Groundwater Impact Assessment Approaches – Information paper (DPE, 2022l) — Guidelines for groundwater quality protection in Australia National Water Quality Management Strategy (Australian Government, 2013) — Guidelines for the Assessment and Management of Groundwater Contamination (NSW Department of Environment and Conservation, 2007).	
Air quality	No	Standard	Yes	General	• Guidance on the assessment of dust from demolition and construction (Institute of Air Quality Management, 2014).	Section 6.1.14
Greenhouse gas and climate change	No	Standard	Yes	General	• ISO 14064-1:2018 Specification with guidance at the organisation level for quantification and reporting of greenhouse gas emissions and removal (ISO, 2018b) • Australian National Greenhouse Accounts Factors (DCCEEW, 2023) • Climate Change in Australia Technical Report 2015 (CSIRO, 2015) • Climate change impact and risk management – A guide for business and government (Australian Greenhouse Office, 2006) • AS 5334:2013 – Climate Change Adaptation for Settlements and Infrastructure – A risk based approach (Standards Australia, 2013).	Section 6.1.15
Waste management and resource use	No	Standard	Yes	General	• Waste Classification Guidelines (EPA, 2014) • *Waste Avoidance and Resource Recovery Act 2001* • NSW Waste avoidance and resource recovery strategy 2003 (Resource NSW, 2003) • NSW Waste and Sustainable Materials Strategy – Stage 1: 2021–2027 (DPIE, 2021).	Section 6.1.16
Cumulative impacts	Yes	Detailed	n/a	Specific	• Cumulative Impact Assessment Guidelines for State Significant Projects (DPE, 2022d).	Section 6.1.17

Appendix B: Biodiversity

Methodology

Database searches

A review of relevant public databases and literature was carried out to identify threatened and migratory species, endangered populations, TECs and their habitats that have previously been recorded within the locality (a 10 km radius around the Preferred Study Corridor).

The following ecological databases and reports were reviewed to determine the potentially occurring threatened entities listed under the BC Act and the EPBC Act that may occur in the Preferred Study Corridor:

- DCCEEW (Commonwealth) PMST based on a 10 km radius around the Preferred Study Corridor (13 March 2024).
- NSW DCCEEW Bionet Atlas of NSW Wildlife based on a 10 km radius around the Preferred Study Corridor (13 March 2024).
- Atlas of Living Australia (ALA 2023) (13 March 2024).
- NSW DPE State Vegetation Type Mapping (SVTM).
- Threatened Biodiversity Data Collection (TBDC) (NSW DCCEEW 2023a).
- Policy and guidelines for fish habitat conservation and management (DPI 2013).
- Department of Primary Industries (DPI) Fisheries Spatial Data Portal (DPI 2023).

Field surveys

Biodiversity field studies have commenced within the Preferred Study Corridor. To date, these studies have focused on the following:

- Vegetation mapping – PCT Identification and Floristic Plot-based Sampling.
- Fauna habitat delineation.
- Threatened flora species searches.
- Threatened fauna species searches.

Likelihood of occurrence

Threatened and migratory species listed under the BC Act and EPBC Act that have the potential to occur within the Preferred Study Corridor and within a 10 km buffer of the Preferred Study Corridor, have been identified based on results from desktop searches, review of relevant literature coupled with data obtained from biodiversity surveys completed to date. This has identified the threatened species that require particular focus in the future biodiversity assessment work.

The assessment of the likelihood of occurrence has been undertaken using the definitions as provided in Table B-1 and the acronyms defined in Table B-2.

Table B-1 Definition of likelihood of occurrence ratings

Likelihood of Occurrence	Definition
Known	Recent and reliable records of this entity exist within the Preferred Study Corridor or Project locality.
High	Probable that the entity occurs in the Preferred Study Corridor or Project locality, despite lack of records.

Likelihood of Occurrence	Definition
Moderate	Suitable habitat is present for this entity however records of the entity are not known to occur in the immediate vicinity of the Preferred Study Corridor or Project locality.
Low	There are no records for this entity, the entity is conspicuous all year and not recorded during targeted searches, habitat requirements are not met, or the normal distribution range of the entity does not coincide with the Preferred Study Corridor or Project locality. Despite this, the matter may be present in rare circumstances.
None	There is almost no potential for the entity to occur within the Preferred Study Corridor or Project locality.

Table B-2 Abbreviations used for likelihood of occurrence assessment

Abbreviation	Explanation
Bonn	The Convention on the Conservation of Migratory Species of Wild Animals, also known as the Convention on Migratory Species (CMS) or the Bonn Convention
CAMBA	The China–Australia Migratory Bird Agreement
CE	Critically Endangered
CEEC	Critically Endangered Ecological Community
E	Endangered
EEC	Endangered Ecological Community
JAMBA	The Japan Australia Migratory Bird Agreement
ROKAMBA	Republic of Korea–Australia Migratory Bird Agreement
V	Vulnerable
VEC	Vulnerable Ecological Community

Desktop assessment – Threatened Ecological Communities

The following tables identify the TECs with potential for occurrence within the Preferred Study Corridor.

Table B-3 Threatened ecological communities listed under the BC Act

Threatened Ecological Community	BC Act Status	SAII	Indicative Potential Area of Impact (ha)
Central Hunter Grey Box — Ironbark Woodland in the New South Wales North Coast and Sydney Basin Bioregions	EEC	No	97
Central Hunter Ironbark — Spotted Gum — Grey Box Forest in the New South Wales North Coast and Sydney Basin Bioregions	EEC	No	8
Howell Shrublands in the New England Tableland and Nandewar Bioregions	EEC	No	92
Hunter Valley Vine Thicket in the NSW North Coast and Sydney Basin Bioregions	EEC	No	22
Lower Hunter Valley Dry Rainforest in the Sydney Basin and NSW North Coast Bioregions	VEC	No	18
Lowland Rainforest in the NSW North Coast and Sydney Basin Bioregions	EEC	No	18
New England Peppermint (*Eucalyptus nova-anglica*) Woodland on Basalts and Sediments in the New England Tableland Bioregion	CEEC	Yes	144
Ribbon Gum — Mountain Gum — Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion	EEC	No	29
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions	CEEC	Yes	560

Table B-4 Threatened ecological communities listed under the EPBC Act

Threatened Ecological Community	EPBC Act Status	Indicative Potential Area of Impact (ha)
Central Hunter Valley eucalypt forest and woodland	CEEC	104
Lowland Rainforest of Subtropical Australia	CEEC	18
New England Peppermint (*Eucalyptus nova-anglica*) Grassy Woodlands	CEEC	144
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	EEC	30

Threatened Ecological Community	EPBC Act Status	Indicative Potential Area of Impact (ha)
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CEEC	560

Desktop assessment – Threatened flora and fauna likelihood of occurrence

The following tables identify the threatened species with potential for occurrence within the Preferred Study Corridor.

Table B-5 Threatened flora known or predicted to have a moderate/high likelihood of occurrence

Likelihood	Scientific Name	Common Name	BC Act	EPBC Act	SAII
Known	*Dichanthium setosum*	Bluegrass	V	V	No
Known	*Eucalyptus nicholii*	Narrow-leaved Black Peppermint	V	V	No
Known	*Thesium australe*	Austral Toadflax	V	V	No
High Likelihood	*Acacia pendula*	Weeping Myall	EP	-	Yes
High Likelihood	*Callistemon pungens*	Callistemon pungens	-	V	No
High Likelihood	*Cymbidium canaliculatum*	Tiger Orchid	EP	-	No
High Likelihood	*Diuris pedunculata*	Small Snake Orchid	E	E	No
High Likelihood	*Diuris tricolor*	Pine Donkey Orchid	V	-	No
High Likelihood	*Eucalyptus camaldulensis*	River Red Gum	EP	-	No
High Likelihood	*Eucalyptus mckieana*	McKie's Stringybark	V	V	No
High Likelihood	*Ozothamnus tesselatus*	null	V	V	No
High Likelihood	*Prasophyllum petilum*	Tarengo Leek Orchid	E	E	No
High Likelihood	*Rhodamnia rubescens*	Scrub Turpentine	CE	CE	Yes
High Likelihood	*Swainsona sericea*	Silky Swainson-pea	V	-	No
High Likelihood	*Tylophora linearis*	Tylophora linearis	V	E	No
Moderate Likelihood	*Bertya ingramii*	Narrow-leaved Bertya	E	E	Yes

Likelihood	Scientific Name	Common Name	BC Act	EPBC Act	SAII
Moderate Likelihood	*Boronia granitica*	Granite Boronia	V	E	No
Moderate Likelihood	*Callistemon linearifolius*	Netted Bottle Brush	V	-	No
Moderate Likelihood	*Chiloglottis platyptera*	Barrington Tops Ant Orchid	V	-	No
Moderate Likelihood	*Cynanchum elegans*	White-flowered Wax Plant	E	E	No
Moderate Likelihood	*Eucalyptus cannonii*	Red Stringy Bark	V	-	No
Moderate Likelihood	*Eucalyptus glaucina*	Slaty Red Gum	V	V	No
Moderate Likelihood	*Eucalyptus largeana*	Craven Grey Box	E	E	No
Moderate Likelihood	*Eucalyptus oresbia*	Small-fruited Mountain Gum	V	-	Yes
Moderate Likelihood	*Eucalyptus rubida subsp. barbigerorum*	Blackbutt Candlebark	V	V	No
Moderate Likelihood	*Grevillea scortechinii subsp. Sarmentosa*	Backwater Grevillea	V	-	Yes
Moderate Likelihood	*Haloragis exalata* subsp. *velutina*	Tall Velvet Sea-berry	V	V	No
Moderate Likelihood	*Lysimachia vulgaris* var. *davurica*	Yellow Loosestrife	E	-	Yes
Moderate Likelihood	*Picris evae*	Hawkweed	V	V	No
Moderate Likelihood	*Pomaderris reperta*	Denman Pomaderris	CE	CE	Yes

Table B-6 Threatened fauna known or predicted to have a moderate/high likelihood of occurrence

Likelihood	Scientific Name	Common Name	BC Act	EPBC Act	Credit Type	SAII
Known	*Artamus cyanopterus cyanopterus*	Dusky Woodswallow	V	-	Ecosystem	No
Known	*Chthonicola sagittata*	Speckled Warbler	V	-	Ecosystem	No
Known	*Dasyurus maculatus*	Spotted-tailed Quoll	V	E	Ecosystem	No
Known	*Petaurus norfolcensis*	Squirrel Glider	V	-	Species	No
Known	*Phascolarctos cinereus*	Koala	E	E	Species	No
Known	*Pomatostomus temporalis temporalis*	Grey-crowned Babbler (eastern subspecies)	V	-	Ecosystem	No
Known	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	Species (camps only)	No
Known	*Stagonopleura guttata*	Diamond Firetail	V	V	Ecosystem	No
Known	*Uvidicolus sphyrurus*	Border Thick-tailed Gecko	V	V	Species	No
High	*Climacteris picumnus victoriae*	Brown Treecreeper (south-eastern)	V	V	Ecosystem	No
High	*Daphoenositta chrysoptera*	Varied Sittella	V	-	Ecosystem	No
High	*Delma impar*	Striped Legless Lizard, Striped Snake-lizard	V	V	Species	No
High	*Haliaeetus leucogaster*	White-bellied Sea-Eagle	V	-	Species (breeding habitat only)	No
High	*Hieraaetus morphnoides*	Little Eagle	V	-	Species (nests only)	No
High	*Litoria booroolongensis*	Booroolong Frog	E	E	Species	No

Likelihood	Scientific Name	Common Name	BC Act	EPBC Act	Credit Type	SAII
High	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat	V	-	Ecosystem	No
High	*Miniopterus australis*	Little Bent-winged Bat	V	-	Species (breeding habitat only)	Yes
High	*Miniopterus orianae oceanensis*	Large Bent-winged Bat	V	-	Species (breeding habitat only)	Yes
High	*Myotis macropus*	Southern Myotis	V	-	Species	No
High	*Myuchelys belli*	Western Sawshelled Turtle/ Bell's Turtle	E	V	Species	No
High	*Phascogale tapoatafa*	Brush-tailed Phascogale	V	-	Species	No
Moderate	*Aprasia parapulchella*	Pink-tailed Legless Lizard	V	V	Species	No
Moderate	*Burhinus grallarius*	Bush Stone-curlew	E	-	Species	No
Moderate	*Callocephalon fimbriatum*	Gang-gang Cockatoo	V	E	Species (breeding habitat only)	No
Moderate	*Calyptorhynchus lathami lathami*	South-eastern Glossy Black-Cockatoo	V	V	Species (breeding habitat only)	No
Moderate	*Chalinolobus dwyeri*	Large-eared Pied Bat	V	V	Species	Yes
Moderate	*Chalinolobus picatus*	Little Pied Bat	V	-	Ecosystem	No
Moderate	*Circus assimilis*	Spotted Harrier	V	-	Species (nests only)	No
Moderate	*Falco subniger*	Black Falcon	V	-	Ecosystem	No
Moderate	*Falsistrellus tasmaniensis*	Eastern False Pipistrelle	V	-	Ecosystem	No
Moderate	*Glossopsitta pusilla*	Little Lorikeet	V	-	Ecosystem	No
Moderate	*Hoplocephalus bitorquatus*	Pale-headed Snake	V	-	Species	No

Likelihood	Scientific Name	Common Name	BC Act	EPBC Act	Credit Type	SAII
Moderate	*Litoria aurea*	Green and Golden Bell Frog	E	V	Species	No
Moderate	*Litoria daviesae*	Davies' Tree Frog	V	V	Species	No
Moderate	*Litoria piperata*	Peppered Tree Frog	CE	V	Species	Yes
Moderate	*Lophoictinia isura*	Square-tailed Kite	V	-	Species (nests only)	No
Moderate	*Melanodryas cucullata cucullata*	Hooded Robin (south-eastern form)	V	E	Ecosystem	No
Moderate	*Ninox connivens*	Barking Owl	V	-	Species	No
Moderate	*Ninox strenua*	Powerful Owl	V	-	Species	No
Moderate	*Nyctophilus corbeni*	Corben's Long-eared Bat	V	V	Ecosystem	No
Moderate	*Petauroides volans*	Greater Glider	E	E	Species	No
Moderate	*Petaurus australis australis*	Yellow-bellied Glider (south-eastern)	-	V	Ecosystem	No
Moderate	*Petrogale penicillata*	Brush-tailed Rock-wallaby	E	V	Species	Yes
Moderate	*Petroica boodang*	Scarlet Robin	V	-	Ecosystem	No
Moderate	*Petroica phoenicea*	Flame Robin	V	-	Ecosystem	No
Moderate	*Planigale maculata*	Common Planigale	V	-	Species	No
Moderate	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	V	-	Ecosystem	No
Moderate	*Tyto novaehollandiae*	Masked Owl	V	-	Species	No
Moderate	*Tyto tenebricosa*	Sooty Owl	V	-	Species	Yes
Moderate	*Vespadelus troughtoni*	Eastern Cave Bat	V	-	Species (breeding habitat only)	Yes

Table B-7 Migratory species predicted to have a potential of occurrence

Migratory Species	Scientific Name	Common Name	Status
Terrestrial Birds	*Hirundapus caudacutus*	White-throated Needletail	V, CAMBA, JAMBA, ROKAMBA
Terrestrial Birds	*Monarcha melanopsis*	Black-faced Monarch	Bonn
Terrestrial Birds	*Motacilla flava*	Yellow Wagtail	CAMBA, JAMBA, ROKAMBA
Terrestrial Birds	*Myiagra cyanoleuca*	Satin Flycatcher	Bonn
Terrestrial Birds	*Rhipidura rufifrons*	Rufous Fantail	Bonn
Terrestrial Birds	*Symposiachrus trivirgatus*	Spectacled Monarch	Bonn
Wetland birds	*Actitis hypoleucos*	Common Sandpiper	Bonn, CAMBA, JAMBA, ROKAMBA
Wetland birds	*Calidris acuminata*	Sharp-tailed Sandpiper	Bonn, CAMBA, JAMBA, ROKAMBA
Wetland birds	*Calidris ferruginea*	Curlew Sandpiper)	Bonn, CAMBA, JAMBA, ROKAMBA
Wetland birds	*Calidris melanotos*	Pectoral Sandpiper	Bonn, JAMBA, ROKAMBA
Wetland birds	*Gallinago hardwickii*	Latham's Snipe, Japanese Snipe	Bonn, JAMBA, ROKAMBA
Wetland birds	*Pandion haliaetus*	Osprey	Bonn
Wetland birds	*Tringa nebularia*	*Tringa nebularia*	Bonn, CAMBA, JAMBA, ROKAMBA
Marine Birds	*Apus pacificus*	Fork-tailed Swift	CAMBA, JAMBA, ROKAMBA

Appendix C: Social Impact Scoping Report

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NSW GOVERNMENT

New England Renewable Energy Zone Network Infrastructure Project

Social Impact Scoping Report

July 2024

Acknowledgement of Country

We acknowledge that Aboriginal and Torres Strait Islander peoples are the First Peoples and Traditional Custodians of Australia, and the oldest continuing culture in human history.

