



Appendix Q. Socio-economic impact assessment

Shoalhaven Hydro Expansion Project Environmental Impact Statement

SSI-10033

Origin Energy Eraring Pty Ltd

November 2022

Shoalhaven Hydro Expansion Project - Main Works

Socio-economic impact assessment

SSI-10033

Origin Energy Eraring Pty Ltd

November 2022

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Executive summary

Origin Energy Pty Ltd (Origin) proposes to develop the Shoalhaven Hydro Expansion Project, to construct and operate a new pumped hydro power station on and under the land between the Fitzroy Falls Reservoir and Lake Yarrunga. The Project would draw on Origin's existing water allocations to pump water up from Lake Yarrunga consuming energy in periods of low demand. Energy would then be generated through the return of water from Fitzroy Falls Reservoir to Lake Yarrunga when demand for energy increases.

Existing environment

The Project is located within the Shoalhaven and Wingecarribee LGAs, approximately 50 kilometres (km) south-west of Wollongong and 20 km north-west of Nowra.

The primary study area had a total population of 1,539 people at the 2021 Census, of which more than half (856 people of 55.6 percent (%)) lived in Kangaroo Valley. The population of other suburbs in the primary study area were 249 people (16.2%) in Wildes Meadow, 220 people (14.3%) in Fitzroy Falls, and 214 people (13.9%) in Barrengarry (ABS, 2021). Communities in the primary study area generally had an older age profile with higher median ages, lower proportions of children and working aged people (i.e., 15 years to 64 years), and higher proportions of older people aged 65 years or over.

The Kangaroo Valley is known for its scenic beauty and tranquil surroundings and is a popular destination for visitors who are attracted to the area for its rural lifestyle and amenity, historic heritage such as historic buildings in the Kangaroo Valley township and the landmark Hampden Bridge across the Kangaroo River, natural landscapes, and nature-based recreational opportunities such as bushwalking, kayaking and fishing. The Kangaroo Valley is also a location for "destination weddings" with venues offering opportunities for celebrations set within natural and bushland settings.

Several community uses are located near to the Project that have potential to experience impacts during construction or operation. They include:

- Fitzroy Falls Reservoir and Recreation Area, which is used by the Southern Highlands Sailing Club
- Morton National Park, which is a popular location for day trippers wanting to participate in nature-based recreation pursuits such as bush walking, mountain biking, nature observation, and picnicking
- Bendeela Recreation Area, which provides camping, active and passive recreation opportunities for day trippers and overnight visitors along the banks of the Kangaroo River
- The Scots College – Glengarry Campus, which conducts outdoor education programs for Year 9 students at Scots College, including a six-month, two-term residential stay
- Kangaroo River, which supports a range of nature-based recreational pursuits, including kayaking and canoeing, camping, swimming, bush walking, nature observation, and fishing.

A range of businesses are also located within about one km of the Project or operate from nearby public areas such as the Kangaroo River or Bendeela Recreation Area. This includes visitor accommodation, wedding and function venues, retreats and recreation and tourism operators. In addition, there are a numerous visitor accommodation and retail businesses along Nowra Road, Bendeela Road, and Moss Vale Road. These roads are proposed to provide construction traffic access for the Project.

Identified impacts

The Project would provide long-term benefits for business, industry and domestic energy customers across NSW through improved energy security and reliability of supply to the NEM during periods of high demand. Locally, potential socio-economic impacts would mainly be associated with the construction phase and would generally relate to:

- Changes in amenity for occupants of properties surrounding the proposed construction works, possibly diminishing individuals use and enjoyment of their properties
- Construction traffic use of local and regional road networks
- Impacts on community facilities near to construction works, including changes in amenity that diminish people's enjoyment and experience of these facilities (e.g., Morton National Park, Kangaroo River, Bendeela Recreation Area).

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It is anticipated that most construction impacts would be effectively managed with the implementation of mitigation measures, including communication and engagement with communities and stakeholders, although there is potential for ongoing residual impacts during the construction phase relating to:

- Disruption to local amenity for users of properties near to construction works due to increased construction noise, dust and traffic
- Amenity changes for businesses immediately surrounding the Project construction, discouraging people from using local accommodation and wedding businesses
- Changes to local amenity of nature-based recreation areas, possibly deterring people from accessing these facilities
- Possible sleep disturbance due to 24 hour works for tunnelling, resulting in health and wellbeing impacts for individuals.

Ongoing communication with affected stakeholders and monitoring of potential impacts and the effectiveness of mitigation measures, including identification of additional mitigation measures as required would be important in managing any ongoing impacts.

Socio-economic impacts of the Project's operation would be similar to the existing pumped hydro scheme (e.g., opportunities for local businesses in operation and maintenance activities, operational noise and traffic effects on local amenity), with the main impact of the Project likely to be changes to community values relating to the environment associated with the clearing of vegetation. These impacts are likely to diminish over time as vegetation becomes re-established.

Summary of mitigation measures

Mitigation measures implemented during the Project would avoid, mitigate or manage identified negative socio-economic impacts of the Project's construction and operation and maximise or enhance positive impacts. These include:

- Preparation of a Workforce Accommodation Strategy for the Project to manage demand for housing and accommodation from the construction workforce during the construction phase
- Preparation of a Local Workforce Strategy, that includes strategies to maximise employment opportunities for residents in the primary and secondary study area
- Preparation and implementation of a Local Procurement Strategy, aimed at maximising procurement opportunities for regional businesses
- Consultation with owners of surrounding businesses and managers of community facilities near to construction activities in accordance with the Stakeholder and Community Engagement Plan (SCEP) about the timing, duration, impacts and management of construction activities.

Consultation and communication with communities and stakeholders through construction in accordance with the SCEP will also be important in avoiding, minimising, or managing potential social impacts of the Project.

Further, socio-economic impacts of the Project would also be managed by the implementation of mitigation measures for other relevant technical studies which would manage impacts associated with traffic and transport, noise and vibration, air quality, landscape and visual amenity, and biodiversity.

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Glossary and terms

Term	Definition
ABS	Australian Bureau of Statistics
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
DPIE	Department of Planning, Industry and Environment
DSSS	Destination Sydney Surrounds South
EIS	Environmental Impact Statement
FTE	Full Time Equivalent
GVP	Gross Value Production
IRSAD	Index of Relative Socio-economic Advantage and Disadvantage
km	Kilometre
LGA	Local Government Area
NEM	National Electricity Market
NPWS	National Parks and Wildlife Service
NSW	New South Wales
OSOM	Over-sized over-mass
Penstock	A water transfer pipeline and associated infrastructure also referred to as a pipeline
RFS	Rural Fire Service
RSSB	Renting and Strata Services Branch
SAL	Suburbs and Localities
SEIFA	Socio-economic Indexes for Areas
T	Tonnes

1. Introduction

This Socio-economic impact assessment provides an assessment of potential socio-economic effects resulting from the construction and operation of the Shoalhaven Hydro Expansion Project, hereafter referred to as 'the Project'.

1.1 Project overview

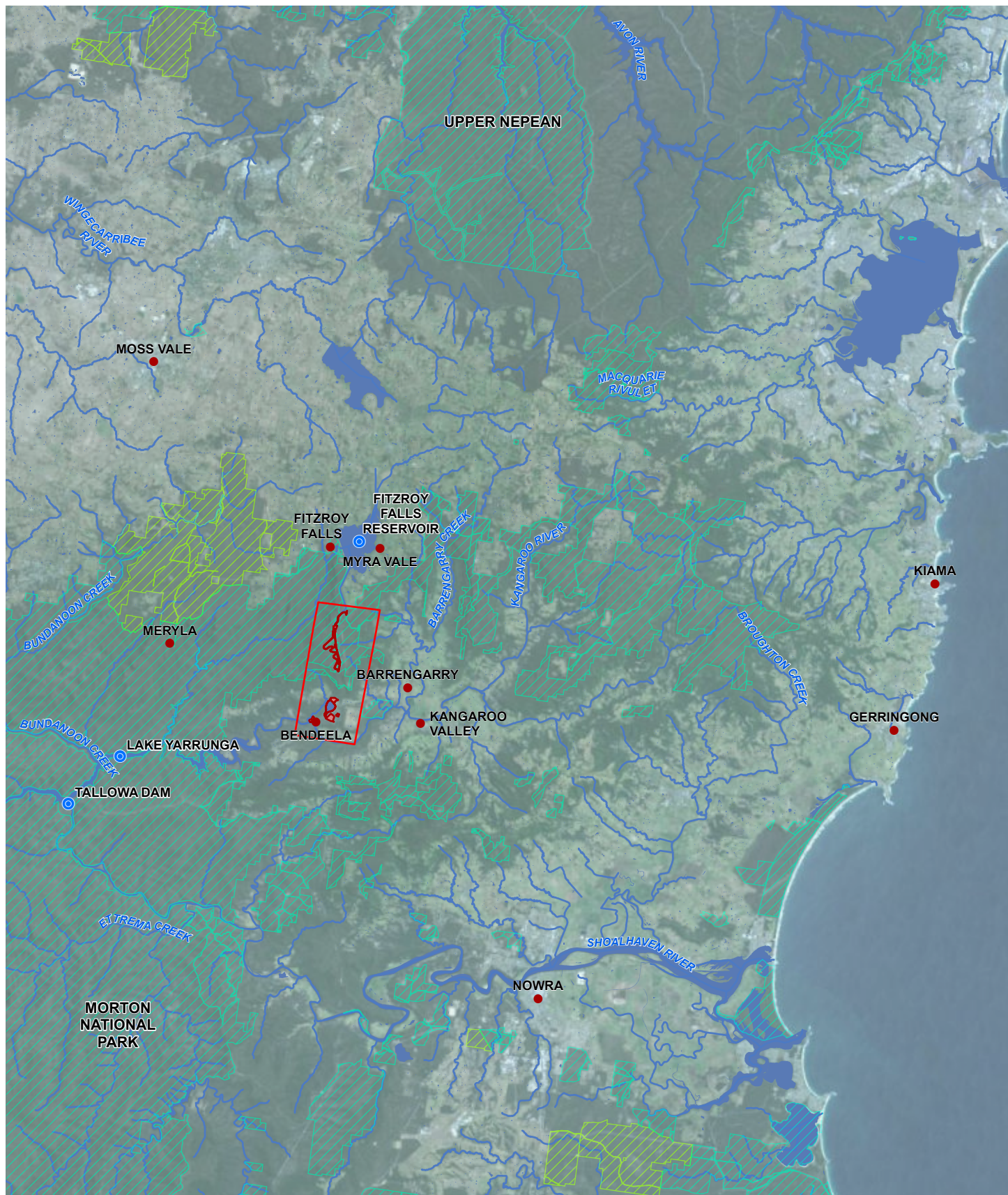
Origin Energy Pty Ltd (Origin) proposes to develop the Project, to construct and operate a new pumped hydro power station on and under the land between the Fitzroy Falls Reservoir and Lake Yarrunga. The Project would draw on Origin's existing water allocations to pump water up from Lake Yarrunga consuming energy when it is in less demand. Energy would then be generated through the return of water from Fitzroy Falls Reservoir to Lake Yarrunga when demand for energy increases.

The Project would involve almost doubling the electricity generation capacity of the existing scheme, providing an approximate additional 235 megawatts (MW) of generation capacity. The operation of the scheme would respond to the needs of the National Energy Market (NEM) and involve up to one pumping and generation cycle per day. Each generation cycle is anticipated to involve up to a minimum of 8 hours of generation and up to 16 hours of pumping, each of which could be divided into shorter durations to best satisfy the needs of the NEM.