We pay respect to Elders past and present and commit to respecting the lands we walk on, and the communities we walk with.

We celebrate the deep and enduring connection of Aboriginal and Torres Strait Islander peoples to Country and acknowledge their continuing custodianship of the land, seas and sky.

We acknowledge the ongoing stewardship of Aboriginal and Torres Strait Islander peoples, and the important contribution they make to our communities and economies.

We reflect on the continuing impact of government policies and practices, and recognise our responsibility to work together with and for Aboriginal and Torres Strait Islander peoples, families and communities, towards improved economic, social and cultural outcomes.

Artwork:
Regeneration by Josie Rose

Cover Image:
Existing 330 kV single circuit transmission line, Armidale, NSW

This report has been prepared by Umwelt (Australia) Pty Ltd, as the suitably qualified and experienced practitioners in SIA, in accordance with the SIA Guideline (DPE, 2023). The authors declare that this report, completed in July 2024:

- Was prepared by practitioners with suitable qualifications, proven experience and competence in SIA practice.
- The authors understand their ethical and legal obligations in the preparation of the SIA.
- None of the information included in this report is false or misleading.
- The report contains all relevant information as obtained.

Contents

FIGURES

TABLES

1 Introduction

The Energy Corporation of NSW (EnergyCo), a NSW Government statutory authority, is proposing to develop the New England Renewable Energy Zone (REZ) Network Infrastructure Project (the Project). The Project is a critical energy project for NSW that proposes to deliver affordable, clean and reliable electricity to consumers.

This Social Impact Scoping Report documents the process and outcomes of the preliminary assessment and scoping phase of the Social Impact Assessment (SIA) for the Project in line with the SIA Guideline (NSW Department of Planning and Environment, 2023).

The Project comprises the following key features:

- new transmission infrastructure including new dual 500 kilovolt (kV) transmission lines and associated infrastructure to connect the New England REZ to the National Electricity Market (NEM) to the west of Singleton NSW (Bayswater); and new single 500 kV and 330 kV lines to connect to the proposed energy hubs within the New England REZ
- four energy hubs to connect future energy generation and storage projects within the New England REZ to the new 500 kV transmission infrastructure and a northern connection to link the North Hub with the existing 330 kV transmission line
- ancillary development to support the Project, including:
  - establishment and/or upgrade of access tracks and public roads
  - upgrade and/or augmentation to existing electricity and utility infrastructure
  - installation and operation of communications infrastructure and facilities
  - other construction-related works and facilities, such as laydown and staging areas, earthworks material sites with crushing and screening plants, concrete batching plants, stringing sites, helicopter landing pads, site offices and workforce accommodation camps.

This report forms part of the Scoping Report for the Project which will accompany the Project's Request for Secretary's Environmental Assessment Requirements (SEARs) lodged with the NSW Department of Planning, Housing and Infrastructure (DPHI). The SEARs will guide the preparation of the Environmental Impact Statement (EIS) for the Project which will include a SIA.

The route selection process and broader strategic context of the Project is described in Section 1 and 2 of the Scoping Report, with the Project description and contained within Section 3 of that report.

1.1 Approach and Methodology

This Report has been prepared in alignment with the DPE Social Impact Assessment Guideline (NSW Department of Planning and Environment, 2023) or 'the Guideline' and represents the 'Phase 1 SIA' for the Project. The 'Phase 2 SIA' for the Project will form part of the Project's EIS.

This Report aims to understand and identify the key social matters for the Project to consider and assess as the Project progresses. To do this, it includes the following key components:

- Social locality – identification of the communities of relevance to the Project, including the regions, rural localities, population and service centres.

- Social baseline profiling – understanding the key social characteristics and existing social conditions across the communities that the Project traverses through a review, compilation and analysis of secondary data and social research methods. A high-level snapshot of the social baseline profile is contained within this Report, summarising the regional profiles and the characteristics of the three key population and service centres making use of the Social Framework for Projects (Smyth & Vanclay, 2017). Key vulnerabilities and strengths of the three key population and service centres have been included to assist in understanding how the Project may impact and benefit each service centre respectively.
- Community and stakeholder engagement – a summary of feedback provided from key community stakeholders consulted to date, including from local communities, directly affected landowners, proximal landowners, local community and environmental groups, and local First Nations communities and representative organisations.
- Issues scoping – preliminary identification of potential social impacts incurred by the Project, to determine the level of assessment required for the EIS, proportionate to the scale of the Project and the potential impacts of importance to the community. Consultation outcomes have been analysed to inform the identification of social impacts and opportunities. Preliminary mitigations or management measures/strategies have been identified to correspond with each identified potential impact. These will be further explored and considered in the next stage of the SIA.
- Community input into Project refinements – description of design and corridor refinements adopted by the Project as part of the scoping phase are described, specifically highlighting the community and landowner feedback that has informed these decisions.

As per the Guideline, and as outlined in Figure 1-1, social impacts can be grouped into several categories including changes to people's way of life, their community, accessibility, health, and wellbeing, how people experience their surroundings, their livelihoods or decision-making systems.

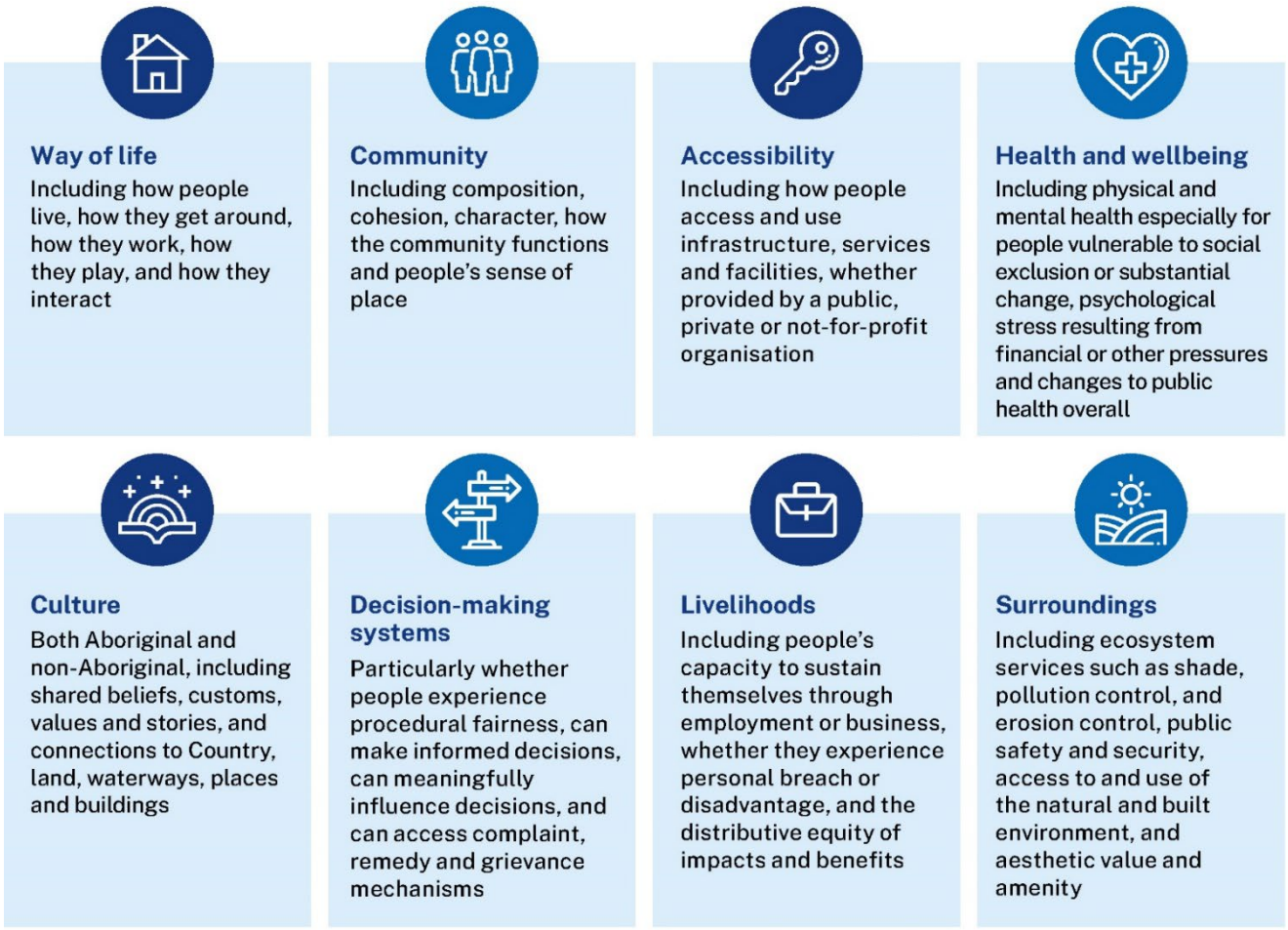


Figure 1-1 Social Impact Categories

Source: Umwelt, 2023, adapted from DPE, 2023.

1.2 Defining the Social Locality

The Project extends from Bayswater Power Station near Muswellbrook in the Hunter Valley Region to the north of the locality of Boorolong in the New England Region of NSW. Due to the linear and expansive geographical nature of the Project, the social locality has been defined to include the following:

- The regions of the Hunter Valley (excluding Newcastle), and the New England and North West, both of which align with the Australian Statistical Geography Standard (ASGS).
- The Local Government Areas (LGAs) of Muswellbrook, Upper Hunter, Liverpool Plains, Tamworth Regional, Walcha Shire, Uralla Shire and Armidale Regional.
- Key population and service centres of Muswellbrook, Tamworth, and Armidale. While the Project does not intersect these townships directly, they are regional centres that would likely be drawn on by the Project for a variety of labour force and contracting services needs throughout the construction and operation of the Project.
- Numerous rural localities (36) being the local communities proposed to host the Project and those areas and populations who would likely experience direct impacts associated with the Project (see Figure 1-2).

Figure 1-2 shows the varying scales of the Project's social locality, from the regions, LGAs, key town centres and the rural localities.

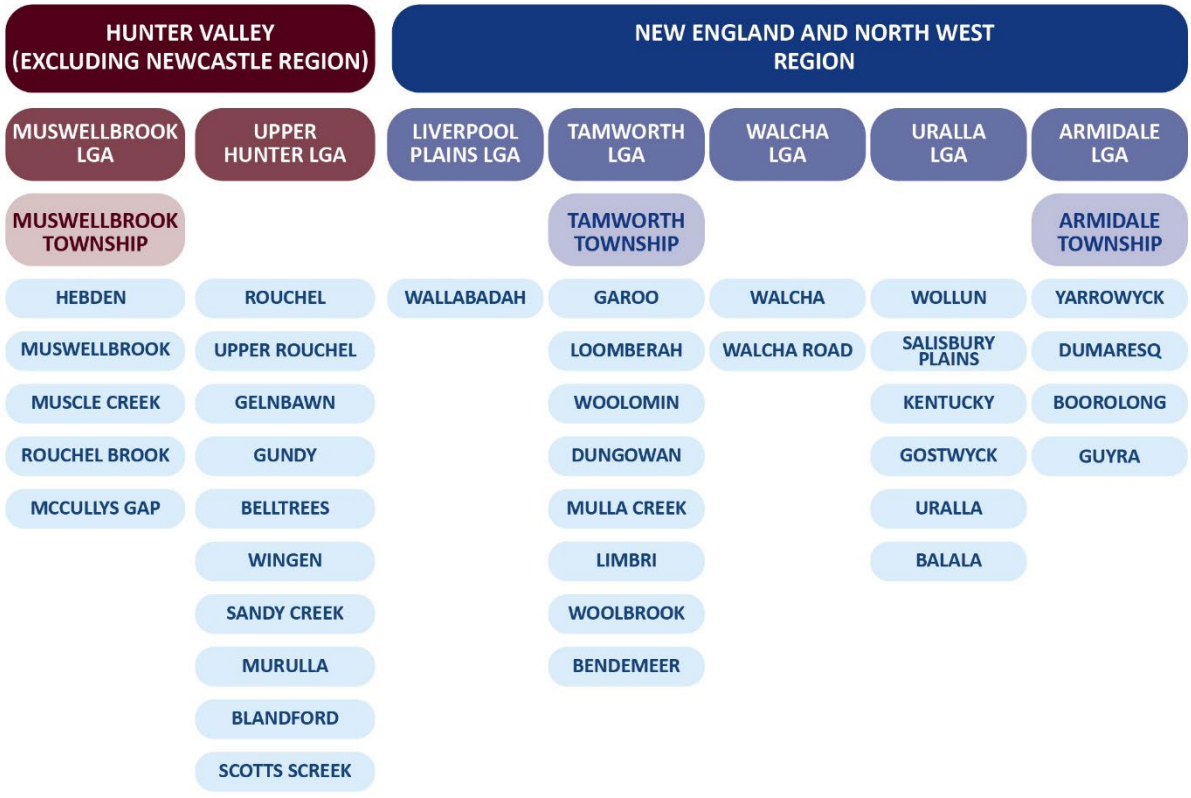


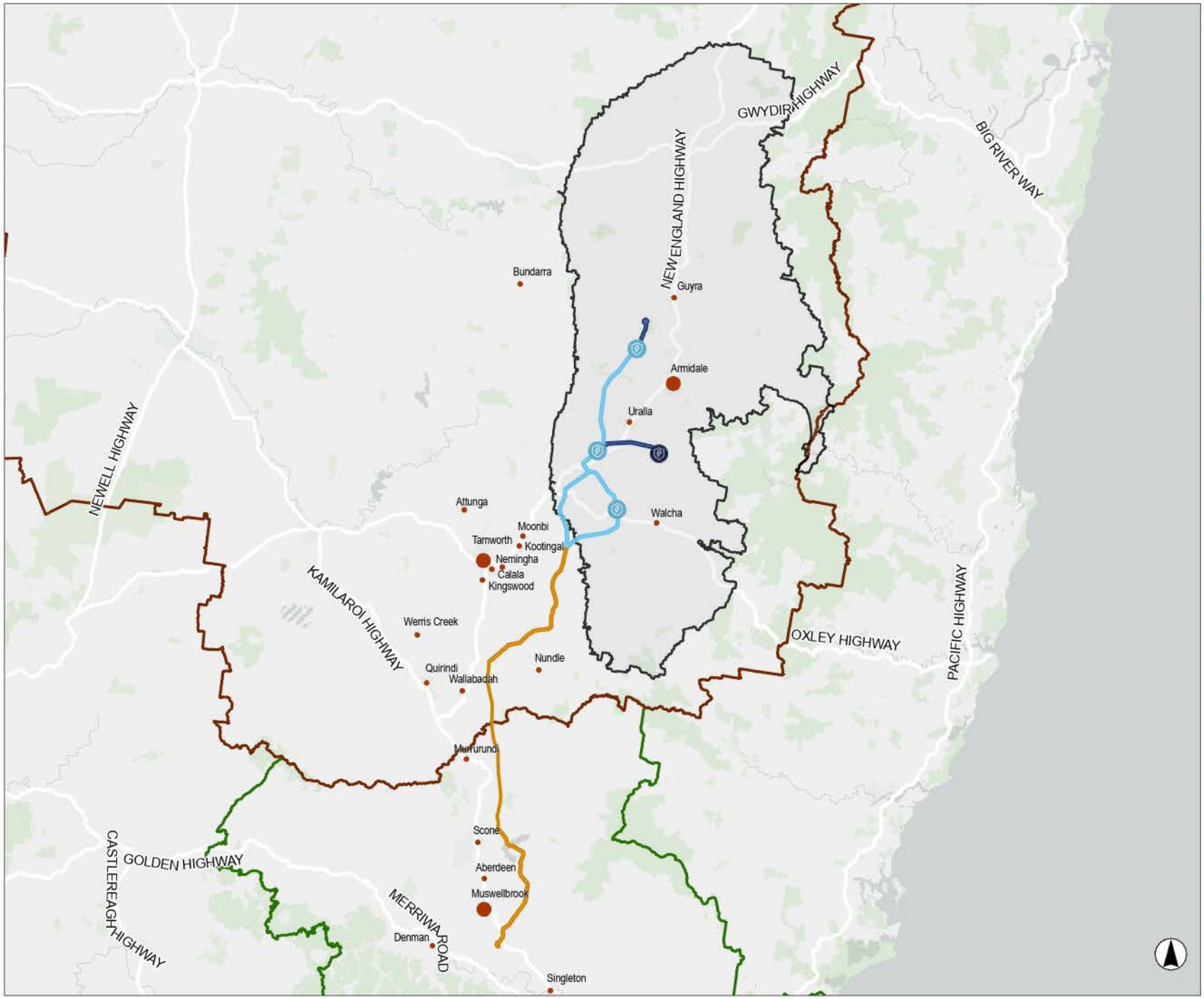
Figure 1-2 Scales of the Social Locality

Source: Umwelt, 2024.

Figure 1-3 visually represents the Project's Social Locality at scale, while Figure 1-4 and Figure 1-5 show the rural localities covering the southern and northern halves of the Project.

FIGURE 1-3

Project Social Locality



Legend

- Towns
- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Renewable Energy Zone
- Hunter Valley exc Newcastle
- New England and North West

0 10 20
Kilometres

Scale 1:2,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) **Data source:** NSW DFSI (2023)

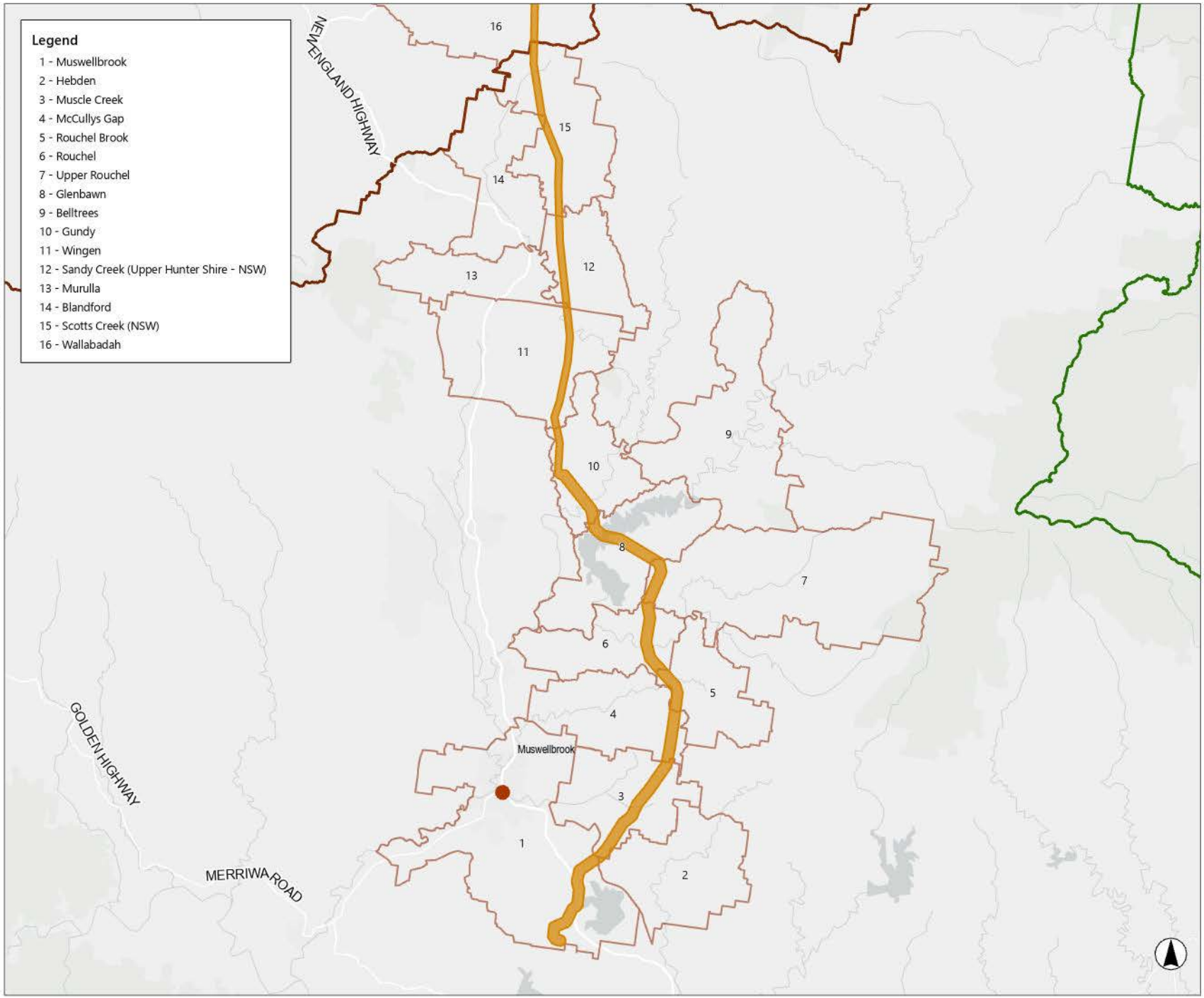


FIGURE 1-4

Project Social Locality - Southern Rural Localities

Legend

- Population and Service Centres
- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Renewable Energy Zone
- Hunter Valley exc Newcastle
- New England and North West
- Rural Localities (SALs)

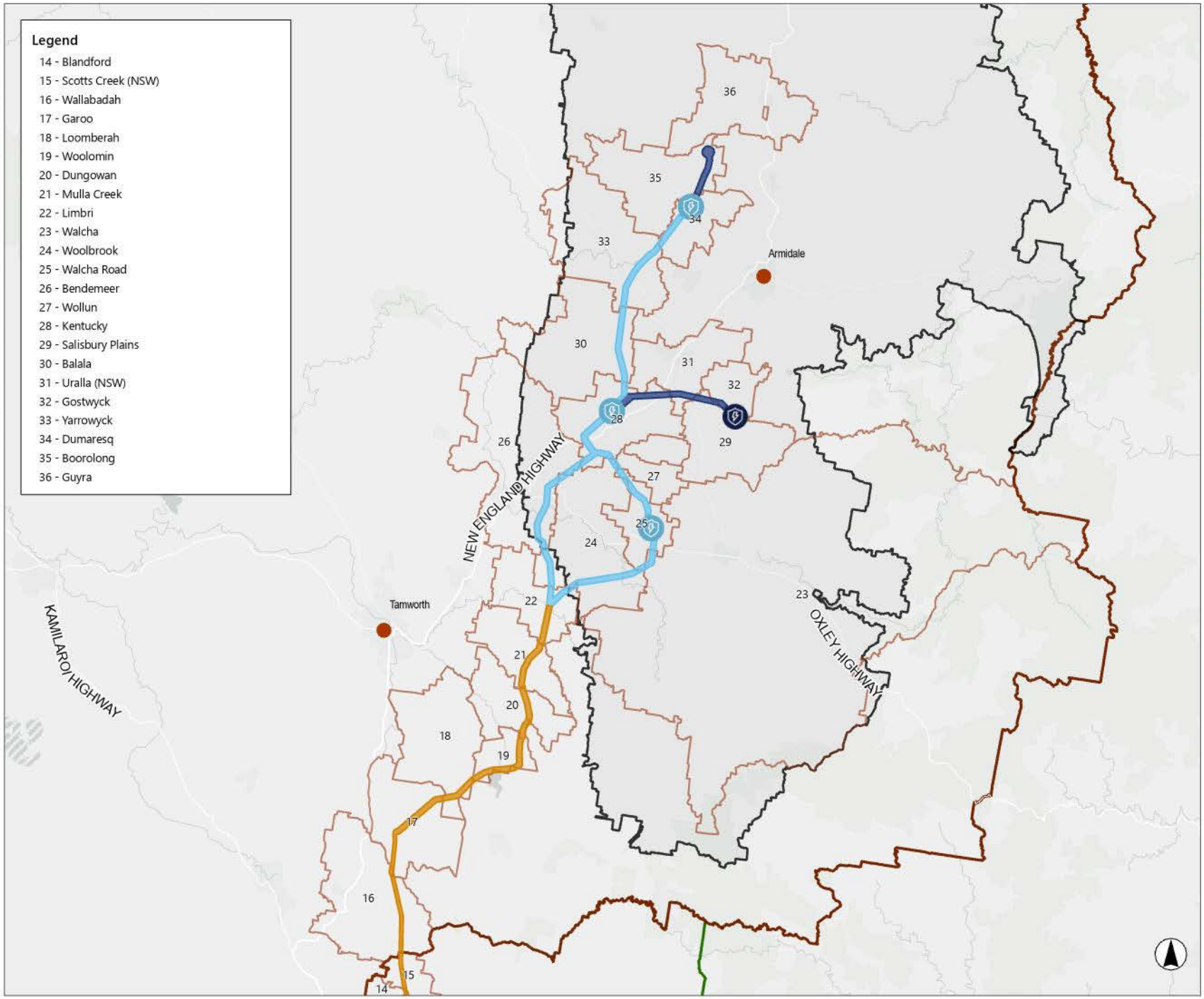
0 10 20
Kilometres

Scale 1:500,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) **Data source:** NSW DFSI (2023)

FIGURE 1-5

Project Social Locality - Northern Rural Localities



Legend

- Population and Service Centres
- 500kV/330kV Hub
- 330kV Hub
- 330kV Transmission Corridor
- 500kV Transmission Corridor
- Dual 500kV Transmission Corridor
- Renewable Energy Zone
- Hunter Valley exc Newcastle
- New England and North West
- Rural Localities (SALs)

0 10 20
Kilometres

Scale 1:1,000,000 at A4
GDA2020 MGA Zone 56

Image Source: ESRI Basemap (2023) **Data source:** NSW DFSI (2023)

2 Existing Social Environment

2.1 Regional Setting

A social baseline profile gathers knowledge from both primary and secondary data sources to inform an understanding of the existing social environment in which a project is proposed and of potentially affected communities.

To gain an understanding of the demographic characteristics and composition of communities within the social locality, and to ascertain how the Project may change or affect people, socio-economic and demographic data has been gathered and summarised from various secondary sources. High level regional profiles are provided below to identify key opportunities and challenges across the hosting regions.

2.1.1 Hunter Valley

The Hunter Valley Region (excluding Newcastle) has about 292,000 residents, with Singleton, Muswellbrook and Scone as the key population centres (NSW Department of Planning and Environment, 2022). By 2041, an additional 100,000 people are expected, a 35.2% increase due to net inward migration (NSW Department of Planning and Environment, 2022). The Region also has a high representation of First Nations residents (8.0%), 2.4 times the State (3.4%) (Australian Bureau of Statistics, 2021). The Wonnarua People are the Traditional Owners of the Region.

The Region's population is generally older, indicating potential challenges such as the need for social and health care services, a smaller labour pool, and potential economic vulnerabilities. Despite this, residents are generally satisfied with their standard of living, scoring 79.7 in the Regional Wellbeing Survey (University of Canberra, 2021). However, socio-economic disadvantage is higher in Project-related Local Government Areas (LGAs) (which includes the Upper Hunter Shire, Singleton and Muswellbrook), with poorer self-reported health outcomes (Australian Bureau of Statistics, 2021).

The Hunter Valley is an economically diverse Region, with abundant natural features and varied land uses. Of most relevance to this Project is the Upper Hunter Valley, where competing industry needs have exacerbated land use conflict and sparked extensive discussion around regional identity, geographical indicators and values associated with rural landscapes. This includes land use conflict arising from competition between viticulture, equine breeding, and mining industries. Despite agriculture occupying 48% of the Region, coal mining generates the most regional output and exports (NSW Department of Planning and Environment, 2022), highlighting the industry's economic significance to the region. As of January 2024, the region has low unemployment, high employment, and moderate participation rates, indicating a healthy labour market (Australian Bureau of Statistics, 2024).

A summary of key demographic and economic characteristics of the Hunter Valley Region is provided below in Figure 2-1.