The Project location is shown in **Figure 1-1** and an indicative Project layout based on the current reference design is provided in **Figure 1-2**. The current reference design consists of the construction and operation of:

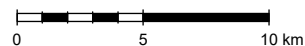
- Upper scheme components (Upper Scheme) including:
 - Connection to existing upper intake control structure at the southern end of the Fitzroy Canal
 - A surface penstock (water transfer pipeline and associated infrastructure) from the existing Fitzroy Canal control structure to the vicinity of the Existing Scheme surge tank
 - A new surge tank adjacent to the Existing Scheme surge tank
 - A further section of surface penstock, adjacent to the Existing Scheme, from the new surge tank to the high pressure shaft
- Underground works including:
 - Vertical shaft and headrace tunnel connecting to the southern end of Upper Scheme surface penstock to an underground power station
 - An underground power station cavern housing a transformer, reversible motor generator and pump turbine capable of supplying a nominal 235 MW of hydroelectric power
 - Associated access tunnel and multipurpose (egress, ventilation and services) tunnel with an entrance in the vicinity of the existing Kangaroo Valley Power Station
 - A tailrace tunnel, including an underground surge chamber located just downstream of the underground power station, terminating west of the existing Bendeela Power Station on Lake Yarrunga
- Lower scheme surface components (Lower Scheme) including:
 - Lower intake /outlet structure west of the Bendeela Power Station connected to the tailrace tunnel
 - Spoil emplacement facility east of Bendeela Pondage
 - High voltage network connection to existing Kangaroo Valley substation
 - Operational surface infrastructure including administration building, water treatment infrastructure and ventilation building.

The Project would also require ancillary works which may include the carrying out of works to upgrade or construct access roads, spoil disposal sites, utilities infrastructure, construction compounds and construction power and water supply. Importantly, the Shoalhaven Hydro Expansion Project essentially duplicates the existing scheme and as such, the Project does not propose any new water storages or connections between waterbodies that have not already been utilised for the existing scheme. In addition, no transmission line augmentations are required to receive or distribute electricity from the existing Kangaroo Valley Power Station substation. A full Project description is provided in Chapter 3 of the Environmental Impact Statement (EIS).



Legend

- Points of interest
- Indicative Project footprint
- Project location
- NPWS Reserve
- State Forest



1:300,000 at A4

GDA2020 MGA Zone 56

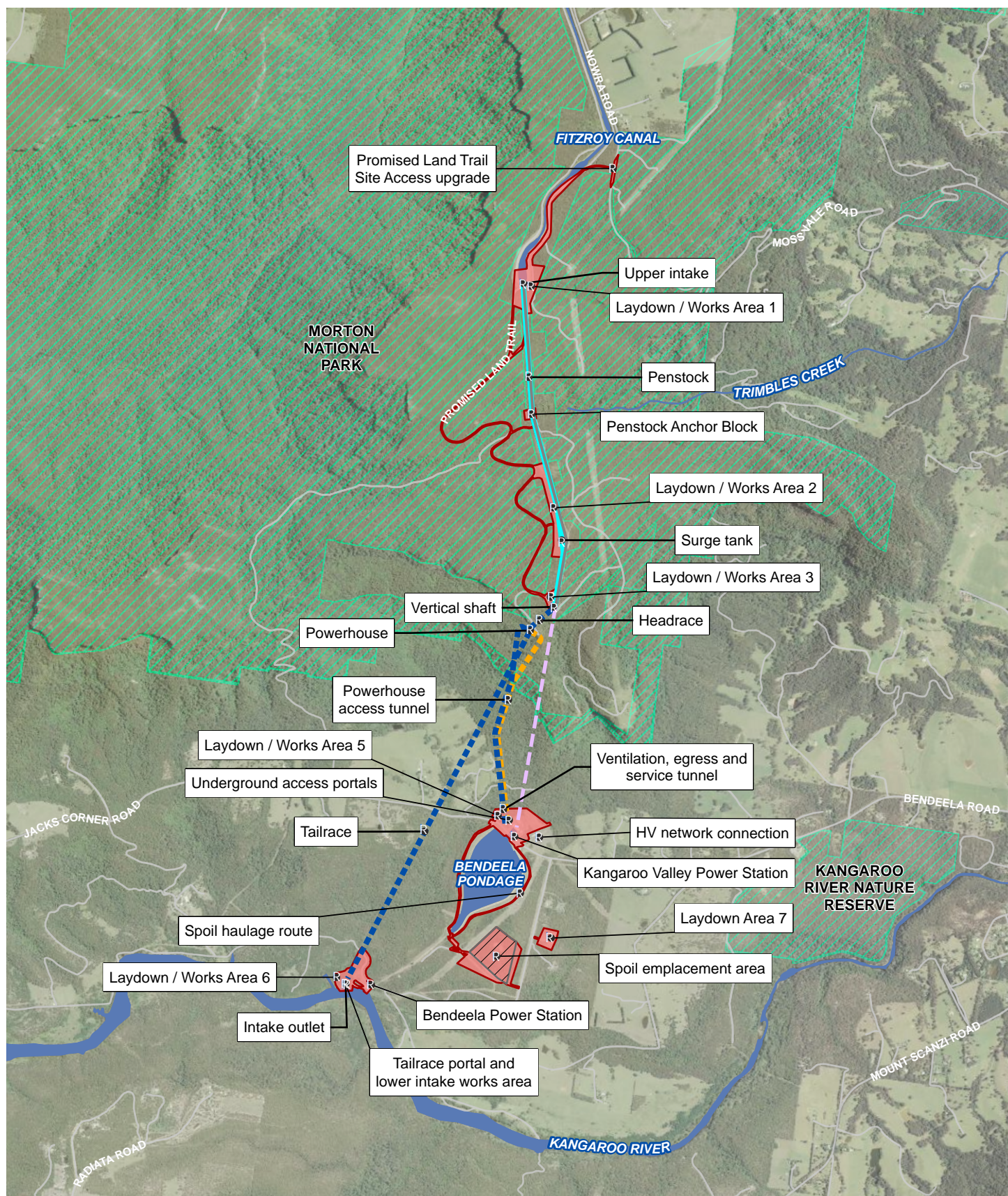
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Figure 1-1 Project location



1.2 Project location

The Shoalhaven Hydro Expansion Project is to be carried out in the Wingecarribee Shire Council and City of Shoalhaven Local Government Areas (LGAs). Access to the upper portion of the Project on the plateau, for penstock, surge tank and vertical shaft construction would be via the Promised Land Trail. The Promised Land Trail is accessed from Moss Vale Road. It traverses both WaterNSW land and the Morton National Park and was constructed as part of the original scheme. Access to the lower portion of the Shoalhaven Hydro Expansion Project within Kangaroo Valley would be via Bendeela Road from Moss Vale Road in the vicinity of the townships of Kangaroo Valley and Barrengarry.

1.3 Secretary's Environmental Assessment Requirements

This assessment forms part of the EIS for the Project. The EIS has been prepared under Division 5.2 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This assessment has been prepared to address the Secretary's Environmental Assessment Requirements (SEARs) relating to social and economic impacts and will assist the Minister for Planning to make a determination on whether or not to approve the Project. **Table 1-1** outlines the SEARs relevant to this assessment along with a reference to where these are addressed.

Table 1-1. Relevant SEARs

Secretary's requirement	Where addressed in this report
Social & Economic – including an assessment of the social and economic impacts in accordance with Social Impact Assessment Guideline (DPIE, July 2021) (application subject to transitional arrangements) and benefits of the Project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure and services.	This report has been produced to address this SEAR

1.4 Structure of this report

The structure and content of this report are outlined in **Table 1-2**.

Table 1-2. Structure and content

Chapter	Description
Chapter 1 Introduction	Outlines key elements of the Project, SEARs and the purpose of this report (this Chapter).
Chapter 2 Policy and planning setting	Provides an outline of the legislative and policy context, including applicable policies and guidelines.
Chapter 3 Assessment methodology	Provides a description of the assessment methodology for this assessment.
Chapter 4 Existing environment	Provides a preliminary description of the existing socio-economic environment.
Chapter 5 Summary of community and stakeholder feedback	Provides an overview of community and stakeholder engagement activities and outcomes relevant to this assessment.
Chapter 6 Potential construction impacts	Presents the outcomes of the construction impact assessment.
Chapter 7 Potential operational impacts	Presents the outcomes of the operational impact assessment.
Chapter 8 Potential cumulative impacts	Presents the qualitative assessment of potential cumulative construction and operational socio-economic impacts with other projects near the Project.

Socio-economic impact assessment

Chapter	Description
Chapter 9 Mitigation measures	Presents the socio-economic mitigation measures applicable for the Project.
Chapter 10 Residual impacts	Presents the impacts following the implementation of mitigation measures.
Chapter 11 Conclusion	Summarises the findings of this report.

2. Legislative and policy context

This chapter provides an overview of the social and economic policies relevant to the Project. Detailed information on Commonwealth, NSW government and Local government policies as well as Origin policies relevant to the Project are outlined in Chapter 2 of the EIS.

2.1 NSW and regional policies and guidelines

2.1.1 Social Impact Assessment Guideline for State Significant Projects

The *Social Impact Assessment Guideline for State Significant Projects* (the SIA Guideline) (DPIE, 2021a) provides guidance to proponents in preparing social impact assessments and includes details on how social impacts should be identified, evaluated, responded to, monitored and managed. From October 2021, all new State Significant projects in NSW are required to prepare a social impact assessment.

This assessment has been prepared in accordance with the SIA Guideline.

2.1.2 Illawarra-Shoalhaven Regional Plan 2041

The *Illawarra-Shoalhaven Regional Plan 2041* (DPIE, 2021b) is a 20-year land use plan for the future of the Illawarra-Shoalhaven region, which includes the Wollongong, Shellharbour, Kiama and Shoalhaven LGAs.

The Plan outlines the strategic framework for the Illawarra-Shoalhaven region and aims to protect and enhance the region's assets and plan for a sustainable future.

The vision for the Illawarra-Shoalhaven region is for an innovative, sustainable, resilient, connected, diverse and creative region. The vision recognises the importance of the area's Aboriginal history, natural environment and heritage, the transition of the region to a low-carbon economy and global hub for clean energy, including pumped hydro, and protection and enhancement of the character of smaller towns and villages.

The upgrade of the existing pumped hydro scheme to increase generation capacity would align with the vision of the regional plan of the Illawarra-Shoalhaven region as a hub for clean energy. The Project would also seek to minimise environmental impacts through the use of existing disturbed land and sub-surface works, with disturbance to environmental areas minimised as far as practicable.

2.2 Local Government strategies, policies and guidelines

2.2.1 Shoalhaven 2032 Community Strategic Plan

The *Shoalhaven 2032 Community Strategic Plan* (Shoalhaven City Council, 2022) guides actions to be undertaken over the next 10 years to achieve the community's vision as a city that work together '*...to foster a safe & attractive community for people to live, work, stay & play; where sustainable growth, development and environmental protection are managed to provide unique & relaxed lifestyle*'.

The Strategic Plan outlines several priorities for the city based around four themes:

- Resilient, safe, accessible and inclusive communities
- Sustainable, liveable environments
- Thriving local economics that meet community needs
- Effective, responsible and authentic leadership.

The Project would support priorities relating to sustainable, liveable environments, by reducing impacts of the development on the LGA's environmental values through the use of land previously identified for the expansion, currently disturbed areas and sub-surface infrastructure. Local employment and business opportunities supported by the Project would also help to achieve priorities relating to strengthening the economy.