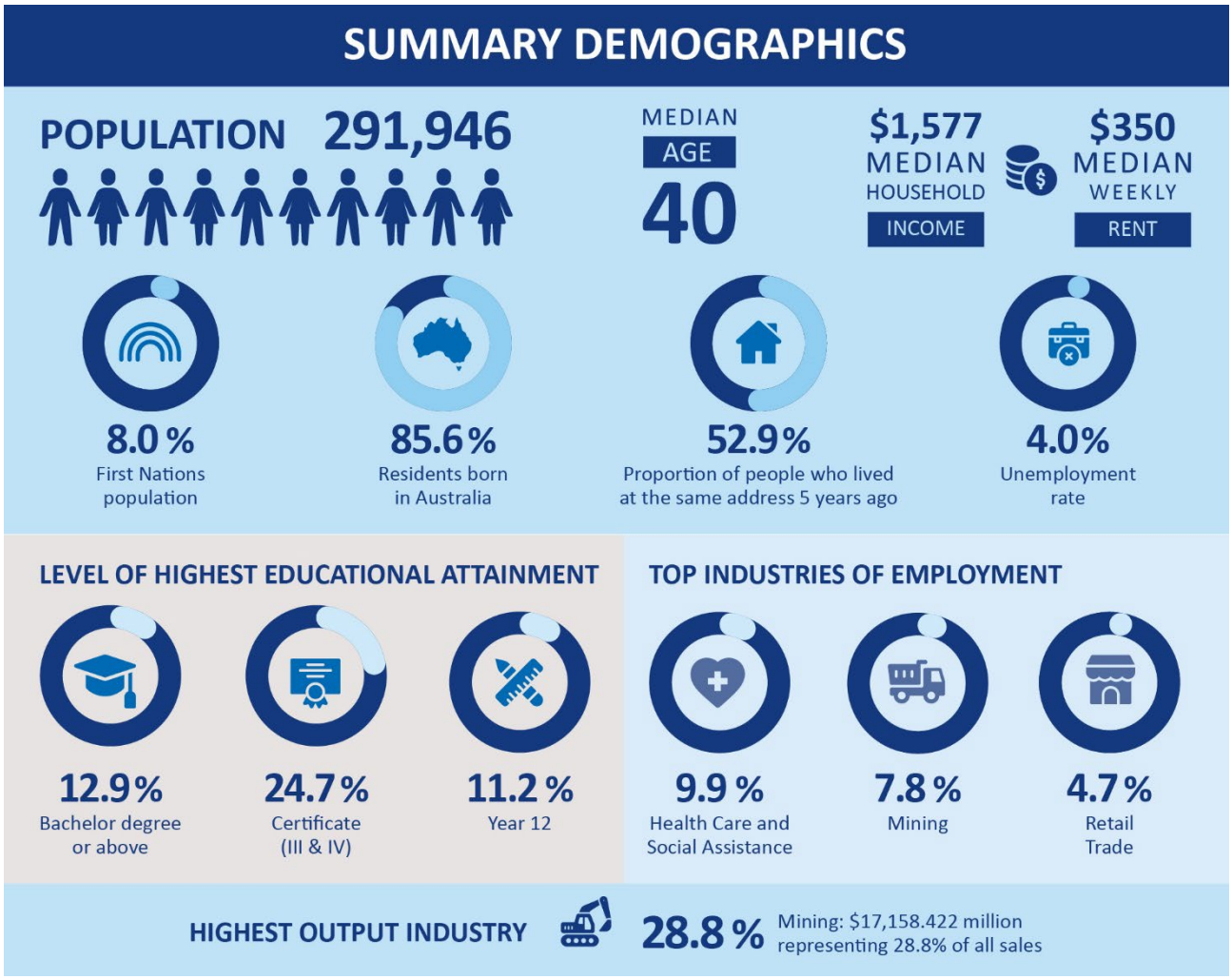


Figure 2-1 Summary of the Hunter Valley Regional Profile

Source: ABS, TableBuilder Pro, Hunter Valley excluding Newcastle SA4, 2021.

2.1.2 New England and North West

The New England and North West Region is home to around 185,000 people with Tamworth and Armidale the major population centres. The population is older than NSW's average and has a high representation of First Nations residents (11.9%, 3.5 times that of NSW) (Australian Bureau of Statistics, 2021). The Region is within the traditional lands of several First Nations, including the Anaiwan/Nganyaywana, Dainggatti, Geawegal, Biripi and Kamilaroi Nations closest to the Project footprint, representing strong diversity in First Nations peoples, cultures, and histories across this region.

By 2041, the Region's population is expected to grow by 6.0%, primarily driven by natural growth. Despite facing socio-economic vulnerabilities, residents generally feel satisfied with their quality of life, as per the 2021 Regional Wellbeing Index. This includes greater levels of socio-economic disadvantage, lower access to economic resources (with the exception of Uralla) and lower educational attainment and occupation levels (with the exception of Armidale), when compared to other LGAs across NSW.

The Region is an important agricultural area for the State, accounting for approximately a fifth of the State's agricultural production. The Region is defined by quality soils, good rainfall, and a favourable agricultural climate. However, water access and water security are key issues, with increasing demand for water resources potentially straining the available water supply.

As of January 2024, the Region has limited unemployment, strong employment rates, and high workforce participation.

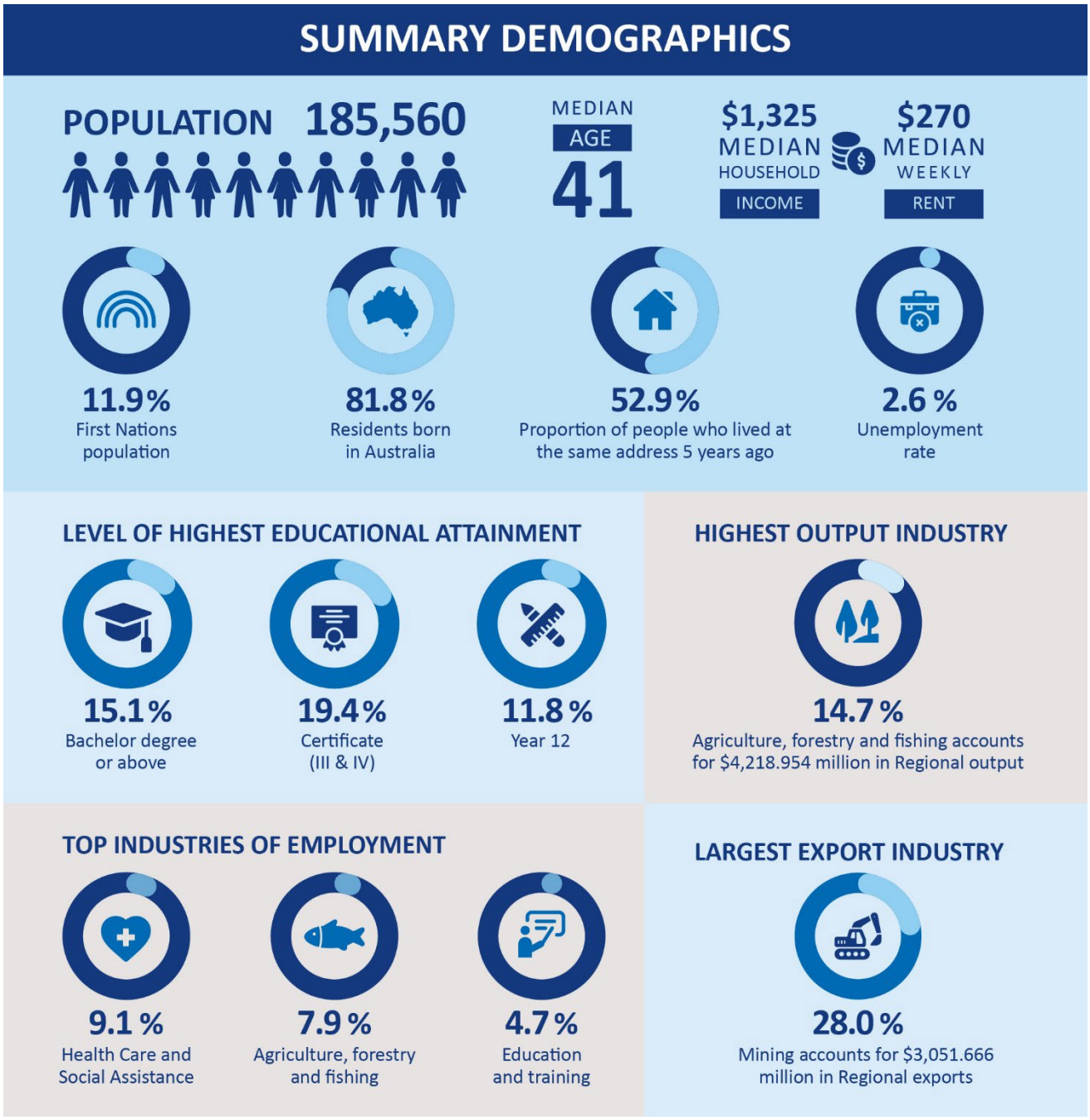


Figure 2-2 Summary of the New England and North West Regional Profile

Source: ABS, TableBuilder Pro, New England and North West SA4, 2021.

2.2 Population and Service Centres

There are three key population and service centres across the social locality that are likely to be relied upon by the Project for labour force needs, services, and other commercial requirements: Muswellbrook, Tamworth, and Armidale. This section provides an overview of the key strengths and vulnerabilities of each of the key towns to inform the identification of potential social impacts and opportunities that the Project presents.

Analysis of key vulnerabilities and strengths for each key service centre was informed by secondary research and included data and information from the Australian Bureau of Statistics, NSW Bureau of Crime Statistics and Research, Council and State Government policies, Public Health Information Development Unit (PHIDU).

2.2.1 Muswellbrook

Muswellbrook is a town in the Upper Hunter Region of NSW. Known for coal mining and horse breeding, it has also developed a reputation for gourmet food and wine production. As of the 2021 census, Muswellbrook has a population of 12,272. The Wonnarua and Gamilaroi peoples are the Traditional Owners in the local region. Muswellbrook's strategic location along the New England Highway and its proximity to the Hunter River are important for transportation, industry, and economic activity.

Table 2-1 presents the characteristics of Muswellbrook as it relates to the Project.

Table 2-1 Characteristics of Muswellbrook Town

Vulnerabilities	Social Framework	Strengths
Educational attainment levels are lower, with an Index of Educational and Occupation (IEO) in the lowest decile in NSW (Australian Bureau of Statistics, 2021). There is an ageing workforce, with 20% aged over 55 and nearing retirement (Australian Bureau of Statistics, 2021). Over half the LGA's population have long-term health conditions, higher than the NSW average (Australian Bureau of Statistics, 2021). The community, with more single-parent and lone households, may be more socio-economically vulnerable (Australian Bureau of Statistics, 2021).	People	Efforts are underway to boost Science, Technology, Engineering and Mathematics (STEM) qualifications. The region has a significant Indigenous population (Australian Bureau of Statistics, 2021) which presents opportunities for the Project in Indigenous participation.
Crime rates, including assault and sexual offences, are higher than the State average (NSW Bureau of Crime Statistics and Research, 2023). The influx of a new workforce could impact the community's sense of safety, especially for women. Low cultural diversity may present challenges around restricted viewpoints.	Community	Community values encompass economic growth, environmental balance, and active community engagement (Muswellbrook Shire Council, 2022). The Project can potentially enhance these values. The Regional Wellbeing Survey shows 90% agree it's a great place to live (University of Canberra, 2021).
Muswellbrook is socio-economically disadvantaged compared to the State, with many low-income households and few skilled occupations (Australian Bureau of Statistics, 2021). A third of the	Livelihoods	There's a strategic push to diversify the LGA's economy beyond mining, with the Project contributing to the

Vulnerabilities	Social Framework	Strengths
town's population rely on government support. The economy heavily depends on mining, which employs a third of the workforce (Australian Bureau of Statistics, 2021) and contributes 60% of the economic output (Muswellbrook Shire Council, 2022). However, mine closures pose unemployment risks. Local SMEs may lack the capacity to service the Project however there are also larger businesses with local branches present. Income disparity exists between mining and non-mining occupations, with higher incomes in mining. Women are over-represented in lower-paying jobs and may be more vulnerable to any future economic downturns (Australian Bureau of Statistics, 2021).		construction industry (Muswellbrook Shire Council, 2022). Plans exist to convert a closed mine site into a renewable energy hub (Muswellbrook Coal Mine) (Idemitsu, n.d.) Workers leaving mines could find opportunities with the Project and through the re-purposing of the Liddell Power Station, particularly technicians and labourers.
The LGA faces a significant healthcare practitioner shortage. Mine and power station closures could increase mental health issues and stress, straining health services. This is seen as one of the community's greatest mental health challenges (Muswellbrook Shire Council, 2024).	Infrastructure	Muswellbrook Hospital is being redeveloped and expanded (Muswellbrook Shire Council, 2024). Council is enhancing public transport, resulting in improved work commutes and expansion of practicable areas to live (Muswellbrook Shire Council, 2024). The town is well serviced by sports and recreation facilities (Muswellbrook Shire Council, 2024). The Council is investing in Arts & Culture and Sports & Recreation facilities, with funding for community initiatives (Muswellbrook Shire Council, 2024).
8.3% of households face mortgage stress, and 34.0% experience rental stress with housing costs rising (Australian Bureau of Statistics, 2021). There's a trend towards larger 3–4 bedroom homes, leading to under-utilisation and a need for smaller dwellings (Australian Bureau of Statistics, 2021).	Housing	Council recognises there are housing affordability and availability issues (Muswellbrook Shire Council, 2022).

Vulnerabilities	Social Framework	Strengths
There's a lack of government housing with long wait times (NSW Communities and Justice, 2024). The introduction of the Project workforces could further strain local housing.		
Muswellbrook's air quality is poor, posing health risks (Muswellbrook Shire Council, 2022). The area, prone to flooding and bushfires, could see Project transport routes affected.	Environment	Council is working on enhancing the road network for better access to disaster-impacted areas. Council acknowledges the need for environmental sustainability, climate change mitigation, and green energy promotion.

2.2.2 Tamworth

Tamworth, located in the New England region of NSW, is a large town with rich cultural heritage and an active regional economy. It is situated on the Peel River and serves as an administrative centre for the north-western region. With a population of over 35,415, it is the second largest inland town in the State and is known as the "Country Music Capital of Australia" as it hosts the Tamworth Country Music Festival each year, the second-biggest country music festival in the world. The town is also recognised as the National Equine Capital of Australia due to the high number of equine events held in the city and the construction of the world-class Australian Equine and Livestock Events Centre. Tamworth's economy is bolstered by industries such as meat processing, food processing, and flour milling. The town's strategic location at the junction of the Oxley and New England highways, along with air and rail links to Sydney, makes it a significant regional service centre.

Table 2-2 outlines the key characteristics of Tamworth that relate to the Project.

Table 2-2 Characteristics of Tamworth Town

Vulnerabilities	Social Framework	Strengths
The LGA's low skills acquisition could hinder economic diversification and resilience (Australian Bureau of Statistics, 2021). An ageing population necessitates more social services (Australian Bureau of Statistics, 2021). Women face safety and income inequality, often earning less and being victims of crime (NSW Bureau of Crime Statistics and Research, 2023).	People	Tamworth Regional Council (Council) aims to enhance the education sector and support workforce upskilling. The community has a high First Nations representation (Australian Bureau of Statistics, 2021).