2.2.2 Wingecarribee Shire Community Strategic Plan

The *Wingecarribee Shire Community Strategic Plan* (Wingecarribee Shire Council, 2017) reflects the aspirations of the Wingecarribee community for the future of the Shire, their community and their lives.

The Strategic Plan outlines several goals and associated strategies to achieve the community's vision as '*a healthy and productive community, learning and living in harmony, proud of our heritage and nurturing our environment*'. Those relevant to the Project, include:

- Wingecarribee's distinct and diverse natural environment is protected and enhanced, with strategies relating to protecting and improving biodiversity, and sustainably manage natural resources for broader community benefit
- Sustainable business and industry work in harmony with local community and environment, with strategies relating to the promotion of development opportunities suited to the distinct region.

The Project would be in keeping with these strategies through the sustainable use of natural resources to generate clean electricity, and upgrade of the existing scheme on land previously allocated for its future development helping to reduce impacts on the area's natural values. The Project would also provide local employment opportunities for communities in the Wingecarribee LGA, supporting the community's goals relating to the economy.

3. Assessment methodology

This chapter provides an overview of the assessment methodology for this socio-economic impact assessment, including the social locality relevant to the Project, methodology for this assessment, and key assumptions and limitations. Details on the authorship of the socio-economic impact assessment is provided in **Appendix A**.

3.1 Social locality

The social locality for the Project considers communities that may experience changes to daily living conditions or community well-being from the Project's construction and operation. The social locality extends beyond the Project footprint (shown on **Figure 1-2**) and acknowledges that:

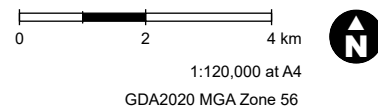
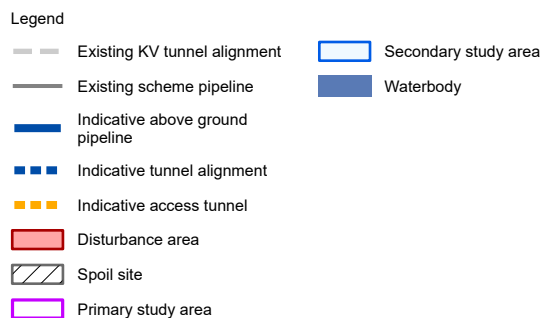
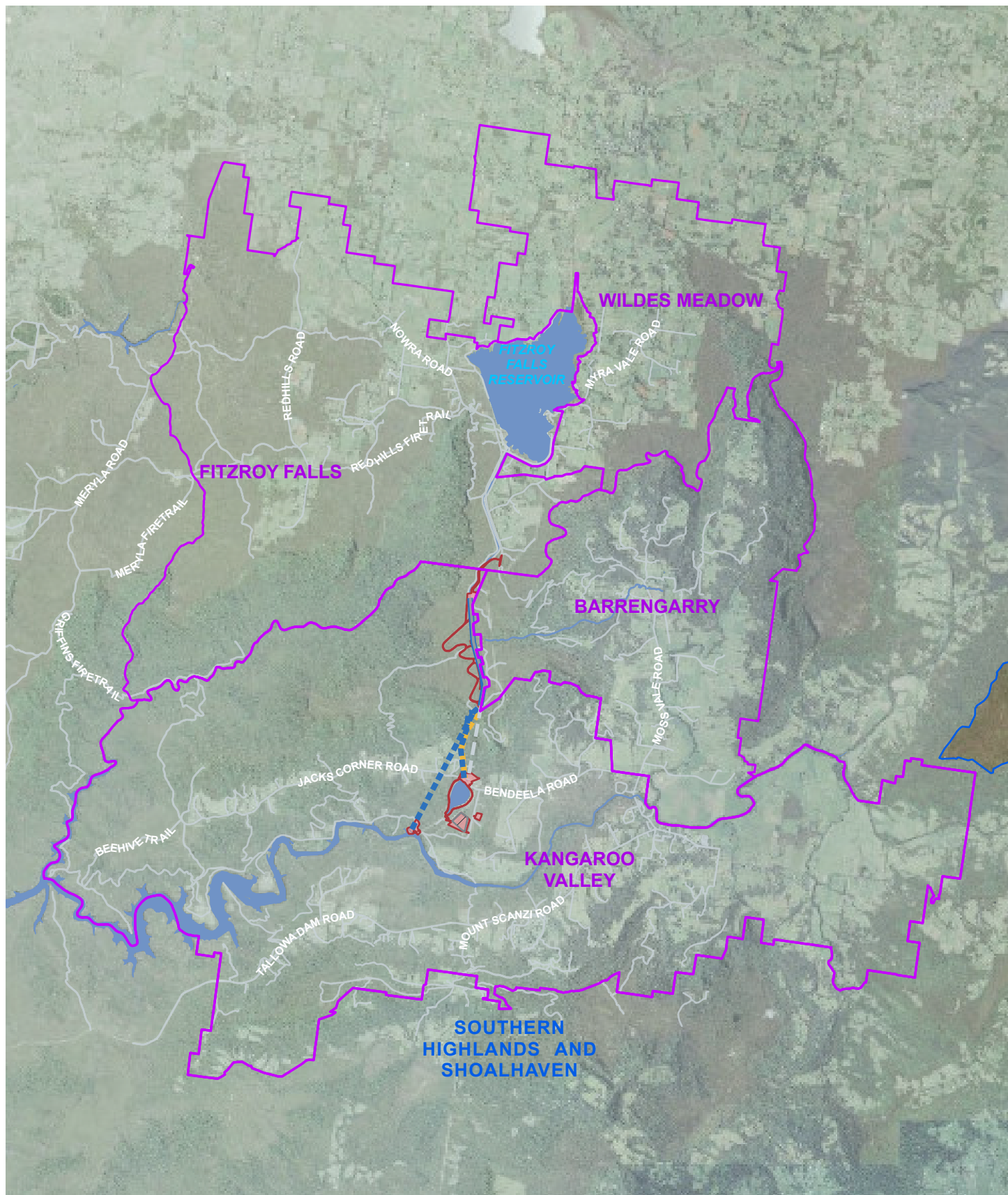
- Communities, businesses, visitors, and community facilities closest to the Project may experience impacts (both positive and negative) from construction and operation, due to such things as the location of construction works and Project infrastructure, changes in amenity from construction noise and dust; access changes and use of local roads for construction access and spoil removal; and the presence of construction workers
- Communities in towns and centres further from the Project in the broader region may experience positive and negative impacts due to such things as employment and business opportunities with the Project; and construction access including worker parking.

3.2 Socio-economic assessment study areas

The primary and secondary study areas for the socio-economic impact assessment represent the social locality and recognises the extent for potential changes to the social environment due to the Project's construction and operation. The study areas are described in **Table 3-1**.

Table 3-1. Socio-economic impact assessment study areas

Study area	Description
Primary study area	The primary study area comprises the 2021 ABS defined 'Suburbs and Localities' (SAL) geographies of Wildes Meadow (SAL14309), Fitzroy Falls (SAL11532), Barrengarry (SAL10214), and Kangaroo Valley (SAL12069). People in the primary study area, including residents, workers and visitors, are likely to interact more frequently with the Project's construction and operational activities due to the proximity of their properties to the Project, or as they move around the area.
Secondary study area	The secondary study area comprises the ABS Southern Highlands and Shoalhaven Statistical Area 4 (SA4) geography. The secondary study area includes communities in towns and centres further from the Project. People in the secondary study area would generally interact with the Project less frequently but may experience benefits or impacts of the Project due to such things as construction-related employment, and business opportunities. Communities in the Southern Highlands and Shoalhaven SA4 are also likely to use recreation and tourist uses in the primary study area.



Data sources

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Figure 3-1 Social locality

3.3 Assessment approach

Social impact assessment includes 'the processes of analysing, monitoring, and managing the intended and unintended social consequences, both positive and negative, of planning interventions (policies, programs, plans, Projects) and any social change processes invoked by those interventions' (Vanclay et al, 2015).

'Social impacts' generally refer to the consequences that people experience to the way in which they live, work, play, or relate to one another, when a new development brings change (DPIE, 2021). Social impacts can be experienced or felt, either in a perceptual (cognitive) sense or corporeal (physical) sense. They can also be experienced at any level, including an individual, social unit (e.g., family, household, collectively), workplace, or by community or society generally (Vanclay et al, 2015).

This assessment has been developed in accordance with the NSW SIA Guidelines (DPIE, 2021) and to address the social and economic matters outlined in the SEARs (refer to **Section 1.3**). An overview of the methodology for this assessment is shown in **Figure 3-2** and details on each step of the assessment process is presented in **Section 3.3.1**.

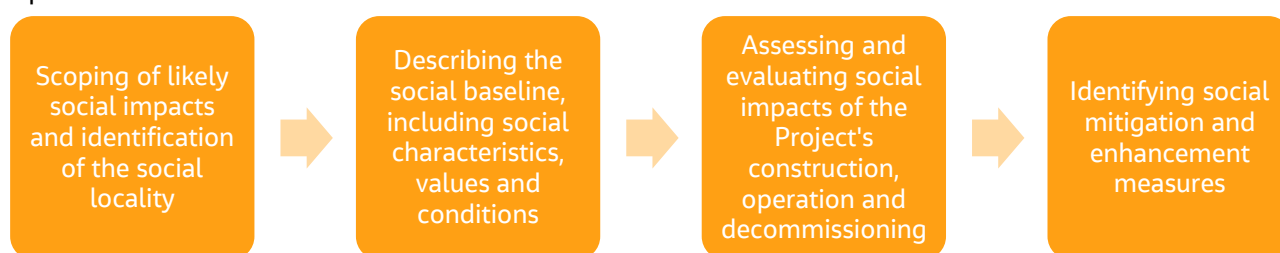


Figure 3-2. Social impact assessment process

3.3.1 Key steps in the assessment process

Scoping of socio-economic impacts

A preliminary review of the Project was conducted to scope the likely range of social and economic impacts relevant to the Project's construction and operation and identify potentially affected communities and groups. Key activities undertaken for the scoping phase included:

- Review of existing Project information, including design drawings, Scoping Report, construction information (e.g., construction layout, haulage routes and workforce requirements), and outcomes of consultation previously undertaken for the Project by Origin
- High-level review of communities, businesses, community features, and stakeholders potentially affected by the Project's construction and operation.

The outcomes of the review informed the:

- Identification of the social locality and study areas for this assessment (refer to **Section 3.1**)
- Information to be gathered for the existing socio-economic environment, including stakeholders to be consulted for the social impact assessment
- Level of assessment for each of the identified impacts.

Existing socio-economic conditions

A description of the existing social and economic conditions, characteristics and values was prepared to provide a baseline from which potential social and economic benefits and impacts of the Project were assessed and evaluated.

The existing socio-economic conditions presents information on matters such as population and demography, housing and accommodation, social infrastructure, business and industry, community values and features important to local and regional communities.

Key activities undertaken in preparing the existing socio-economic assessment include:

- Review of the SEARs for the Project
- Analysis of population, demographic, and employment data for the primary and secondary study areas, including recent data and information from the Australian Bureau of Statistics (ABS) Census of Population and Housing, related ABS publications (e.g., estimated resident population), and NSW and Australian Government agencies (e.g., employment and population projections)
- Review of local and state government policies and strategies relevant to the Project and the socio-economic environment of the study areas
- Audit of social infrastructure near the Project, including recreational uses, health and emergency services, education facilities, and community services and facilities
- Analysis of community values relating to such things as local amenity, character and identity; community cohesion; and community wellbeing and safety, based on the analysis of consultation outcomes, review of existing literature, and findings of other studies undertaken for the EIS.