Vulnerabilities	Social Framework	Strengths
Socioeconomic disadvantage is high, as are mental health issues and long-term health conditions (Australian Bureau of Statistics, 2021). The non-indigenous community lacks cultural diversity (Australian Bureau of Statistics, 2021).		
The LGA is experiencing a rise in crime, including violent incidents like domestic violence (NSW Bureau of Crime Statistics and Research, 2023). The community is more transient than neighbouring areas (Australian Bureau of Statistics, 2021). The Tamworth Country Music Festival shapes perceptions of Tamworth, the area offers more than just music (Tamworth Regional Council, 2022).	Community	Residents take pride in their community and enjoy a high quality of life (Tamworth Regional Council, 2022). There's a desire for stronger community cohesion and safety (Tamworth Regional Council, 2022). The community is capable of mobilising when their values are at stake.
The Region has a violent colonial history with nearby massacre sites of First Nations people (University of Newcastle, 2019). There's a community call for enhanced engagement with diverse cultures (Tamworth Regional Council, 2022).	Culture	A desire from the community to celebrate First Nations history and culture in the area (Tamworth Regional Council, 2022).
Income disparities exist between industries and gender, with limited opportunities for higher-income jobs (Australian Bureau of Statistics, 2021). Households face high housing costs with limited income (Australian Bureau of Statistics, 2021). Opportunity for labour transfer in Project-related industries is limited (Australian Bureau of Statistics, 2021). The LGA lacks business size diversity, mostly comprising small and medium enterprises (Australian Bureau of Statistics, 2023). These businesses may struggle to meet Project procurement requirements due to their size and scope.	Livelihoods	Economic growth is focused on agriculture, healthcare, construction, and manufacturing. Council aims to diversify the economy into renewable energy (Tamworth Regional Council, 2022). Local construction businesses, with proper support, could participate in project-related procurement.

Vulnerabilities	Social Framework	Strengths
Small agricultural businesses, which are abundant, could be impacted by land access and use changes (Australian Bureau of Statistics, 2023).		
Community dissatisfaction with existing road infrastructure across the LGA, indicating poor or limited quality (Tamworth Regional Council, 2022).	Infrastructure	Strong connections to highway network, including major arterial roads leading: north, south, east, and west. Various travel options available including rail and air connections that link Tamworth to Sydney, Melbourne, and Brisbane (Tamworth Regional Council, n.d.). High supply of health care services, servicing the community and broader region (NSW Department of Planning and Environment, 2022). Moderate representation of further educational institutions with room for strategic growth. High representation of performance spaces within the township, supporting live music and contributing to a better quality of life for residents (Tamworth Regional Council, n.d.). High community satisfaction with Council run social and community infrastructure (Tamworth Regional Council, 2022).
Housing diversity is limited, with mostly larger, under-utilised houses (Australian Bureau of Statistics, 2021). Renters face greater affordability issues than homeowners (Australian Bureau of Statistics, 2021). Short-stay housing is scarce during major events, leading to potential homelessness (ABC News, 2022). Social housing has significant waitlists (NSW Communities and Justice, 2024).	Housing	Desire from community and Council to increase housing supply, including affordability and choice (Tamworth Regional Council, 2022).

Vulnerabilities	Social Framework	Strengths
The community faces water scarcity and is vulnerable to climate change, with increased risks of droughts, bushfires, and floods (Tamworth Regional Council, 2022).	Environment	Apply a critical natural hazards lens to the Project, with the expectation that the frequency and severity of hazard events will increase in the future.

2.2.3 Armidale

Armidale, located in the Northern Tablelands of NSW, is a town known for its rich cultural heritage and natural beauty. With a population of approximately 29,360, it serves as an administrative centre for the region and is situated at the junction of the New England Highway and Waterfall Way, approximately halfway between Sydney and Brisbane. Armidale is surrounded by forests, mountain gorges, waterfalls, and four national parks, making it a haven for nature enthusiasts. The town is also noted for its colonial-era architecture, centres of education, and cultural heritage, and is known for its modern amenities that cater to its growing population.

Table 2-3 outlines the key characteristics of Armidale that relate to the Project.

Table 2-3 Characteristics of Armidale Town

Vulnerabilities	Social Framework	Strengths
Aging population and associated impacts to health care services (Australian Bureau of Statistics, 2021). High rates of self-reported mental health conditions (Australian Bureau of Statistics, 2021), and high rates of hospitalisation due to mental health conditions (Public Health Information Development Unit, 2021).	People	High number of young adults (15–34). High rates of advantage and low rates of disadvantage (as defined by the Australian Bureau of Statistics Socio-Economic Indexes for Areas – SEIFA). High Indigenous population (Australian Bureau of Statistics, 2021).
Some political resistance to the REZ and calls for underground transmission lines (Parliament of New South Wales, 2023). Some active community opposition to renewable energy. High crime rates affecting community safety (NSW Bureau of Crime Statistics and Research, 2023). Extensive use of social welfare, including rental aid and aged pensions. Perceived lack of resilience in the community. High population turnover (Australian Bureau of Statistics, 2021).	Community	Local Councils working together to improve the outcomes of development within the REZ (Coalition of Renewable Energy Mayors) (Armidale Regional Council, 2023). Highly connected community. Population growth expected to occur in Armidale township (NSW Department of Planning and Environment, 2022).

Vulnerabilities	Social Framework	Strengths
Contestation over traditional lands around Armidale. High Anglo-Saxon representation within the community, with limited cultural diversity.	Culture	Ongoing investment targeting First Nations communities for improved infrastructure and services. Active LALC and Aboriginal Corporations enhancing cultural connections. Local TAFE collaboration for Aboriginal site identification courses. Designated as a regional refugee settlement location, leading to increased migration.
Numerous small businesses in agriculture and construction (Australian Bureau of Statistics, 2023) which may need to adapt to changing land uses on parts of their property. Wage disparities based on gender and industry (Australian Bureau of Statistics, 2021). Ranked second decile in economic resources (Australian Bureau of Statistics, 2021). Council acknowledges over-reliance on agriculture for economic stability. Few workers with transferable skills for Project construction (Australian Bureau of Statistics, 2021).	Livelihoods	High educational attainment and SEIFA scores (Australian Bureau of Statistics, 2021). Desire for diversified economic growth, including small businesses and 'blue collar' industries. Council identifies REZ as key for job growth (NSW Department of Planning and Environment, 2022). Recognition of education and healthcare's role in economic sustainability (NSW Department of Planning and Environment, 2022). Tourism identified as a growth industry. Low unemployment rates (Australian Bureau of Statistics, 2024).

Vulnerabilities	Social Framework	Strengths
Aging population may strain health network (NSW Department of Planning and Environment, 2022). Infrastructure inadequate for desired population growth, requiring significant investment. Urban sprawl presents challenges and need for infrastructure investment. Continued road improvements needed for the town's connectivity.	Infrastructure	Access to higher education facilities (NSW Department of Planning and Environment, 2022). Access to medical facilities with recent redevelopment of local hospital (NSW Department of Planning and Environment, 2022). High number of general practitioners, dentists and specialist practitioners in the LGA per 100,000 people (Public Health Information Development Unit, 2021). Rail, road and air connections to major cities in NSW and QLD (NSW Department of Planning and Environment, 2022).
Increasing rental and house prices, including lack of affordable housing and high rates of rental stress (Australian Bureau of Statistics, 2021). Overall lack of housing availability. Existing challenges with overcrowding. Long wait times for social housing (NSW Communities and Justice, 2024).	Housing	Desire to increase housing through new land areas for development, including residential and large lot residential investigation areas. Low rates of mortgage stress (Australian Bureau of Statistics, 2021).
Vulnerability to drought, evidenced by 2018-2020 water scarcity. Poor air quality due to wood heaters, with related health effects (Armidale Regional Council, n.d.).	Environment	Proximity to national parks and natural features important for tourism to the region (NSW Department of Planning and Environment, 2022).

3 Community Engagement Outcomes

During the scoping phase, community engagement has focused on potentially affected landowners and the local community to the Preferred Study Corridor. A summary of engagement activities undertaken is contained in Section 5 of the Scoping Report. A summary of engagement outcomes by stakeholder group that has informed the identification of social impacts and opportunities is presented below.

3.1 Stakeholder Identification

SIA involves the participation and collaboration of people who may have an interest in, or those that are affected by a project. As Burdge (2004) outlines, stakeholders may be affected groups or individuals that:

- live, work, or recreate near the Project
- have an interest in the proposed action or change
- use or value a resource associated with the Project
- are affected by the Project e.g., may be required to relocate as a result of the Project (Burdge, 2004).

A stakeholder identification process was undertaken to identify stakeholders with an interest in the Project, or those directly and indirectly affected by the Project.

Figure 3-1 outlines the key stakeholder groups to be engaged and participate in the Project, while recognising that the SIA process to date has focussed on stakeholders most directly affected by the Project; landowners, First Nations people and organisations, community groups, and the wider community. Section 5 of the Scoping Report summarises the broader stakeholder and community engagement that has been undertaken on the Project to date.

Figure 3-1 Key Stakeholder Groups

3.2 Summary of Engagement Findings

Engagement outcomes have informed the identification of potential social impacts and are summarised below by stakeholder group.

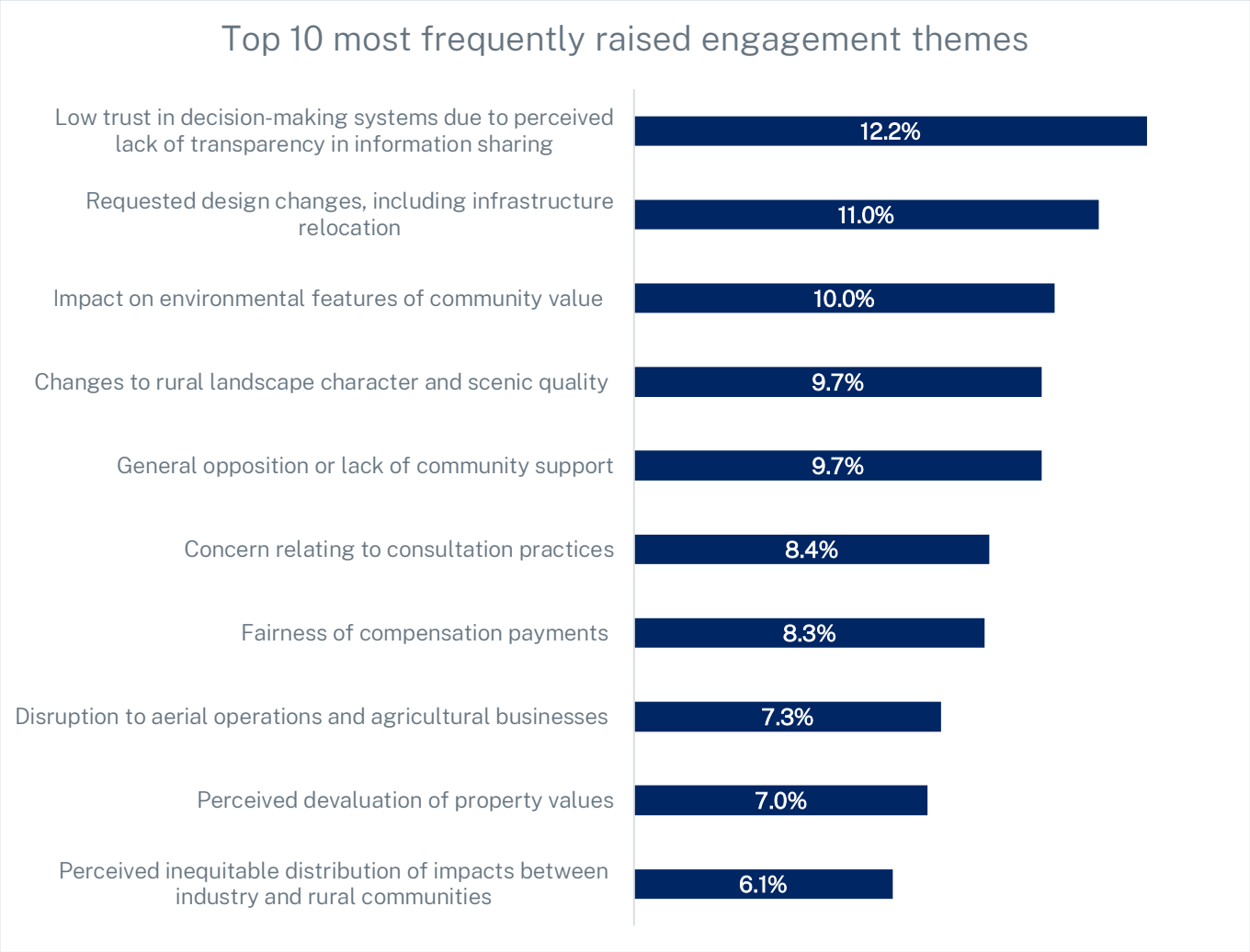


Figure 3-2 Top 10 Engagement Themes Raised

Source: Umwelt, 2024.

3.2.1 Landowners and Route Selection

Since mid-2023, EnergyCo has been consulting with directly affected landowners through a combination of personal meetings and group meetings, of which approximately 474 landowner and group landowner meetings have occurred to the end June 2024.

The Project's route selection process is summarised in Figure 3-3. Community and landowner engagement outcomes discussed throughout this section are derived from the engagement activities undertaken during the Corridor Refinement and Project Design stage as per the figure below.

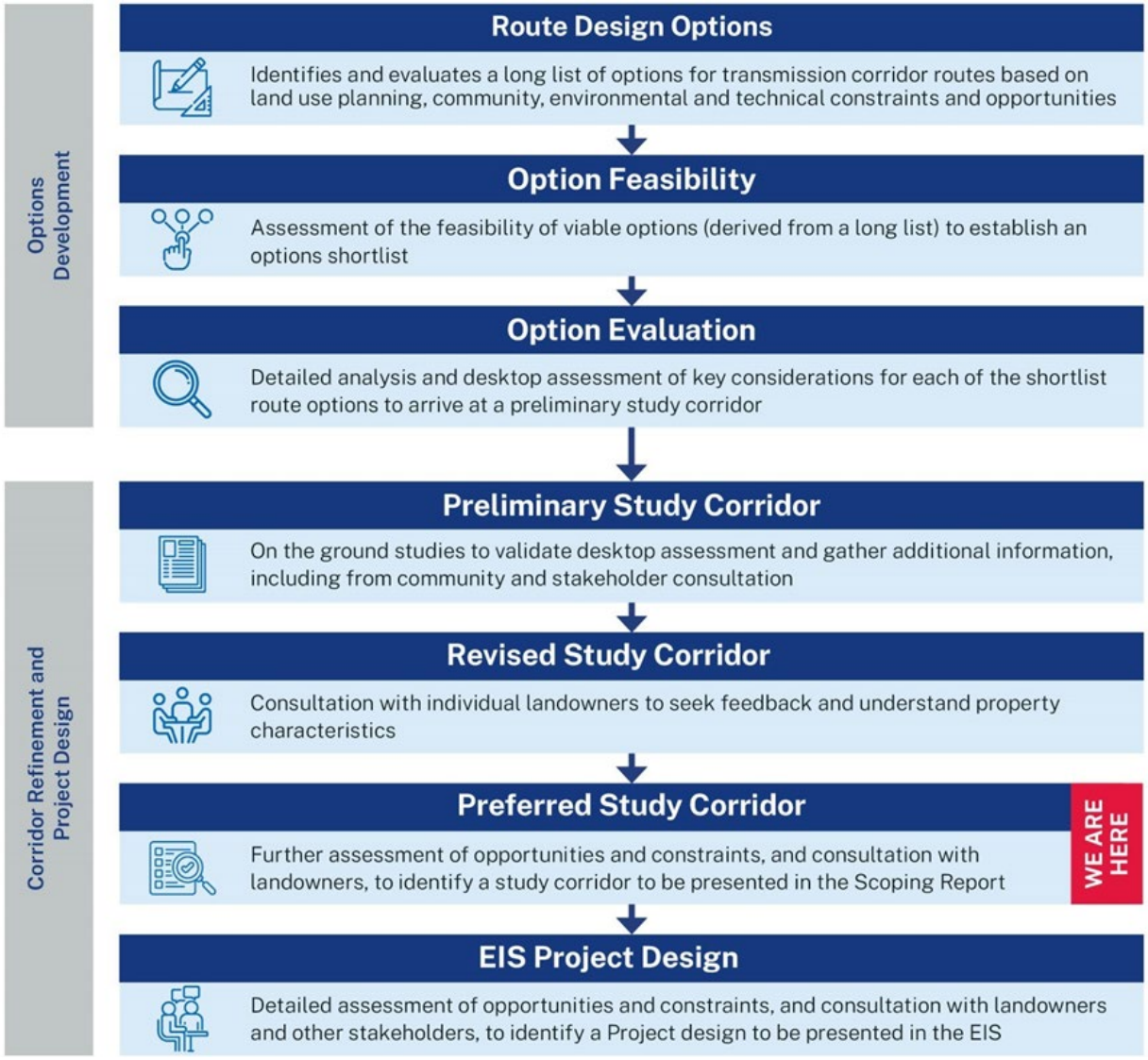


Figure 3-3 Route selection process

Broadly, the route selection process for the Project has been informed by EnergyCo's planning principles which includes aspects such as the avoidance of town centres and more densely populated areas, national parks, known historic sites, usage of crown or public land and environmental and construction feasibility aspects. Design refinements have been adopted with the aim to minimise and avoid impacts on landowners and residents.

The Preferred Study Corridor will continue to be refined in response to stakeholder feedback and the findings of technical assessments including the environmental and social studies that will be completed as part of the EIS. Further changes to the Preferred Study Corridor, based on community and landowner consultation, may occur up to the lodgement of the EIS. Further detail on the route selection process is contained within Section 1.4 of the Scoping Report.

Figure 3-4 outlines the key points of feedback received by directly affected landowners between the time of the Preliminary Study Corridor announcement in mid-2023 and the release of the Revised Study Corridor in March 2024.

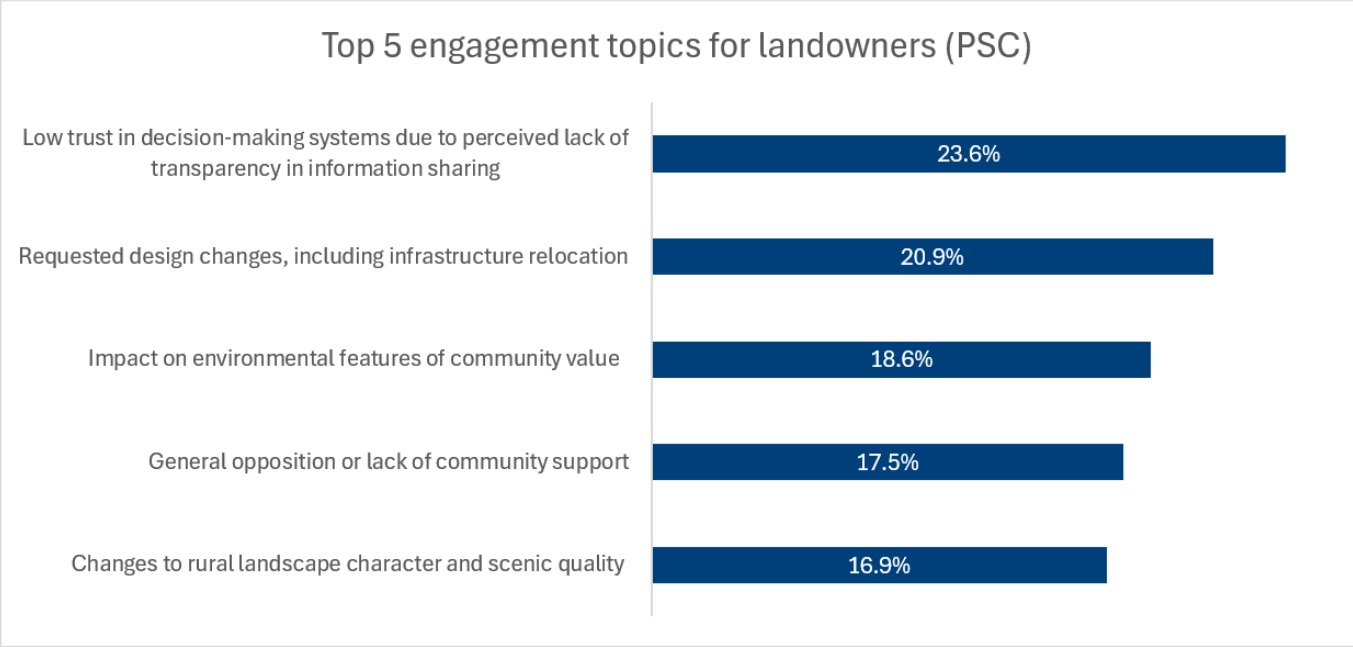


Figure 3-4 Top 5 engagement topics for landowners (PSC)

Source: Umwelt, 2024.

Affected landowners have raised concerns about the location of infrastructure and its impact on prime agricultural land, including cumulative impacts of the New England REZ on agricultural land use. Landowners have highlighted the importance of agricultural land to their community, livelihoods, and rural identity. Further to this, many landowners raised concerns about the visual impacts of the Project, including industrialisation of the rural landscape impacting residents' sense of place.

Many landowners expressed concerns that land and property values would be impacted by hosting Project infrastructure. Consequently, landowners had extensive questions regarding compensation, acquisition and taxation.

Multiple landowners identified the stress and anxiety associated with hosting the Project, with some indicating that their mental health and wellbeing has been negatively impacted due to proposed changes on their properties.

Landowners also expressed concerns about Electric and Magnetic Fields (EMFs) potential health impacts on their children and livestock, suggesting further research is required to understand these potential impacts.

Landowners expressed notable interest in understanding the decision-making processes regarding route alignment, including Project rationale and justification of constraints analysis. Landowners also expressed a desire to understand the degree of opportunity to influence asset location on their properties to improve land use. This included agricultural activities as well as opportunities to host generator projects.

Landowners have also expressed concern that the Project would impact upon activities on their properties. This included agricultural practices such as stock movement, operation of machinery, and aerial activities (cropping, spraying, fertilising, bushfire response and management). The need for Project activities to implement property specific biosecurity security measures was also identified as essential.

Lastly, landowners expressed concern regarding the potential fragmentation of their properties, and any effect on existing biodiversity and wildlife corridors. Related, many landowners have raised their interest in hosting biodiversity offset sites relating to the Project.

3.2.1.1 Community Input into Design Refinements

As an outcome of landholder and community engagement and further technical studies, sections of the Preliminary Study Corridor were revised to avoid and minimise impacts. This included 15 design refinements. Table 3-1 outlines the design refinements and changes that have occurred between the Preliminary Study Corridor (announced in May 2023) and the Revised Study Corridor (announced in March 2024).

In summary, the Revised Study Corridor, when compared to the Preliminary Study Corridor, has resulted in a reduction of about 80 landowners in the total number of directly affected landowners and private properties (the number of landowners affected by the Preliminary Study Corridor was around 320 landowners) through the increased use of government land and the avoidance of smaller landholdings where possible. These changes have also reduced the overall length of transmission easements by 39 km.

Following the announcement of the Revised Study Corridor in March 2024, EnergyCo has undertaken further landowner and community consultation and has continued technical studies on the corridor. The Revised Study Corridor largely forms the basis of the Preferred Study Corridor for the purposes of the Scoping Report, with some minor amendments to corridor width. The Preferred Study Corridor now forms the basis for detailed environmental assessments, including social impact assessment and stakeholder engagement, and for obtaining the SEARs for the Project.

Table 3-1 summaries each of the design refinements made to the Project when moving from the Preliminary Study Corridor to the Revised Study Corridor and Preferred Study Corridor, including how these changes have been made in consideration of impacts to landowners and local communities.

Table 3-1 Summary of Social Considerations in Project Refinements

Locality of Change	Description
Glenbawn and Gundy	Realignment of the 500 kV transmission lines, connecting Bayswater and the New England REZ. This change is outside the Preliminary Study Corridor and has been made to minimise impacts on nearby landowners as well as reducing the overall length of the corridor. There is also an increase in use of State-owned land in this area.
Central Hub to North Hub	The corridor has been realigned between the North and Central Hubs to minimise impacts to the environment.
Kingstown Road – Thunderbolts Way	The Preliminary Study Corridor has been moved in this section to improve environmental impact, decrease visual impact and incorporates changes requested by landowners.
Rocky River – Bundarra Road	The Preliminary Study Corridor had multiple river crossings, while the Preferred Study Corridor avoids crossing Boorolong Creek (improving environmental and constructability outcomes). This reduces the number of landowners impacted and reduces the amount of transmission line located within a flood zone.
Central Hub to East Hub	Realignment of the 330 kV transmission line connecting Central and East Hub has incorporated a shorter and more direct route and fewer transmission towers, therefore impacting upon fewer landowners, reducing environmental impacts, and improving constructability and cost.

Locality of Change	Description
McCully's Gap to Muscle Creek	Realignment of the 500 kV transmission lines connecting Bayswater to the New England REZ to the east of the Preliminary Study Corridor at the McCullys Gap and Muscle Creek Area. This change reduces impacts on landowners.
New England Highway Junction	Realignment of the 500 kV transmission line connecting into the Central Hub crossing the New England Highway. This change reduces the number of dwellings impacted by the Project.
Dungowan, Loomberah, Woolomin and Mulla Creek	The study corridor has been realigned near Loomberah, Dungowan, Woolomin and Mulla Creek to increase the use of state-owned land and minimise impacts to smaller lifestyle properties. This change reduces the number of dwellings that will be visually impacted by infrastructure. It is acknowledged that the Preferred Study Corridor continues to interact with a variety of residential, agricultural and commercial properties and interests.
Walcha	Deferral of the proposed South Hub and the connecting transmission infrastructure in consideration of the consultation with industry and communities in this area. The South hub and associated transmission infrastructure will be assessed under a separate future approval, and it is not part of the Project.
Boorolong (North Hub)	The proposed site for the North Hub site has been shifted approximately 12 km to the south. This change reduces impacts on landowners, including the number of properties affected.
Kentucky (Central Hub)	The proposed site for the Central Hub has been moved onto a commercial property who is host to other proposed renewable energy infrastructure.
Gostwyck (East Hub)	The proposed site for the East Hub has been shifted from the northern side of Hillview Road to the southern side in response to landowner feedback, reducing impacts on potential wind generation, visual impacts, and to improve co-location with proposed generator infrastructure.
Woolbrook (Central South Hub)	The proposed site for the Central South Hub has been shifted from the southern side of the Oxley Highway to the northern side in response to landowner feedback.

Feedback on the design refinements through approximately 80 personal meetings with affected landowners was obtained following the release of the Revised Study Corridor. Figure 3-5 below outlines the most frequently raised topics (Revised Study Corridor or 'RSC) gathered during these engagement activities.

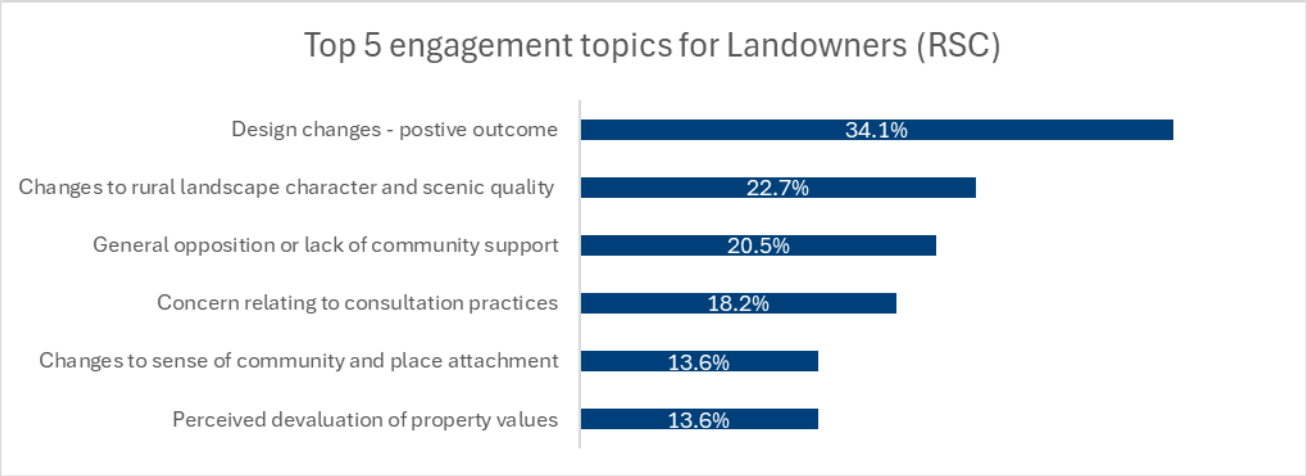


Figure 3-5 Top 5 engagement topics for Landowners (Revised Study Corridor)

Source: Umwelt, 2024.

Due to the diversity of landowner experiences regarding the announcement of the Revised Study Corridor, engagement outcomes reflected a range of sentiment. The most frequent theme from landowners who no longer host the Project as part of the Revised Study Corridor was the perceived positive outcomes due to the design changes. Conversely, many stakeholders expressed negative sentiments that their properties remained within the Revised Study Corridor or had been introduced into the Revised Study Corridor and therefore affected by the Project for the first time, as a result of the design refinements.

As part of this, landowners expressed concern about the predicted visual changes to the landscape, and how this would affect their sense of place attachment and community. Landowners have also expressed concerns about the perceived potential for devaluation of their property due to hosting Project infrastructure or residing nearby.

3.2.2 Community Groups

EnergyCo's early consultation with community groups to date has captured preliminary feedback from groups representing local interests relating to farming and agriculture, biodiversity and conservation, and the renewable energy industry, with ongoing broader engagement underway.

Key focus areas for these community groups included the transparency relating to the Project's decision-making process primarily regarding the route alignment as well as the broader REZ. Community groups sought detailed information on the design, route alignment, viability thresholds, and consultation process for the broader New England REZ, as well as the Project.

The ability of EnergyCo to foster community support was questioned by some community groups due to their opposition to the Project and reported mistrust in the Government's planning and decision-making processes for large-scale development. Similarly, some groups also raised concerns about unresolved questions that they have about the Project, recognising both their desire for involvement in the decision-making process and desire for answers to questions that are subject to ongoing design and technical assessment given the current stage of the Project.