Impact assessment

The impact assessment involved the identification, analysis, and evaluation of potential changes to existing social and economic conditions from the Project's construction and operation, including positive and negative impacts, direct and indirect impacts, and cumulative impacts with other projects. This involved:

- Review of socio-economic issues identified in the Scoping Report for the Project (Jacobs, 2019)
- Review of issues identified through community and stakeholder consultation
- Analysis of potential social and economic impacts, including benefits and impacts relating to property, housing and accommodation, employment, business, social infrastructure, and community values
- Evaluation of the likely significance of the identified impacts, using the evaluation matrix presented in **Section 3.3.2** and identification of any residual socio-economic impacts.

It is noted that social impacts can affect individuals, communities and other stakeholder groups in different ways, and potential changes from a project may be experienced by individuals and communities as positive, neutral, or negative depending on individual circumstances, vulnerabilities, and attitudes to the particular change. This assessment considers potential impacts of the Project on different stakeholder groups such as local and regional residents, visitors and tourists, and social infrastructure users.

This assessment also considers the potential for the Project to have cumulative impacts on social and economic values due to its interaction or overlap with impacts from other projects, either spatially (i.e., occurring within or near the Project) or temporally (i.e., occurring before, after or at the same time as the Project). Cumulative impacts can result in effects (positive or negative) on individuals, businesses or local communities that individually may be minor, but collectively could result in larger effects, or that individually may have positive social impacts, but collectively could result in negative social impacts. Cumulative socio-economic impacts have been assessed through a qualitative analysis, taking into account relevant Projects listed in the EIS.

Management and mitigation measures

The final step in the assessment process involved the identification of management strategies to avoid, manage or mitigate negative socio-economic impacts from the Project or enhance positive socio-economic impacts. This included consideration of recommended measures from other technical studies that are relevant to the management of social-economic impacts, and measures identified through community and stakeholder consultation.

3.3.2 Evaluation of significance

An evaluation matrix was used to evaluate the significance of socio-economic impacts identified for the Project. The evaluation matrix used for this socio-economic impact assessment is presented in **Table 3-2** and is based on the approach presented in the SIA Guidelines (DPIE, 2021). It includes consideration of:

- The magnitude of the change, considering the extent, duration, intensity or scale, sensitivity or importance, and level of concern/ interest
- Likelihood of the change occurring.

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Each identified socio-economic impact, positive and negative, was assigned a level of significance using the evaluation criteria in **Table 3-3**. Considerations for determining the magnitude of the identified impact are described in **Table 3-4**.

Table 3-2. Evaluation matrix

		Magnitude level				
		A Minimal	B Minor	C Moderate	D Major	E Transform- ational
Likelihood	1 Almost certain	Medium	Medium	High	Very high	Very high
	2 Likely	Low	Medium	High	High	Very high
	3 Possible	Low	Medium	Medium	High	High
	4 Unlikely	Low	Low	Medium	Medium	High
	5 Rare	Low	Low	Low	Medium	Medium

Source: DPIE (2021)

Table 3-3. Evaluation criteria

Level		Meaning
Magnitude level		Meaning
A	Minimal	Little noticeable change experienced by people in the locality
B	Minor	Mild deterioration/improvement, for a reasonably short time, for a small number of people who are generally adaptable and not vulnerable
C	Moderate	Noticeable deterioration/improvement to something that people value highly, either lasting for an extensive time, or affecting a group of people
D	Major	Substantial deterioration/improvement to something that people value highly, either lasting for an indefinite time, or affecting many people in a widespread area
E	Transformational	Substantial change experienced in community wellbeing, livelihood, infrastructure, services, health, and/or heritage values; permanent displacement or addition of at least 20 percent (%) of a community
Likelihood level		Meaning
1	Almost certain	Definite or almost definitely expected (e.g., has happened on similar projects)
2	Likely	High probability
3	Possible	Medium probability
4	Unlikely	Low probability
5	Rare	Improbable or remote probability

Source: DPIE (2021)

Table 3-4. Dimensions of social impact magnitude

Dimension	Details needed to enable assessment
Extent	Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any vulnerable people? Which location(s) and people are affected? (e.g., near neighbours, local, regional, future generations).
Duration	When is the social impact expected to occur? Will it be time-limited (e.g., over particular project phases) or permanent?
Intensity or scale	What is the likely scale or degree of change? (e.g., mild, moderate, severe)

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Dimension	Details needed to enable assessment
Sensitivity or importance	How sensitive/vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change.
Level of concern/interest	How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood, duration and/or intensity.

Source: DPIE (2021)

3.4 Data sources

This socio-economic impact assessment has been informed by a range of data and information sources including data from Australian and NSW government, Council and NSW government policies and strategies, review of existing literature relevant to the Project and the socio-economic environment of the study areas, consultation outcomes, and other studies undertaken for the EIS. Key data sources include:

- Population and demographic data and information, including from the ABS Census of Population and Housing 2021 and 2016, other ABS publications (e.g., estimated resident population, socio-economic indices for areas (SEIFA)), NSW DPE (e.g., population projections)
- Economic data, including employment data from the Australian government National Skills Commission
- Data on housing and accommodation from NSW Communities and Justice and Real Estate Institute of NSW (e.g., rental housing), and STR and Destination NSW (e.g., visitor accommodation)
- Website and literature reviews
- Wingecarribee Shire Council and City of Shoalhaven strategies, reports, publications, and websites
- Feedback from community and stakeholder consultation undertaken for the Project by Origin, including unpublished visitor data provided by WaterNSW on the Bendeela Recreation Area
- Interviews with stakeholders and community representatives undertaken for this socio-economic impact assessment (refer to **Chapter 5**)
- Other relevant Project technical studies undertaken for the EIS, including:
 - Land use and property (e.g., impacts on property and the use of land during construction and operation)
 - Noise and vibration (e.g., effects of construction noise and vibration on local amenity)
 - Air quality (e.g., effects of dust from construction activities on local amenity)
 - Landscape and visual amenity (e.g., changes to landscape and visual amenity from the introduction of Project infrastructure)
 - Biodiversity (e.g., impacts on community values relating to the environment)
 - Traffic and transport (e.g., potential road safety risks and traffic disruptions).

3.5 Assumptions and limitations

Population and demographic data presented in the socio-economic impact assessment is from the 2021 ABS Census, where this is available. Data from the 2021 Census on employment, education and internal migration is due to be released in October 2022, with additional data on socio-economic indicators such as distance to work and SEIFA to be released in mid-2023.

Where data from the 2021 Census is not available, data is presented from the 2016 ABS Census supplemented with more recent information from the ABS, NSW Government, Council, and other relevant sources where this is available.

4. Existing environment

This chapter describes the existing social and economic characteristics and features of the study areas and wider regional context. It includes information on population and demography, employment and industry, social infrastructure, and community values.

4.1 Regional context

The Project is located within the Shoalhaven and Wingecarribee LGAs, approximately 50 kilometres (km) south-west of Wollongong and 20 km north-west of Nowra.

Shoalhaven LGA is characterised by mountains, coastal plains and beaches, farmland, and bushland as well as many towns and villages. The LGA contains a range of towns and villages, including the regional centre of Nowra-Bomaderry, historic towns of Kangaroo Valley and Berry, and smaller towns, villages, and settlements. The area's natural features, environmental amenity, and proximity to Sydney and Canberra make the region a popular destination for tourists and visitors, with tourism a significant contributor to the region's economy. Other key industries include defence, manufacturing, health, and social services. The Wingecarribee LGA, also known as the Southern Highlands, is located about 110 km from central Sydney. The LGA is mostly rural in character, with nature reserves and agricultural lands separating the towns and villages. Key urban centres servicing the LGA include Moss Vale, Bowral, and Mittagong with these offering a range of government administration, education, health, and retail needs of the area.

The Project falls within the Shoalhaven drinking water catchment, which includes Tallowa Dam, Fitzroy Falls Reservoir and Bendeela Pondage. The Fitzroy Falls Reservoir was completed in 1974 and is located on Yarrunga Creek upstream of the Fitzroy Falls. The Bendeela Pondage is an earth and rockfill embankment, which functions as a balance reservoir to control flow between Lake Yarrunga and Fitzroy Falls Reservoir during water pumping or power generation at the Kangaroo Valley Power Station. Lake Yarrunga is formed by the Tallowa Dam, which is located just downstream of the Project at the confluence of the Kangaroo River and Shoalhaven River.

4.2 Socio-economic profile

This section presents data on population, housing, and socio-economic status of communities in the primary and secondary study areas, including population trends, age, cultural diversity and relative socio-economic advantage and disadvantage. Data is presented for the primary and secondary study areas (refer to **Section 3.2**) along with NSW as a comparison. Population and demographic data for each of the suburbs in the study area is in **Appendix B**.

4.2.1 Social profile

Population and age

The primary study area had a total population of 1,539 people at the 2021 Census, of which more than half (856 people of 55.6%) lived in Kangaroo Valley. The population of other suburbs in the primary study area were 249 people (16.2%) in Wildes Meadow, 220 people (14.3%) in Fitzroy Falls, and 214 people (13.9%) in Barrengarry (ABS, 2021).

The age profile of communities in the primary and secondary study area is presented in **Table 4-1**. Communities in the primary study area generally had an older age profile with median ages ranging from 50 years to 57 years, with an average of 53 years, compared to 39 years in NSW (ABS, 2021). Compared to the NSW, the primary and secondary study areas had lower proportions of children and working aged people (i.e., 15 years to 64 years), and higher proportions of older people aged 65 years or over.

Within the primary study area, Wildes Meadow had an older population, with a median age of 57 years, highest proportion of people aged 65 years or older (30.9%) and lowest proportions of children (12.0%). Barrengarry and Fitzroy Falls had younger median ages, although these were still above NSW.

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The population of the secondary study area at the 2021 Census was 161,006 people (ABS, 2021). More than two thirds of the secondary study area's population lived in the Shoalhaven region, with Nowra and North Nowra – Bomaderry key population centres, which combined account for 24% of the secondary study area's population. The main population centres in the Southern Highlands region include Bowral, Mittagong and Moss Vale – Berrima. The secondary study area had a younger population compared to the primary study area, although this was older than NSW. At the 2021 Census, working aged people accounted for about 55.8% of the secondary study area's population.

Table 4-1. Age profile, 2021

Indicator	Primary study area	Secondary study area	NSW
Median age	53 years*	48 years	39 years
0-14 years	14.2%	16.2%	18.2%
15-24 years	9.0%	9.5%	11.8%
25-64 years	49.8%	46.3%	52.3%
65 years or over	26.7%	28.0%	17.6%
Total population	1,539	161,006	8,072,163

Note: *refers to average of primary study area SALs

Source: Based on Jacobs analysis of the ABS 2021 Census

Cultural diversity

The primary study area displays relatively low levels of cultural diversity (refer to **Table 4-2**). At the 2021 Census, compared to NSW, communities in the primary study area generally reported lower proportions of people who were born overseas and who spoke a language other than English, and people who indicated they were Aboriginal and/or Torres Strait Islander. Within the study area, Kangaroo Valley recorded the highest proportion of people who were born overseas and who spoke a language other than English, although these were both below the NSW average. Fitzroy Falls reported the highest proportion of people who indicated they were Aboriginal and/or Torres Strait Islander (at 2.3%) (ABS, 2021).

At the 2021 Census, proportions of overseas born and non-English speaking people in the secondary study area were both below the NSW average. Aboriginal and/or Torres Strait Islander comprised approximately 5.1% of the population in the secondary study area, which was above the NSW average. This was mainly driven by a very high proportion of Aboriginal and/or Torres Strait Islander people in Shoalhaven (at 6.5%), which was nearly double the NSW average (ABS, 2021).