Other key issues raised in this consultation related to the Project included:

- various questions regarding landowner payments for hosting infrastructure, including how payments would be impacted by taxation, the rationale behind the period of payments (20 years), and the view that landowners should be compensated for disruptions to their businesses during field studies and construction activities
- the view that the engagement process for the Preliminary Study Corridor could have been improved

- the rationale behind the route alignment and the influence of generators
- that biodiversity offsetting is highly important for the Project and should be sought locally.

Some community groups also raised a range of concerns relating to the broader New England REZ, with the Project considered enabling infrastructure for the REZ. Whilst some of these issues raised in relation to the broader REZ are beyond the scope of this assessment, others are important cumulative and region-wide considerations which will be considered in the cumulative impact assessment for the Project. The broader REZ issues raised through this consultation are noted below and included:

- concerns by some stakeholders about the perceived unfairness of impact distribution associated with the New England REZ, with rural communities hosting renewable energy generation projects for statewide energy security
- some representatives questioned the engagement process undertaken to inform the development of the New England REZ, announced by the NSW Government in 2021
- feedback that some proposed generator projects in the region have been perceived as undertaking community and landowner engagement poorly
- feedback relating to the potential cumulative impacts of the New England REZ on biodiversity including that biodiversity offsetting is highly important for the Project and should be sought locally.

3.2.3 First Nations

Early engagement with First Nations communities and representative groups has involved a number of individual introductory briefings as well as community meetings at the time of the Project's announcement. Initial feedback obtained during these meetings highlighted the following in relation to the Project:

- calls for collaborative decision-making processes and increased engagement with First Nations communities in project planning
- concern for potential impact on culturally significant sites, wildlife, and migrating birds, potential harm to local ecosystems and water resources
- recognition, preservation, and promotion of cultural heritage through involvement in project planning and environmental assessments
- the importance of involving cultural Elders in site work and adhering to cultural protocols, emphasising the preservation of cultural heritage
- the need to realise opportunities for increased involvement in heritage site protection
- the need for employment and training opportunities in trades and energy projects for young members of the community to create potential positive impacts on livelihoods and wellbeing
- the need for more comprehensive community consultation and awareness-building efforts to ensure equal opportunities for input, to provide equitable job access and contracts for First Nations people
- concerns about potential health impacts during construction and issues related to noise pollution and dust
- concerns about potential displacement of traditional livelihoods
- concerns over the project lifespan and land rehabilitation.

When reflecting and sharing feedback on the broader REZ and cumulative matters, commentary was made on:

- the reduction in greenhouse gas emissions and environmental benefits through clean energy production as a positive aspect of the REZ however simultaneous concerns relating to the potential harm to local ecosystems, water resources, and wildlife habitats during construction and operation of projects
- concerns about the potential impact of energy infrastructure on culturally significant sites, wildlife, and migrating birds
- the need for fair access to historic land records and resources (including knowledge-sharing) as part of the region's development
- concerns relating to the potential for social disruption and the strain on community resources
- concerns about social isolation, racial issues, and potential encroachment on lands, indicating the need to address community-related challenges
- potential opportunities for long-term sustainability and self-sufficiency of First Nations communities through renewable energy projects
- concerns over the decommissioning of projects at the end of their lifecycle.

3.2.4 Broader Community

Fourteen community information sessions were held in towns of Armidale, Walcha, Uralla, Murrurundi, Dungowan, Scone and Muswellbrook through June and July 2023 to share the Preliminary Study Corridor. Concurrent to these events, individual feedback forms (online and hard copy) were completed by approximately 145 people.

In March 2024, three community information sessions were held in Armidale, Tamworth, and Muswellbrook, and an additional session in Woolomin in May 2024 to share the Revised Study Corridor with the broader community where feedback from the broader community was also captured.

In relation to the Project, members of the community have been highly interested in detailed planning of the Project, with questions spanning from the potential for environmental impacts to the levels of community or public participation in Project design.

The following matters have been raised:

- need for better understanding of how transmission line options were developed and the criteria which has informed the route selection and design
- doubt in the ability for the community to influence the Project's design and concern that the Project timeline may not allow for design refinements based on technical studies, such as biodiversity considerations
- mistrust in decision making systems, due to a perceived lack of transparency, caused in part by stakeholders desires for detailed information and responses regarding the Project (and concern about the time taken for such information to be provided) and more information about the Project's plans and route selection process
- the level of community support and the implications if social acceptance of the Project is not established or maintained.

Some stakeholders described that these perceptions have been informed partly due to prior experience with proponents of energy generation projects in the region, some of whom have been viewed as having inadequate community engagement processes. This has led to low levels of trust and a lack of willingness to engage by some community members.

Relating to the broader energy transition, the REZ, and cumulative or region-wide matters, the following points of feedback have been raised:

- further information on the establishment of the New England REZ
- concerns about the perceived inequitable distribution of impacts of the renewable energy industry on rural communities as compared to industry and urban or coastal communities
- concerns of the cumulative effects associated with existing and proposed generation projects including:
  - the potential impacts on rural landscape and property aesthetics
  - social amenity matters such as noise
  - accessibility to accommodation for workforces
  - impacts to agricultural productivity across the region
  - impacts on road access/quality and water supply
  - the potential effects on the local tourism industry.

The most frequently raised topics by broader community members are outlined in Figure 3-6.

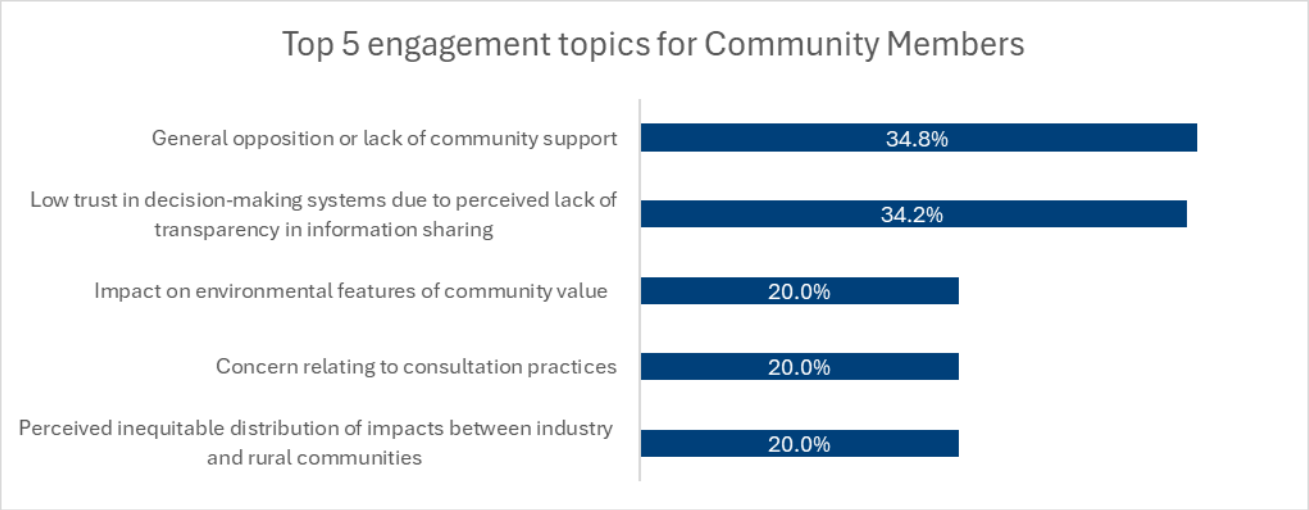


Figure 3-6 Top 5 engagement topics for Community Members

Source: Umwelt, 2024.

Based on feedback to date, members of the community have also raised the following ideas for the Project to support addressing existing community needs, which will be further explored in consultation with local stakeholders and communities during the next stages of the Project and as part of the SIA in particular:

- mental health support for local communities
- mixed community engagement methods to facilitate improved participation
- establishment of a maintenance / training facility to facilitate local job opportunities
- partnerships with local universities to support skills development and upskilling
- assistance for local landowners with establishment of biodiversity offsets
- engagement with local community groups regarding distribution of the proposed Community Benefit Funds.

4 Scoped Social Impacts

The scoping of social issues, impacts and opportunities was undertaken using the methodology outlined in Section 1 and in accordance with the categories as per the Guideline. Impacts have been identified based on community engagement outcomes gathered via the Project to date together, with the insights gathered from the social baseline analysis such as through secondary data analysis, a comparative benchmarking exercise, as well as through a local media review. A summary of social impacts is contained in Table 4-2 with the preliminary social impact assessment provided in Appendix A, adapted from the NSW SIA Guideline's Social Impact Scoping Tool Worksheet.

The preliminary evaluation of the issues and impacts identified during the scoping phase has been undertaken to determine the level of assessment required for each social impact in the next stage of the SIA process (Phase 2), and to inform any further Project refinements and planning. The level of assessment determines the extent of effort and data required to assess the impact and will fall into one of four categories outlined in Table 4-1, as per the Guideline.

Table 4-1 Level of Assessment for Social Impacts

Level of Assessment	Definition
Detailed assessment	The project may result in significant social impacts, including cumulative impacts
Standard assessment	The project is unlikely to result in significant social impacts, including cumulative impacts
Minor assessment	The project may result in minor social impacts
Not relevant	The project will have no social impact, or the social impacts of the project will be so small they do not warrant consideration

Source: NSW DPE (2023).

Due to the large-scale nature of the Project traversing through two regions and numerous rural localities, social impacts will differ in importance or significance in the varying rural localities and by stakeholder group. It is also acknowledged that social impacts can occur from the time of Project commencement, as directly affected people and host communities can experience effect to their personal lives or change to their circumstances and perceptions as a result of the announcement of the Project.

Table 4-2 Summary of Preliminary Social Impacts

Social Impact Category	Potential Social Issue or Impact
Way of life 	• Changes to how people live, work and interact with their homes, land and landscapes. • Potential for nearby residents to relocate.

Social Impact Category	Potential Social Issue or Impact
Community 	• Changes to community character and composition. • Changes to place attachment and sense of belonging. • Change in levels of community cohesion. • Changes to interpersonal relationships given distributive inequity of project impacts. • Opportunities for community development through benefit sharing investments.
Culture 	• Potential changes to connection to Country. • Potential physical effect on cultural heritage values, places, stories, sites or landscapes of Aboriginal cultural significance.
Accessibility 	• Increased pressure on social infrastructure and services, including health care and housing and accommodation. • Potential change in ability for emergency service response and recovery during natural disasters or hazards. • Changes to local roads may alter people's mobility. • Potential changes in how people use public recreation areas and natural resources. • Potential for improvements to public infrastructure and community facilities.
Health and wellbeing 	• Stress, anxiety and uncertainty about people's futures. • Perceived health effects relating to presence of EMFs.
Surroundings 	• Changes to rural landscape character may affect community values. • Changes in local amenity may cause disturbance for local residents. • Potential changes to levels of public safety.
Livelihoods 	• Opportunities for local and regional employment and economic diversification. • Potential for skills development. • Opportunities for local business development and increase in commercial activity across the region. • Potential disruption to agricultural operations. • Potential diversification of income streams. • Potential change in rural property values.

Social Impact Category	Potential Social Issue or Impact
Decision making systems 	• Frustration and reduced trust in project planning and decision-making processes. • Perceived inequitable distribution of impacts between rural and urban communities, and rural communities and industry. • Concern associated with processes relating to compulsory acquisition of land and compensation payments.

5 Conclusion

This Social Impact Scoping Report has documented the SIA process and engagement undertaken during the scoping phase of the Project and forms part of the Scoping Report to inform the issuance of SEARs by the DPHI.

This Report has included an overview of the social baseline profile for the Project, the outcomes of early community and stakeholder engagement, and the identification of social impacts and opportunities. The preliminary identification of social impacts has been undertaken to inform and support the refinement of Project design and plans to reduce any negative Project impacts and to achieve greater positive Project outcomes for communities.

This Report has confirmed that a detailed assessment of social impacts is required as part of the EIS and should be informed by an ongoing process of community consultation. As part of the EIS, the next phase of the SIA for this Project will include comprehensive consideration and assessment of social impacts and the development of relevant strategies to mitigate, enhance or manage the social impacts and opportunities associated with the Project. Further, the SIA undertaken as part of the EIS will also consider perceptions of impacts raised by the community and other stakeholders.

The next phase of the SIA will involve the following key activities:

- Validation of the social locality and identification of additionally affected communities and potentially vulnerable groups.
- A detailed update of the social baseline profile to ensure that the Project's understanding of the existing social environment is relevant to the impacts identified and any community changes within the regional and local social context is captured.
- Provision of feedback to landowners, local communities, and other key stakeholders on the outcomes of matters raised in the scoping phase and communication of the Project's SEARs (once issued). This will include an outline of the next steps in the Project's planning and assessment process and confirmation of opportunities for community input and participation.
- Update of the Project's Community and Stakeholder Engagement Plan (CSEP) and corresponding Implementation Plan, which details further engagement with local communities, special interest groups, service providers, Traditional Owners, and other key stakeholders on key social impact areas. This will involve targeted SIA consultation with community stakeholders, the provision of feedback on the outcomes of EIS technical studies and will provide opportunities for community input to the development of appropriate mitigation and enhancement measures to address social impacts and any residual effects.
- A comprehensive prediction, assessment, and evaluation of social impacts against existing baseline conditions, using social science methods, including the prioritisation of impacts of highest importance to people.

- The development of mitigation and enhancement measures to address impacts where feasible, and mechanisms or strategies to monitor and manage the impacts over the life of the Project. A Social Impact Management Plan Framework will be developed as part of the SIA to achieve this.