Table 4-2. Cultural diversity, 2021

Indicator	Primary study area	Secondary study area	NSW
Overseas born	15.7%	15.0%	29.3%
Speaks language other than English	2.9%	5.8%	26.8%
Aboriginal and/or Torres Strait Islander	1.0%	5.1%	3.4%

Source: Based on Jacobs analysis of the ABS 2021 Census

Families and households

There were 598 households in the primary study area at the 2021 Census, of which 72.2% comprised family households, 24.1% were lone person households and 1.7% were group households (ABS, 2021). This was similar to the household profile in NSW.

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The primary study area had a high proportion of couple only families, with this group comprising nearly 60% of family households compared to nearly 38% in NSW. While all suburbs in the primary study area were well above the NSW average, Wildes Meadow had a particularly high proportion of couple only families (at 71.6%). The proportions of couple families with children and one parent families in the primary study area were both below the NSW average. The family profile is consistent with many rural communities across NSW and Australia, which see older children (i.e., over 15 years) generally moving away for education or employment opportunities.

Table 4-3. Household and family type, 2021

Indicator	Primary study area	Secondary study area	NSW
Households			
Total households	598	62,790	2,900,468
Family households	72.2%	69.7%	71.2%
Lone person households	24.1%	27.7%	25.0%
Group households	1.7%	2.5%	3.8%
Families			
Couple only families	59.0%	49.3%	37.9%
Couple family with children	32.7%	34.2%	44.7%
One parent family with children	9.1%	15.2%	15.8%

Source: Based on Jacobs analysis of the ABS 2021 Census

4.2.2 Income and employment

The primary study area had median weekly personal and household incomes above NSW at the 2021 Census (refer to **Table 4-4**). Across the primary study area, Wildes Meadow, Barrengarry and Fitzroy Falls reported median household incomes above \$2,000 per week, with Kangaroo Valley the only suburb that recorded a median household income below the NSW median (at \$1,578) (ABS, 2021). Kangaroo Valley was the only suburb in the primary study area with median personal incomes below NSW. Median household and personal incomes for communities in the secondary study area were below NSW at the 2021 Census.

Employment data for the primary study area is available from the 2016 Census (refer to **Table 4-4**). At the 2016 Census, labour force participation was below NSW. In 2016, there was approximately 737 people in the primary study area who were either employed or actively looking for work (ABS, 2016). This represented 56.4% of people aged 15 years or over, which was below the labour force participation rate for NSW. Within the primary study area, all suburbs apart from Wildes Meadow recorded labour force participation rates below NSW, which is likely to reflect the older age profiles of communities in the primary study area.

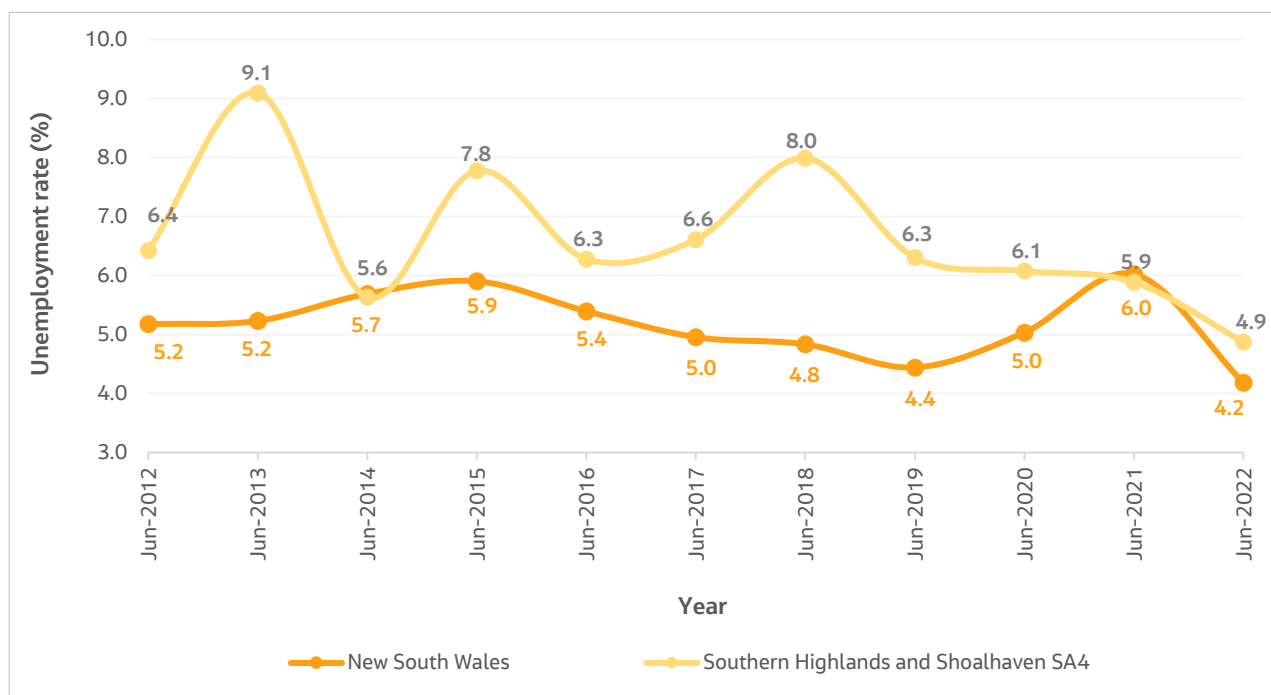
Table 4-4. Income, 2021

Indicator	Primary study area	Secondary study area	NSW
Median weekly personal income (2021) (\$)	\$883	\$683	\$813
Median weekly household income (2021) (\$)	\$1,998	\$1,357	\$1,829
Unemployment rate (2016) (%)	1.4%	5.6%	6.3%
Labour force participation (2016) (%)	56.4%	49.1%	59.2%

Source: ABS (2021)

No people in the suburbs of Barrengarry, Fitzroy Falls and Wildes Meadow were identified as unemployed at the 2016 Census. The unemployment rate in Kangaroo Valley was 2.4% in 2016, which was below the average for NSW (ABS, 2016).

The secondary study area had a relatively low level of labour force participation, with less than 50% of people aged 15 years or over employed or actively looking for work at the 2016 Census. The unemployment rate in the secondary study area was 5.6% in 2016 (ABS, 2016). More recent data on unemployment in the secondary study area is available from the ABS for June 2022 (refer to **Figure 4-1**). In June 2022, the unemployment rate in the secondary study area was 4.9%, above the NSW unemployment rate of 4.2%. Over the past decade, the unemployment rate in the secondary study area for the June quarter was generally above the NSW average. The exception to this was June 2014 and June 2021, both of which recorded a level of unemployment marginally below NSW (ABS, 2022).



Source: ABS, 2022

Figure 4-1. Unemployment rate, June 2012-June 2022

At the 2016 Census, the top industries of employment for residents in the primary study area reflects the importance of agriculture and tourism industries to communities and the local economy, with:

- Beef cattle farming, vegetable growing, horse farming, sheep farming, or dairy cattle farming identified in the top five industries of employment in Wildes Meadow, Fitzroy Falls and Barrengarry
- Accommodation, and/or cafes and restaurants within the top five industries of employment in Barrengarry, Fitzroy Falls, and Kangaroo Valley.

The other main industries of employment for communities in the study area included primary and/or secondary education in Kangaroo Valley and Barrengarry, hospitals in Kangaroo Valley, supermarket and grocery stores in Fitzroy Falls, and coal mining and house construction in Wildes Meadow (ABS, 2016).

4.2.3 Socio-economic disadvantage

The ABS produces socio-economic indexes for areas (SEIFA) that indicate relative levels of socio-economic advantage and disadvantage regarding people's access to material and social resources, and their ability to participate in society. Currently available SEIFA data is from the 2016 Census.

The index of relative socio-economic advantage and disadvantage summarises variables that indicate either relative advantage or disadvantage, such as income, occupation, education, family type, disability status and housing. The index ranks areas on a continuum from most disadvantaged to most advantaged. A low score indicates relatively greater disadvantage and a lack of advantage in general (e.g., many households with low incomes, many people in unskilled occupations, and few households with high incomes or people in skilled occupations), while a high score demonstrates a relatively high incidence of advantage and relative low incidence of disadvantage. The index of economic resources summarises variables related to income and wealth, such as household income, housing tenure and costs, private vehicle access, and household type. A

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low score indicates a relative lack of access to economic resources (e.g., many households with low income or paying low rent, and few high-income households and owned homes) (ABS, 2018a).

The decile scores divide each suburb across NSW into 10 groups from lowest to highest SEIFA score. The lowest 10% of areas are given a decile value of 1, while the highest 10% of areas are given a decile value of 10. Low decile values generally represent areas of relative disadvantage while high decile values represent areas of least disadvantage.

The primary study area comprises communities with relatively high levels of advantage, with decile scores for the index of relative socio-economic advantage and disadvantage ranging from 7 to 10 (refer to **Table 4-5**). Wildes Meadow, Fitzroy Falls and Barrengarry particularly are within the top 20% of suburbs in NSW, demonstrating relatively high levels of advantage and low levels of disadvantage. Kangaroo Valley recorded a decile score of 7, suggesting pockets of both socio-economic advantage and socio-economic disadvantage.

In 2016, communities in the primary study area also displayed relatively high levels of economic resources, ranging from a decile score of 7 to a decile score of 10. This suggests that communities in these areas have relatively greater access to economic resources compared to other suburbs in NSW.

Table 4-5. Socio-economic disadvantage, 2016

Location	Index of relative socio-economic advantage and disadvantage		Index of economic resources	
	Score	Decile	Score	Decile
Primary study area				
Wildes Meadow	1098	10	1114	10
Fitzroy Falls	1078	9	1094	9
Barrengarry	1073	9	1066	7
Kangaroo Valley	1038	7	1073	8

Note. Decile scores represent ranking within New South Wales

Source: ABS, 2018b

4.3 Housing and accommodation

4.3.1 Private dwellings

There were 824 private dwellings in the primary study area at the 2021 Census, of which 598 dwellings (72.6%) were occupied on Census night (refer to **Table 4-6**). This was below the dwelling occupancy rate for NSW and may reflect the popularity of the primary study area for short-stay holiday makers and the possible presence of hobby farms and 'weekender' homes.

Nearly 80% of occupied private dwellings were owner occupied, including 50.8% that were owned outright and 28.9% that were owned with a mortgage. There were 81 dwellings in the primary study area that were being rented at the 2021 Census (13.5% of occupied dwellings), of which 53.1% (43 dwellings) were rented from a person not in the same household (e.g., family member or friend). Dwellings rented through a real estate agent comprised 28.4% of rental dwellings (further details on rental housing in the primary and secondary study area is in the following section). There were no dwellings in the primary study area that were rented through a state housing authority or community housing provider.

Within the secondary, there were 77,759 private dwellings at the 2021 Census, with 62,790 dwellings (80.7%) occupied. About 73.5% of occupied dwellings in the secondary study area were owner occupied (i.e., owned outright or with a mortgage), with rental dwellings accounting for 22.6% of occupied dwellings (14,211 dwellings). The majority of rental dwellings were rented through a real estate agent (i.e., 59.5%), with dwellings rented through a person not in the same household accounting for about 20% of rental dwellings.

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Median rental costs in the primary study area varied, ranging from \$310 per week in Kangaroo Valley to \$450 per week in Wildes Meadow at the 2021 Census, with an average of \$404. This is compared to median weekly rental costs of \$420 for NSW as a whole. Median rental costs in the secondary study area were below NSW at \$360 per week (ABS, 2021).

Table 4-6. Housing indicators, 2021

Indicator	Primary study area	Secondary study area	NSW
Dwellings			
Total private dwellings	824	77,759	3,199,988
Dwelling occupancy rate	72.6%	80.7%	90.6%
Housing tenure			
Owned outright	50.8%	44.6%	31.5%
Owned with a mortgage	28.9%	28.8%	32.5%
Rented	13.5%	22.6%	32.6%
Housing costs			
Median weekly rent	\$404*	\$360	\$420

*Note: *Average of median rents of primary study area suburbs*

Source: Based on Jacobs analysis of ABS Census 2021

Rental dwellings

More recent information on rental housing in the primary study area is available at a postcode level from the NSW Department of Communities and Justice Renting and Strata Services Branch (RSSB). Postcodes covering the primary study area and surrounding region include:

- 2576, which includes the suburbs of Bowral, Burradoo, East Bowral, East Kangaloon, Glenquarry, and Kangaloon
- 2577, which includes the primary study area suburbs of Barrengarry, Fitzroy Falls, Kangaroo Valley, and Wildes Meadow, along with the suburbs of Avoca, Barren Grounds, Beaumont, Belanglo, Berrima, Budgong, Burrawang, Canyonleigh, Carrington Falls, Knights Hill, Macquarie Pass, Manchester Square, Medway, Meryla, Moss Vale, Mount Murray, New Berrima, Paddys River, Red Rocks, Roberston, Sutton Forest, Upper Kangaroo River, Upper Kangaroo Valley, and Weraí.

Table 4-7 presents information on rental bonds for the March quarter 2019, 2021 and 2022. At the March quarter 2022, there was a total of 1,806 rental bonds held for properties in the postcode areas 2576 and 2577. Over the 12 months to the March quarter 2022, postcode area 2576 recorded a decrease in the availability of rental housing, with the number of new bonds lodged decreasing by 22.1%. Postcode area 2577 recorded an increase in the availability of rental housing, with the number of new bonds lodged increasing by 9.2%. This is compared to a decrease in the number of new bonds lodged recorded for NSW as a whole of 3.6%.

Between 2019 and 2022, the total number of new bonds in the postcode areas 2576 and 2577 increased by 10.7%, which was similar to the increase in rental housing recorded in NSW as a whole. The rental housing stock in postcode area 2576 increased by about 3.3% over the 12 months to the March quarter 2022, which was nearly double the growth of rental house stock recorded in NSW as a whole. Over the same period, the rental housing stock in postcode area 2577 remained relatively stable.

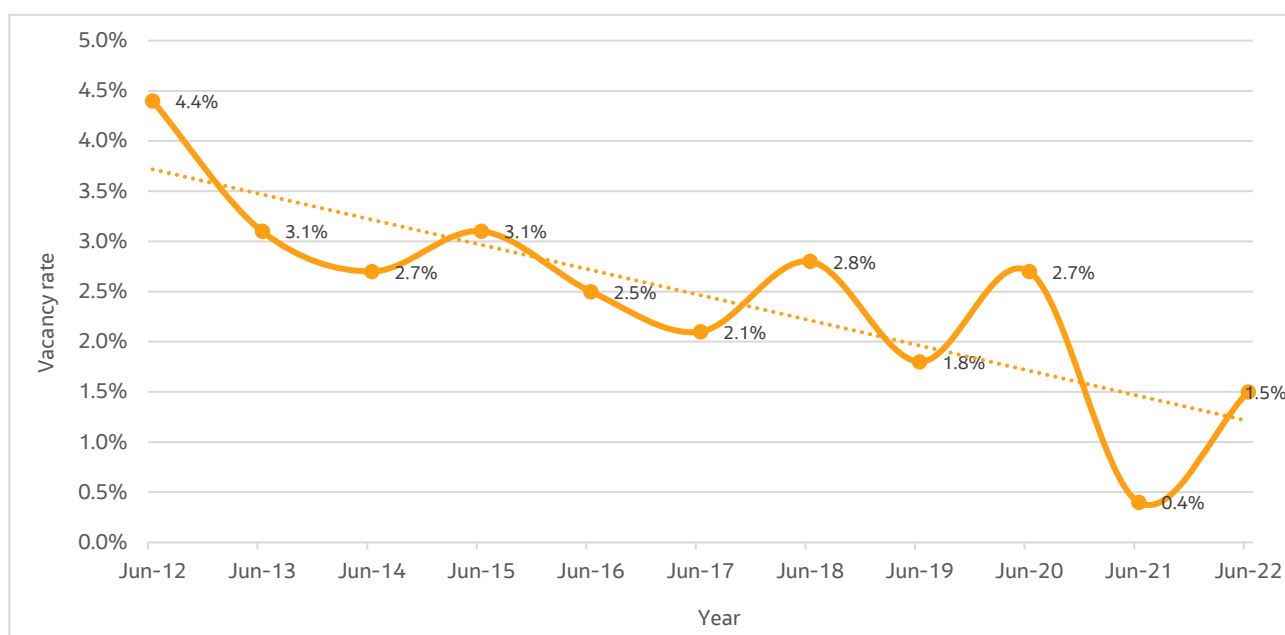
It is noted that the total number of bonds held by the RSSB does not equal the total number of rental properties (i.e., some properties may be vacant or bonds may not be held by some rental properties such as those rented informally through a family member); however, the number of active bonds provides an indication of the total rental housing stock available in the LGA (i.e., the more active bonds, the larger the

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stock of rental housing)¹. The number of new bonds lodged also provides an indication of the overall availability of rental housing in a specific period due to turnover of existing rental housing or additions to the stock of rental housing.

Information from the RSSB on median weekly rental costs is presented in **Table 4-8**. At the March quarter 2022, the median weekly rent for new bonds lodged in postcode areas 2576 and 2577 was \$750 per week and \$650 per week respectively, well above the median weekly rent of \$500 recorded for NSW. Compared to NSW, the primary study area and surrounding communities experienced a significant increase in median weekly rents for new bonds lodged. This may be due in part to the movement of people to regional areas and away from urban centres during the COVID-19 pandemic.

Figure 4-2 shows rental vacancy rates for the NSW Real Estate Institute South Coast division², which includes the suburbs in the primary and secondary study area. In June 2022, the rental vacancy rate in the South Coast division was 1.5%, with vacancy rates declining over the 10 years from 2012. Communities in the South Coast reported very low levels of rental vacancy in 2021, which may reflect the loss of houses through the bushfires in 2019-2020 and increases in remote working and the movement of people to regional communities associated with the COVID-19 pandemic.



Source: Based on information from REINSW

Figure 4-2. Rental vacancy rates, June 2012 – June 2022

¹ For comparison, there were 970 households in the postcode area 2576 that were renting at the 2021 Census, of which 634 households were renting from a real estate agent. For postcode area 2577, there were 1,348 rental houses, with 725 rented from a real estate agent

² This division includes the suburbs of Bargo, Basin View, Batehaven, Batemans Bay, Bawley Point, Bega, Bendalong, Bermagui, Bermagui South, Berrima, Berry, Bodalla, Bombaderry, Boorowa, Bourinda, Broulee, Burrawang, Burrill Lake, Callala Bay, Cambewarra, Cobargo, Culburra Beach, Currarong, Dalmeny, Dolphin Point, Eden, Erowal Bay, Falls Creek, Greenwell, Greenwell Point, Huskisson, Hyams Beach, Jaspers Brush, Kangaroo Valley, Kianga, Long Beach, Malua Bay, Manyana, Merimbula, Meroo Meadow, Milton, Mollymook, Moruya, Narooma, Narrawallee, Nowra, Nowra Hill, Nowra North, Orient Point, Pambula, Pheasants Nest, Robertson, Sanctuary Point, Shoalhaven Heads, St Georges Basin, Sunshine Bay, Surf Beach, Sussex Inlet, Swanhaven, Tapitallee, Tathra, Termeil, Tomerongtura Beach, Tuross Head, Ulladulla, Vincentia, Wandandian, Wapengo, West Nowra, Wildes Meadow, Woollamia, Worrigee, Worronging Heights, Yanderra

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Table 4-7. Rental bonds, March quarter 2018, 2019 and 2022

Locality	March quarter 2019			March quarter 2021			March quarter 2022			Change in total bonds held	
	Total bonds held	New bonds		Total bonds held	New bonds		Total bonds held	New bonds		2019-2022	2021-2022
		Lodged	Annual change		Lodged	Annual change		Lodged	Annual change		
Postcode area 2576	760	80	-8.1%	837	95	6.7%	865	74	-22.1%	13.8%	3.3%
Postcode area 2577	872	83	-5.7%	937	87	-27.5%	941	95	9.2%	7.9%	0.4%
NSW	754,041	81,189	7.0%	817,837	85,658	3.5%	831,839	82,589	-3.6%	10.3%	1.7%

Sources: Family and Community Services, 2019; Department of Communities and Justice, 2021 and 2022

Table 4-8. Median weekly rent for new bonds, March quarter 2018, 2019 and 2022

Locality	March Quarter 2019	March Quarter 2021	March Quarter 2022	Change in median weekly rent for new bonds	
				2019-2022	2021-2022
Postcode area 2576	\$555	600	\$750	36.4%	25.0%
Postcode area 2577	\$470	530	\$650	39.8%	22.6%
NSW	\$480	470	\$500	4.2%	6.4%

Sources: Family and Community Services, 2019; Department of Communities and Justice, 2021 and 2022

Dwelling sales

Information on residential sales in the primary study area is available at a postcode level from the NSW Department of Communities and Justice RSSB. As described in the previous sections, postcodes covering the primary study area and surrounding region include postcode area 2576 and postcode area 2577.

Between October and December 2021, there were 229 residential properties sold in the primary study area and surrounding communities (refer to **Table 4-9**). Median sales prices were well above the median for NSW, ranging from \$1.2 million to 1.6 million dollars, compared to \$880,000 in NSW.

Over the 12 months to the December quarter 2021, growth in the median sales prices in the postcode areas 2576 and 2577 was above NSW, with postcode area 2577 recording a growth in the median sales price nearly double NSW.

Table 4-9. Residential sales data, December quarter 2021

Locality	Total sales	Median sales price ('000)	Annual change in median sales price
Postcode area 2576	104	\$1,605	28.4%
Postcode area 2577	125	\$1,200	41.6%
NSW	42,682	\$880	21.4%

Source: Department of Communities and Justice, 2022

4.3.2 Visitor accommodation

Regional visitor accommodation

Information on visitor accommodation is available from the Australian Accommodation Monitor for NSW tourism regions. The Australian Accommodation Monitor presents information on the number of accommodation establishments and rooms, occupancy rates and average daily room rates for visitor accommodation such as hotels, motels, serviced apartments, and holiday parks with 10 or more rooms. While it does not include data on other accommodation types such as smaller hotels, caravan sites, holiday houses (i.e., rented through Airbnb), or bed and breakfast accommodation, it provides an indication of the likely availability in visitor accommodation across the primary and secondary study areas.

The primary and secondary study areas is covered by two tourism regions, including:

- Capital Country, which includes the major towns of Bowral, Goulburn, Yass and Young
- South Coast, which includes the major towns of Wollongong, Shellharbour, Kiama, Jervis Bay, Ulladulla, Bateman Bay, Moruya, Narooma, Bega, Merimbula, and Eden.