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Appendix A: Preliminary Social Impact Assessment

Table A-1 Preliminary Social Impact Assessment

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Establishment, construction, and operation of Project infrastructure	Surroundings	Changes to people's sense of place and place attachment due to changes to scenic landscape character, rural values and industrialisation of landscape	Negative	Detailed assessment	Landscape and Visual Impact Assessment, community survey, key stakeholder interviews, local government plans	Yes	• Development of Landscape and Visual Impact Assessment. • Implementation of Community and Stakeholder Engagement Plan (CSEP). • Implement Community Benefits Scheme.
Construction and operation of Project infrastructure	Surroundings	Increased noise and dust may cause change in social amenity and health outcomes for nearby residents	Negative	Standard assessment	Noise and Vibration Impact Assessment, Air Quality Impact Assessment, Community survey, key stakeholder interviews	Yes	• Development and implementation of Construction Environmental Management Plan (CEMP). • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction and operation of Project infrastructure	Surroundings	Opportunities for landowners to host biodiversity offset areas, potential to increase biodiversity conservation efforts and outcomes and provision of financial support	Positive	Standard assessment	Biodiversity Assessment and Biodiversity Offset Strategy, interviews	No	• Development and implementation of Biodiversity Offset Strategy. • Implementation of CSEP.
Construction and operation of Project infrastructure	Surroundings	Changes to environmental features and impacts to local flora and fauna through vegetation clearing and land disturbance that are highly valued by the community, including decrease in ability to control/loss of control over land stewardship and environmental protection efforts on private properties	Negative	Detailed assessment	Biodiversity Assessment and Biodiversity Offset Strategy Community survey, key stakeholder interviews	Yes	• Development and implementation of a CEMP. • Implementation of feedback mechanisms for monitoring and reporting. • Implementation of CSEP. • Development and implementation of Biodiversity Offset Strategy.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Establishment, construction, and operation of Project infrastructure	Surroundings	Environmental impacts on highly valued landscape features arising from the sourcing of materials required for the Project (including gravel and water)	Negative	Standard assessment	Community survey, key stakeholder interviews, climate change risks considered in relevant assessment, Greenhouse Gas Assessment	Yes	• Implementation of CSEP.
Establishment, construction, and operation of Project infrastructure	Surroundings	Environmental and social benefits of the Project arising from addressing the effects of climate change and contribution to net-zero targets	Positive	Standard assessment	Climate change risks considered in relevant assessment, Local and State Government Strategies	Yes	• Implementation of CSEP.
Demobilisation and site rehabilitation post construction	Surroundings	Intergenerational inequity given need to manage impacts of infrastructure demobilisation and rehabilitation and associated cost and environmental impact outcomes	Negative	Standard assessment	Demobilisation and site rehabilitation strategy development, key stakeholder interviews	Yes	• Development and implementation of CEMP. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Operation of project	Access	Intergenerational equity arising from the securing of renewable energy	Positive	Standard assessment	Local and State Government Strategies	No	• Implementation of CSEP.
Establishment, construction, and operation of Project infrastructure	Community	Changes in housing market could cause changes to community composition and levels of community stability	Negative	Detailed assessment	Key stakeholder interviews as part of SIA	No	• Development and Implementation of Workforce and Accommodation Strategy.
Establishment of Project	Community	Changes to community cohesion and interpersonal relations due to differences in sentiment towards REZ development and the Project	Negative	Detailed assessment	Key stakeholder interviews as part of SIA	Yes	• Development and Implementation of Workforce and Accommodation Strategy. • Implementation of CSEP. • Implementation of Community Benefits Scheme. • Investigation into government partnerships.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Establishment of Project	Community	Changes to levels of community cohesion due the potential polarisation that the Project may cause between community members and damage to social networks and intracommunal relations	Negative	Detailed assessment	Key stakeholder interviews as part of SIA	No	• Development and Implementation of Workforce and Accommodation Strategy. • Implement Community Benefits Scheme.
Establishment of Project	Community	Effect on community and personal lived experiences of place, place attachment and sense of belonging	Negative	Detailed assessment	Cumulative Impact Assessment, Key stakeholder interviews as part of SIA	No	• Implementation of CSEP. • Implement Community Benefits Scheme.
Construction of Project infrastructure	Community	Changes to the composition and character of local communities due to influx and presence of transient workforces including potential increase in antisocial behaviour and increase in strain on local policing services	Negative	Detailed assessment	Workforce profiling and modelling, ABS data, key stakeholder interviews as part of SIA	No	• Development and Implementation of Workforce and Accommodation Strategy.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Project design and establishment	Decision-making systems	Reduced trust in public institutions and decision-making processes of government projects may reduce overall levels of social acceptance	Negative	Detailed assessment	Community survey, key stakeholder interviews as part of SIA	No	• Implement Community Benefits Scheme. • Implementation of CSEP.
Project design and establishment	Decision-making systems	Social division between rural and urban communities in relation to impact distribution of energy policy decisions	Negative	Minor assessment	Community survey, key stakeholder interviews, comparative study	No	• Implement Community Benefits Scheme. • Implementation of CSEP. • Investigation into government partnerships.
Project design and establishment	Decision-making systems	Stress and emotional load associated with perceived inability to influence project design and decision-making	Negative	Detailed assessment	Landowner and key stakeholder interviews	No	• Implement Community Benefits Scheme. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Project design and establishment	Decision-making systems	Perceived inequitable distribution of impacts between communities and industry associated with Project establishment and route selection	Negative	Detailed assessment	Landowner interviews, key stakeholder interviews	Yes	• Implement Community Benefits Scheme. • Implementation of CSEP.
Project design and establishment	Decision-making systems	Loss of trust and frustration over perceived lack of early community engagement and information sharing	Negative	Detailed assessment	Community and landowner feedback	No	• Implementation of CSEP.
Project design and establishment	Decision-making systems	Ability to contribute to decision making about community investment options emerging from Community Benefits Scheme	Positive	Standard assessment	Community and stakeholder engagement, benchmarking exercise	No	• Implement Community Benefits Scheme. • Implementation of CSEP.
Project design and establishment	Livelihoods	Community concern about devaluation of property values and ability to sell in future effecting personal futures and control over personal circumstances	Negative	Detailed assessment	Landowner interviews, Economic Impact Assessment	Yes	• Negotiation with directly impacted landowners.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Operation of Project infrastructure	Health and wellbeing	Perceived health impacts associated with exposure to EMFs	Negative	Standard assessment	EMF Assessment	No	• Implementation of CSEP. • Development and implementation of EMF Assessment.
Operation of Project infrastructure	Health and wellbeing	Anxiety and stress associated with the perceived impacts of EMF on livestock behaviour and health	Negative	Standard assessment	EMF Assessment	No	• Implementation of CSEP. • Development and implementation of EMF Assessment.
Project design and establishment	Decision-making systems	Lack of willingness to participate in project planning (consultation fatigue) due to large number of projects in the region	Negative	Standard assessment	Community and stakeholder engagement, benchmarking exercise	No	• Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Project design and establishment	Health and wellbeing	Heightened community fear, stress, anxiety and fatigue associated with uncertainty over project outcomes on personal circumstances, effect on local communities and people's livelihoods including exacerbation of existing or emerging mental or physical health conditions and levels of social isolation (both individual and communal)	Negative	Detailed assessment	Community and landowner feedback, key stakeholder interviews as part of SIA	Yes	• Implementation of CSEP. • Investigation into government partnerships.
Project design and establishment	Community	Emergence of community tension, division and intercommunal polarisation or conflict due to heightened levels of stress, fear, anxiety and fatigue, and unequal effects of project impacts/benefits within local communities	Negative	Detailed assessment	Community and landowner feedback, key stakeholder interviews as part of SIA	No	• Implementation of CSEP. • Investigation into government partnerships. • Implementation of Community Benefits Scheme.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Operation of Project infrastructure	Health and wellbeing	Improved long-term public health outcomes due to reduced reliance on fossil fuel for electricity generation	Positive	Standard assessment	Key stakeholder interviews, Comparative studies	No	
Construction of Project infrastructure	Access	Reduced levels of public safety on roads due to increase in traffic on local roads, including heavy vehicle movements	Negative	Detailed assessment	Traffic Assessment, Community and landowner feedback, key stakeholder interviews	No	• Preparation and implementation of a Traffic Management Plan. • Implementation of CSEP.
Construction of Project infrastructure	Access	Travel disruption and/or increase in travel times caused by Project-related traffic	Negative	Detailed assessment	Traffic Assessment, Community and landowner feedback, key stakeholder interviews	No	• Preparation and implementation of a Traffic Management Plan. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction, and operation of Project infrastructure	Access	Community concern about reduced ability for emergency service response and recovery during natural disasters, hazards or incidents due to increased traffic, road access changes and potential disruption to aerial firefighting operations	Negative	Standard assessment	Traffic Assessment, Hazards Assessment, Bushfire Assessment, Community and landowner feedback, key stakeholder interviews	No	• Implementation of CSEP. • Investigate partnership with emergency services agencies. • Development and implementation of Hazards Assessment.
Construction, and operation of Project infrastructure	Access	Pressure on housing and short term accommodation caused by population influx and increase in demand which may disproportionately affect lower income households and vulnerable residents	Negative	Detailed assessment	Cumulative region-wide investigations, local housing strategies, review of housing data, key stakeholder interviews as part of SIA	No	• Development of Workforce and Accommodation Strategy.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction, and operation of Project infrastructure	Access	Pressure on health service delivery caused by population influx which may disproportionately affect lower income households and vulnerable residents	Negative	Detailed assessment	Review of local and state planning documents, key stakeholder interviews as part of SIA, workforce forecasting, cumulative region-wide investigations	No	• Investigate partnerships with government agencies. • Development of Cumulative Impact Assessment.
Construction, and operation of Project infrastructure	Access	Pressure on recreational infrastructure and community facilities caused by population influx which may disproportionately affect vulnerable residents	Negative	Detailed assessment	Review of local and state planning documents, key stakeholder interviews as part of SIA, workforce forecasting, cumulative region-wide investigations	No	• Investigate partnerships with government agencies. • Development of Cumulative Impact Assessment. • Implementation of Community Benefits Scheme.
Construction of Project infrastructure	Livelihoods	Private access track/road upgrades to benefit accessibility and property use for landowners	Positive	Standard assessment	Construction planning, landowner engagement	Yes	• Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Establishment and construction of Project infrastructure	Access	Improved road safety from upgrades and investment in local road infrastructure	Positive	Detailed assessment	Traffic Assessment, Community and landowner feedback, key stakeholder interviews	No	• Preparation and implementation of Traffic Management Plan.
Establishment and construction of Project infrastructure	Community	Potential improvements to community infrastructure, services and programs through implementation of Community Benefits Scheme	Positive	Detailed assessment	Social infrastructure investigations, review of local and state planning documents, key stakeholder interviews	Yes	• Investigate partnerships with government agencies. • Implementation of Community Benefits Scheme. • Implementation of CSEP.
Payments to landowners	Livelihoods	Diversification of income streams contributing to financial resilience of agribusinesses and perceived increased certainty for future family succession plans	Positive	Detailed assessment	Key stakeholder interviews as part of SIA, landowner interviews	No	• Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction and operation of Project infrastructure	Livelihoods	Concern about effects on agricultural businesses associated with potential changes in surface or groundwater flow	Negative	Standard assessment	Surface and ground water assessment, key stakeholder interviews, landowner interviews	No	• Development and implementation Groundwater and Surface Water Assessments. • Development and implementation of CEMP. • Implementation of CSEP.
Payments to landowners	Way of life	Increased uncertainty over personal futures associated with land acquisition and compensation processes	Negative	Detailed assessment	Key stakeholder interviews, landowner interviews	Yes	• Negotiation with directly impacted landowners. • Implementation of CSEP.
Payments to landowners	Way of life	Uncertainty over personal futures associated with potential physical or economic displacement	Negative	Detailed assessment	Key stakeholder interviews, landowner interviews, literature review, comparative studies	Yes	• Negotiation with directly impacted landowners. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Payments to landowners	Decision-making systems	Uncertainty and perceived unfairness associated with compulsory acquisition of land or properties	Negative	Standard assessment	Key stakeholder interviews, landowner interviews, literature review, comparative studies, review of State Government policies	No	• Negotiation with directly impacted landowners. • Implementation of CSEP.
Construction and operation of Project infrastructure Generator project development	Livelihoods	Perceived land use conflict arising from cumulative project development (transmission and RE generators) within the region due to disruptions to agricultural land and agribusinesses	Negative	Standard assessment	Land Use Conflict Assessment, Cumulative Impact Assessment, key stakeholder interviews, landowner interviews	Yes	• Negotiation with directly impacted landowners. • Implementation of CSEP.
Construction and operation of Project infrastructure	Livelihoods	Potential loss of access to, or use of, or disruption to, productive agricultural land and key physical assets such as private airstrips, given infrastructure placement/siting	Negative	Detailed assessment	Agricultural Assessment, landowner interviews, key stakeholder interviews as part of SIA	Yes	• Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction and operation of Project infrastructure	Way of life	Potential reduced access and disruption to use, management and enjoyment of private properties	Negative	Detailed assessment	Landowner engagement, key stakeholder interviews as part of SIA, Landscape and Visual Assessment, Land Use Conflict Assessment, Agricultural Assessment	No	• Negotiation with directly impacted landowners. • Implementation of CSEP.
Construction and operation of Project infrastructure	Livelihoods	Biosecurity risks due to property access for assessment and development affecting farming practices and sustainability	Negative	Detailed assessment	Landowner interviews, key stakeholder interviews as part of SIA, Agricultural Assessment	No	• Development and implementation of CEMP. • Implementation of CSEP. • Development and implementation of tailored Land Access Agreements.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Construction and operation of Project infrastructure	Livelihoods	Disruption to local business operations given effect on aerial agricultural operations and aerial safety	Negative	Detailed assessment	Landowner interviews, key stakeholder interviews, Economic Impact Assessment, Agricultural Impact Assessment	Yes	• Implementation of CSEP.
Project establishment and land acquisition compensation	Livelihoods	Potential loss of income from other revenue streams due to Project placement and subsequent disruptions to farming land/practices and tourism/visitation or recreation businesses	Negative	Detailed assessment	Landowner interviews, Economic Impact Assessment, Agricultural Impact Assessment	Yes	• Negotiation with directly impacted landowners. • Implementation of CSEP.
Construction and operation of Project infrastructure	Livelihoods	Local employment and contracting opportunities during the construction period	Positive	Detailed assessment	Key stakeholder interviews, workforce planning, Economic Impact Assessment, cumulative region-wide investigations	No	• Undertake and implement Workforce Strategy. • Investigate partnerships with government agencies. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Operation of Project infrastructure	Livelihoods	Local employment and contracting opportunities during the operation period for upgrades and maintenance	Positive	Detailed assessment	Key stakeholder interviews, workforce planning, Economic Impact Assessment, cumulative region-wide investigations	No	• Undertake and implement Workforce Strategy. • Implementation of CSEP.
Construction and operation of Project infrastructure	Livelihoods	Skills drain from regional labour force placing pressure on local businesses and other industries	Negative	Detailed assessment	Key stakeholder interviews, workforce planning, Economic Impact Assessment, cumulative region-wide investigations	No	• Undertake and implement Workforce Strategy. • Implementation of CSEP.
Establishment, construction, and operation of Project infrastructure	Livelihoods	Opportunities for diversification of skills (reskilling, upskilling and/or additional training) given establishment of a new industry sector	Positive	Detailed assessment	Key stakeholder interviews, review of relevant local and state plans	No	• Undertake and implement Workforce Strategy. • Implementation of CSEP.

Project activity	Category	Potential impact on people	Nature of impact	Future assessment level	SIA methods	Project Refinement	Mitigation / enhancement measures
Establishment and construction of Project infrastructure	Culture	Potential effect on cultural values or landscapes of Aboriginal cultural significance due to Project placement	Negative	Detailed assessment	Aboriginal Cultural Heritage Assessment, Cultural Values Assessment, First Nations engagement	No	• Implementation of CSEP. • Undertake and implementation of Aboriginal Cultural Heritage Assessment, Aboriginal Cultural Values Assessment, and Historic Heritage Assessment.
Establishment and construction of Project infrastructure	Culture	Recognition, preservation, and promotion of cultural heritage through First Nations' Elders' involvement in project planning and environmental assessments, and opportunities for reconnection to Country through onsite surveys undertaken with adherence to cultural protocols	Positive	Detailed assessment	Aboriginal Cultural Heritage Assessment, Cultural Values Assessment, First Nations engagement	No	• Implementation of CSEP. • Undertake and implementation of Aboriginal Cultural Heritage Assessment, Aboriginal Cultural Values Assessment, and Historic Heritage Assessment.

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