Information on visitor accommodation for the Capital Country and South Cost tourism regions is presented in **Table 4-10**. For the year ending June 2021, there were 197 establishments with 10 rooms or more in the South Coast tourism region, offering about 5,649 rooms. Over the same period, there were 64 accommodation establishments offering 2,208 rooms in the Capital Country tourism region (STR, 2021b). Accommodation and room numbers in the Capital Country and South Coast tourism regions have remained relatively stable since 2017/ 2018.

The average room occupancy rate for the year ending June 2021 was 53.3% in the Capital Country tourism region and 59.1% in the South Coast and region. This was above the occupancy rates for the year ending June 2020, but below previous years (refer to **Table 4-10**) (STR, 2019; STR, 2020; STR, 2021a; STR, 2021b).

Table 4-10. Visitor accommodation, 2017-18 to 2020-21

Timeframe	Region	Number of properties	Number of rooms	Room occupancy rate
July 2017 – June 2018	Capital Country	62	2,107	54.8%
	South Coast	190	5,511	66.8%
	NSW	1,784	87,957	79.0%
July 2018 – June 2019	Capital Country	49	2,077	66.0%
	South Coast	191	5,481	65.9%
	NSW	1,808	89,288	77.8%
July 2019 – June 2020	Capital Country	62	2,173	47.9%
	South Coast	196	5,644	54.8%
	NSW	1,799	88,250	61.7%
July 2020 – June 2021	Capital Country	64	2,208	53.3%
	South Coast	197	5,649	59.1%
	NSW	1,859	92,378	47.4%

Sources: STR, 2019; STR, 2020; STR, 2021a; STR, 2021b

Visitor accommodation in the primary study area

There are a large number of accommodation providers in the primary study area. These mainly cater for people taking short stay 'weekend getaways' or attending private events such as weddings and include higher-end boutique accommodation such as bed and breakfast accommodation, spa retreats, eco-resorts, farmstays, holiday houses and apartments.

There are also two caravan and holiday parks located in the town of Kangaroo Valley, with these being the Kangaroo Valley Glenmack Park, which offers a mix of villas, cabins, caravan sites, and camping sites, and Holiday Haven Kangaroo Valley, which offers a range of cabins and camping sites.

Further details about accommodation businesses in the primary study area is in **Section 4.4**.

4.4 Economic profile

4.4.1 Local and regional business

There were approximately 13,362 businesses in the secondary study area in 2020, of which 98% were small businesses employing less than 20 people. This included about 58% of businesses that were non-employing businesses such as sole traders and partnerships without employees (ABS, 2022).

Construction related businesses comprised the largest business group, comprising about 21.3% of all businesses in June 2020. Other key business industries included:

- Professional, scientific and technical services (11.5%)
- Rental, hiring and real estate services (9.4%)
- Agriculture, forestry and fishing (7.6%)
- Financial and insurance services (7.2%).

Local businesses in the primary study area are mainly concentrated in Kangaroo Valley, including:

- Retail businesses that cater for the needs of local residents, visitors and surrounding rural uses, e.g., supermarkets and grocery retailers, service station, rural supplies, and specialty retail uses
- Accommodation providers
- Cafes, restaurants, and takeaway food shops
- Tourism service providers such as tour operators and equipment hire.

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A general store, collectibles store and the NPWS Fitzroy Falls Visitor Centre also located at Fitzroy Falls, while a large number of visitor accommodation providers located on rural properties across the primary study area. These mainly comprise boutique accommodation such as bed and breakfasts, farm stays and self-contained holiday cottages. These mainly cater for people taking short stay 'weekend getaways', but also used for private events such as weddings. In addition, there are several function venues used for weddings and other events.

Internet searches undertaken in August 2022 identified a range of businesses located within about one km of the Project or that operate from nearby public areas such as the Kangaroo River or Bendeela Recreation Area. These are listed in **Table 4-11** along with a description of the business operations. In addition, there are a numerous visitor accommodation and retail businesses along Nowra Road, Bendeela Road, and Moss Vale Road. These roads are proposed to provide construction traffic access for the Project.

Table 4-11. Businesses located within about 1km of the Project

Business name	Type	Description
Kangaroo Valley Safaris	Recreation and tourism	This business operates half day, full-day, and multi-day canoe and kayak along the Kangaroo River. Bendeela Recreation Area is used as a drop-off and pickup location for tours.
Kangaroo Valley Kayaks	Recreation and tourism	This business operates day trips, over-night trips and multi-day trips of the Kangaroo River, and Lake Yarrunga and Tallowa Dam downstream of the Project. Bendeela Recreation Area is used as a starting and ending point for tours.
Kangaroo Valley Adventure Company	Recreation and tourism	This business offers nature-based guided and unguided tours, including bush walking, kayaking and canoeing, mountain biking, rock climbing and abseiling, and wildlife viewing. Unguided kayaking and canoeing operate along the Kangaroo River to and from Bendeela Recreation Area.
Valley Outdoors	Recreation and tourism	Offers nature-based tours including canoeing, hiking, camping and abseiling. Unguided and guided canoe tours operate to and from Bendeela Recreation Area.
Cedarvale Health and Lifestyle Retreat	Health and wellness / accommodation	This business is located at Moss Vale Road, east of the Project. It offers four-, five- and 12-day health and wellness programs with on-site accommodation.
Falls Hideaway	Accommodation	Self-contained accommodation for up to six guests, located in a rural setting at Manning Lookout Road.
Wirramina	Accommodation	Self-contained accommodation for up to eight people located at Bendeela Road, Kangaroo Valley. Consultation for this assessment also raised that this accommodation was regularly used by wedding parties and guests of weddings at Wildwood Kangaroo Valley.
Tullawalla	Accommodation	Self-contained farm stay accommodation located at Jacks Corner Road, Kangaroo Valley.
Wildwood Kangaroo Valley	Eco-retreat, wedding, and function venue	<p>This business is an eco-retreat and wedding and function venue at Bendeela Road, Kangaroo Road. Accommodation at the business includes eight rooms for guests, with consultation for the assessment indicating proposed future plans to develop eco-cabins on the site.</p> <p>Feedback from consultation for this assessment raised that the business hosts about 50 events per year, including weddings and functions for about 60 to -100 guests, with autumn and spring being the peak periods. Weddings and events are generally held on Saturday, Wednesday or Thursday afternoon/evening, with guests staying on-site for two days. Locations such as Old Bendeela Road are also used as settings for wedding photos.</p>

Business name	Type	Description
Clover Hill Farm	Accommodation	Self-contained farmhouse accommodation for up to 10 guests, located at Bendeela Road, Kangaroo Valley.
Jack's Corner Retreat	Health and wellness / accommodation	This business is located west of the Project at Jacks Corner Road, Kangaroo Valley. The property is used for retreats for small groups (e.g., yoga, art). Consultation by Origin for the Project raised that the property is booked for retreats most weekends.
Banksia Designer Tiny Home	Accommodation	Self-contained accommodation located on a working farm at Old Bendeela Road, Kangaroo Valley.

4.4.2 Key industries

Tourism

Recent visitor information for the primary study area is available for the Wingecarribee and Shoalhaven LGAs. The primary study area a popular tourist destination for day trippers from surrounding urban centres and overnight visitors from intrastate, interstate and overseas. In 2019, there was a total of 4.91 million visitors to the Wingecarribee and Shoalhaven LGAs, including domestic and international overnight visitors, and domestic day trip visitors (refer to **Table 4-12**).

The proximity of the primary study area to urban centres such as Canberra, Greater Sydney and the Illawarra makes it a popular location for day trips and short-stay holidays or 'weekend getaways'. As indicated in **Table 4-12**, in 2019, day trippers accounted for about 72% of visitors to the Wingecarribee LGA and about 51% of visitors to the Shoalhaven LGA. Domestic overnight visitors were the next largest visitor category in 2019, comprising about 27% and 48% of visitors in the Wingecarribee and Shoalhaven LGAs respectively. The majority of domestic overnight visitors (i.e., more than 80%) were from NSW. People visiting on holiday was the main reason people visited the primary study area and surrounding communities, with this group comprising 51% of visitors in the Wingecarribee LGA and 59.4% in the Shoalhaven LGA (TRA, 2019).

Tourism in the Wingecarribee and Shoalhaven LGAs has been affected in recent years by the bushfires in late 2019 and early 2020, and government travel restrictions and lockdowns implemented in response to the COVID-19 pandemic. Between 2019 and 2020, the tourism regions covering the primary study area and surrounding region experience a decline in spending, loss of tourism-related employment, and reduced occupancy of visitor accommodation (TRA, undated).

The rural amenity and country lifestyle; natural landscapes and features such as the Kangaroo River and Moreton National Park; nature based recreational opportunities such as kayaking, fishing, mountain biking, bushwalking, horse riding and camping; and heritage and history of local towns and communities are key attractions for visitors to the primary study area and surrounding area. Major events such as the Kangaroo Valley Folk Festival, Bowral Tulip Festival, Southern Highlands Food and Wine Festival, Bowral Classic, Festival of Canoe and Kayak, and Terra Nova 24 also attract large numbers of visitors to communities in the primary and secondary study areas (refer to **Section 4.6** for further information on key events).

Important tourist attractions and destinations near the Project include the Kangaroo Valley township, which includes the heritage listed Hampden Bridge across the Kangaroo River; Fitzroy Falls and Moreton National Park, which has a visitor centre and café, and offers walking tracks, views of waterfalls and rainforest gullies from lookouts, and picnic areas; Bendeela Recreation Area; and the Kangaroo River, which is popular for kayaking, canoeing and fishing. The primary study area is also a popular cycling destination and includes routes for both road cycling and mountain biking. Identified road cycling routes include Upper Kangaroo River to Kangaroo Valley township via Upper Kangaroo River Road and Moss Vale Road; and Kangaroo Valley to Nowra via Mount Scanzi, which travels along Illaroo Road, Bugong Road, and Mount Scanzi Road (Destination NSW, 2022).

As indicated in **Section 4.3.2**, there are several tourism-related businesses that operate near the Project, including accommodation providers such as bed and breakfast accommodation, spa retreats, resorts, farmstays, and holiday cottages; and recreational tourism operators that use the Kangaroo River, Moreton

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National Park and Bendeela Recreation Area. Several visitor accommodation providers and tourist attractions are also located at Nowra Road and Moss Vale Road.

Table 4-12. Visitor statistics, 2019

Locality	Wingecarribee LGA		Shoalhaven LGA	
	Number ('000)	%	Number ('000)	%
Visitors				
Total visitors	1,911		2,998	
International overnight travel	13	0.7%	34	1.1%
Domestic overnight travel	520	27.2%	1,423	47.5%
Domestic daytrip travel	1,378	72.1%	1,540	51.4%
Origin of domestic overnight visitors				
Interstate	93	17.9%	232	16.3%
Intrastate	427	82.1%	1192	83.7%
Reason for visit				
Holiday	976	51.0%	1,782	59.4%
Visiting friends and relatives	645	33.7%	839	28.0%
Business	143	7.5%	204	6.8%
Other	149	7.8%	176	5.9%

Source: Tourism Research Australia (TRA), 2019

Agriculture

The primary study area communities had agriculture production as one of the main industries of employment at the 2016 Census, including cattle farming, vegetable growing and horse farming. The surrounding land uses near the Project also include land zoned RU2 Rural Landscape, RU1 Primary Production along Jacks Corner Road and Bendeela Road, and beyond the township of Kangaroo Valley. Based on land use data from the SEED portal (DPE, 2020), there are grazing modified pastures, native/exotic pastures, areas of intensive animal production, farm infrastructure or rural residential with agriculture land uses in the primary study area to the north and east of the Project, and along the Project construction haulage routes on Moss Vale Road and Nowra Road.

In the Wingecarribee LGA, agriculture is a significant industry contributing to production in NSW, including agribusiness and equine currently being developed into high growth industries to help diversification ([Wingecarribee Shire Council, 2021](#)). In the Southern Highlands, the agriculture, forestry, and fishing industry is the fourth largest in the region consisting of 546 businesses employing 655 people ([Wingecarribee Shire Council, 2021](#)). In 2020, the Wingecarribee LGA contributed to 5.5% of the South East and Tablelands Region agricultural Gross Value of Production (GVP), with \$49.5 million coming from beef, milk/dairy and poultry meat commodities in 2016 ([NSW DPI, 2020](#)).

Based on an internet search of nearby businesses to the Project, there are several local producers including Kangaroo Valley Pastured Eggs, Kangaroo Valley Olives, Target Creek Farm, Fox and Quail Farm and Native Goodways in Kangaroo Valley east of the Project. These are located in proximity to Moss Vale Road, which would be used for the majority of construction vehicles accessing the Project lower scheme via Bendeela Road. To the north of the Project, agriculture-related businesses include Roses and Friends Plant Nursery, Silverdale Farm, Mount Ashby Estate along Nowra Road, which would be used for all construction vehicle access to the upper scheme.

In the Shoalhaven LGA further afield, the agricultural output of the milk industry produces 11.1% of NSW's total production in 2016, encompassing 85 businesses ([NSW DPI, 2020](#)). The commodities with the highest GVP are milk (\$49.66 million), beef (\$16.43 million) and nurseries/cut flowers/turf (\$3.38 million). The Shoalhaven region is serviced by cattle sale yards at Moss Vale (Southern Regional Livestock Exchange) and

Moruya, both combined had approximately 50,000 head of cattle pass through the yards in 2018-19 ([NSW DPI, 2020](#)). The region is also known for specialised agricultural produce including small scale local produce, which are often sold on-farm or at farmers markets and local retailers. There is an emphasis on local growers and buying local, with each township hosting their own farmers market monthly, such as the Kangaroo Valley Farmer's Market. The small scale agricultural produce and farm gate sales also contribute to the region's agri-tourism such as farm stays, bed and breakfast accommodation options that showcase local production and provide community education opportunities.

4.5 Social infrastructure

There are a range of community uses located near the Project that have potential to be impacted during construction and operation due to their proximity to Project infrastructure and construction activities.

In addition, the primary and secondary study areas accommodate a range of local and regional level community services and facilities that contribute to the community's health and wellbeing and quality of life, including health facilities, sport and recreation uses, education facilities, cultural facilities, and emergency services. These facilities have potential to experience impacts relating to the Project's construction, for example, from the transport of workers, materials, plant and equipment, or health and safety risks associated with major construction activities.

The following sections provide an overview of social infrastructure near the Project, and social infrastructure in the primary and secondary study areas.

4.5.1 Social infrastructure near the Project

Community uses are generally limited to nature-based recreation areas and facilities, and an education facility.

Fitzroy Falls Reservoir and Recreation Area

Fitzroy Falls Reservoir is located on the Yarrunga Creek upstream of Fitzroy Falls. The reservoir forms part of the existing pumped hydro scheme. It also provides water to the local Southern Highlands and Goulburn communities and can be fed into Warragamba Dam and Upper Nepean dams to supplement water supplies for Sydney and the Illawarra regions (<https://www.waternsw.com.au/supply/visit/fitzroy-falls-reservoir>).

A recreation area is located at Nowra Road that offers picnic facilities such as barbeques, playground, picnic tables and toilets, and views of the reservoir. The reservoir is also a popular location for recreational fishing, with land-based fishing permitted from a designated fishing area on the eastern foreshore of the reservoir, accessed from Myra Vale Road. Camping, swimming, and use of watercraft are not permitted at the reservoir (<https://www.waternsw.com.au/supply/visit/fitzroy-falls-reservoir>).

The Southern Highlands Sailing Club is located at Nowra Road, Fitzroy Falls on the western side of the reservoir. The sailing club meets every Sunday between October and April, with afternoon races conducted by the club that involve various classes of sailing boats. Mid-week sail training sessions are also held at the sailing club (<http://www.highlandsailing.com.au/>). Consultation previously undertaken by Origin with representatives of the Southern Highlands Sailing Club identified issues relating to changes to water levels in the Fitzroy Falls Reservoir and management of water level changes during the sailing club's competitions and events.

Morton National Park

Morton National Park was established in 1969 from a number of reserves dating back to 1824 and covers an area of approximately 170,462 ha. Morton National Park's proximity to urban centres such as Moss Vale, Nowra and Wollongong makes it a popular location for day trippers wanting to participate in nature-based recreation pursuits such as bush walking, mountain biking, nature observation, and picnicking. Key facilities within Morton National Park near the Project include:

- May, Warragong, Yarrunga, Valley View and Lamond lookouts, west of the Fitzroy Falls Reservoir and Fitzroy Canal, which are connected by the East Rim and Wildflower walking track

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- Fitzroy Falls to Kangaroo Valley cycling route, which is a 30km one-way track starting near the Fitzroy Falls Visitor Centre and ending at Jack's Corner Road, approximately 6.5 km west of the Kangaroo Valley Power Station
- Griffins walking track, which is an 11km one-way day or overnight hike through the Yarrunga Creek Valley, starting at Jack's Corner Road, approximately 6.5 km west of the Kangaroo Valley Power Station.

The Promised Land Trail is an 8 km fire trail located in Morton National Park. The trail extends south from Moss Vale Road near the southern extent of the Fitzroy Canal. The trail is used for mountain biking, walking and hiking.

The NPWS Fitzroy Falls Visitor Centre and Café is located at Nowra Road, Fitzroy Falls in the northern precinct of Morton National Park. The centre has displays offering visitors with information on the region's local history, Aboriginal culture, wildlife, and birdwatching. The centre is open between 9am and 5pm, seven days a week (<https://www.nationalparks.nsw.gov.au/things-to-do/visitor-centres/fitzroy-falls-visitor-centre/visitor-info#Facilities>).

Bendeela Recreation Area

Bendeela Recreation Area provides camping, active and passive recreation opportunities for day trippers and overnight visitors along the banks of the Kangaroo River. The site is managed by WaterNSW and comprises picnic areas used by day visitors and overnight campers, and two camping areas, one for vehicle-based camping that is opened 24 hours a day ('front camping ground'), and another area that is generally closed to vehicles apart from weekends and public holidays ('rear camping ground'). The camping areas caters for up to 1,000 campers each night and is open year-round with online booking options. Each camping site can accommodate up to six people with campers permitted to stay for a maximum of seven consecutive days. The camping areas are also used mid-week by school groups, during non-school holiday periods (<https://www.waternsw.com.au/supply/visit/bendeela-recreational-area>).

Visitor data provided by WaterNSW indicated that in January 2022, about 5,646 people camped at the Bendeela Recreation Area, of which nearly 90% were from NSW, 3.6% were from the ACT and 3% were from Victoria. About 10 campers were from overseas, including New Zealand, Denmark, Germany and Canada. Between August 2015 and November 2022, the campground had 139 large group bookings ranging in size from about 10 people to 999 people. About 70 bookings were for regular events including mid-week bookings for school groups, and weekend bookings for community groups, Scouts/ Rover groups, Kangaroo Valley Folk Festival (held in October), and Kangaroo Valley Craft Beer and BBQ Festival (held in November). The largest number of bookings were for groups up to 50 people (72 bookings), followed by groups of 51-100 people (41 bookings) and groups of 100-200 people (15 bookings). Groups larger than 200 people were generally associated with festivals, school groups and Scout/Rover groups.

Feedback from WaterNSW suggests peak use times of the Bendeela Recreation Area include the Easter long weekend, the new year period (i.e., last week in December and first week in January), and Australia Day long weekend.

Permitted activities include fishing, swimming, bushwalking, canoeing, non-powered boating on Kangaroo River and Lake Yarrunga. During extreme weather events such as flooding or when Tallowa Dam is spilling, the Recreation Area may be closed. As indicated in **Section 4.4.1**, the Bendeela Recreation Area is also used by local recreation and tourism businesses as drop-off and pick-up points for tour groups that use the Kangaroo River (e.g., local canoe operators and adventure race events).

Vehicle access to the Bendeela Recreation Area is provided from Bendeela Road near the Bendeela Power Station.

The Scots College – Glengarry Campus

The Scots College Glengarry Campus is located between Jacks Corner Road and the Kangaroo River, west of the Project. The campus conducts outdoor education programs for Year 9 students at Scots College, which includes a six-month, two-term residential stay. The main access to the campus is from Jacks Corner Road, with Lower Bendeela Road west of the Bendeela Power Station used as an emergency access to Bendeela or as a secondary access to the property when the access from Jacks Corner Road is closed.

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Consultation with staff of Scots College for this assessment indicated that the campus hosts about 130 students and 35–40 staff members at any time, with programs run at the site for 40 weeks each year. Over the remaining 12 weeks in December and January, the site accommodates about six families.

Consultation also identified that the program involves a range of academic and recreation-based activities, including outdoor teaching classes based on the property's environmental values including creeks, and native flora and fauna. Recreation-based activities comprise both on-site and off-site activities including those that use surrounding local roads such as 24-hour rogaining events that involve students walking to Bendeela, using public roads at night-time, and cycling trips. The Kangaroo River is also used for academic and water-based recreation activities such as canoeing, and as the source of drinking water for the college.

It was also indicated during consultation with staff that Scots College has plans to expand the education program to a nine-month program and has initiated a master plan process that involves plans to develop infrastructure over the next couple of years, including redeveloping facilities lost to the bushfires in early 2020.

Kangaroo River

The Kangaroo River runs from the Budderoo National Park, through the Kangaroo Valley, to its convergence with the Shoalhaven River in Tallowa Dam. The river supports a range of nature-based recreational pursuits, including kayaking and canoeing, camping, swimming, bush walking, nature observation, and fishing. Near the Project, public access to the river for non-motorised watercraft (e.g., canoes and kayaks) is provided from two launch sites at the Bendeela Recreation Area.

As indicated in **Section 4.4.1**, the Kangaroo River also supports several recreation- and tourism- based businesses in Kangaroo Valley that operate day trips, overnight trips and multi-day trips along the Kangaroo River, and Lake Yarrunga and Tallowa Dam downstream of the Project.

Further discussion about community values associated with the Kangaroo River is in **Section 4.6**.

4.5.2 Social infrastructure in the primary study area

The primary study area accommodates a range of community services and facilities that cater for the needs of local residents, and day trippers and overnight visitors from outside of the primary study area. These are mainly located in Kangaroo Valley and include sport and recreation facilities, emergency services, cultural uses, and schools. Social infrastructure in the primary study area is listed in **Table 4-13**.

Table 4-13. Social infrastructure in the primary study area

Facility	Name and location of facility
Sport and recreation uses	<ul style="list-style-type: none">Osborne Park Kangaroo Valley Showground, Moss Vale Road, Kangaroo ValleyKangaroo Valley Swimming Pool, Moss Vale Road, Kangaroo ValleyKangaroo Valley Tennis Club, Moss Vale Road, Kangaroo ValleyBendeela Recreational Area, Bendeela Road (refer to Section 4.5.1)Kangaroo River Nature Reserve, Bendeela RoadFitzroy Falls Reservoir and Recreation Area, Nowra Road, Fitzroy Falls (refer to Section 4.5.1)Southern Highlands Sailing Club, Fitzroy Reservoir (refer to Section 4.5.1)Mimosa Reserve, Casuarina Crescent, Fitzroy FallsFitzroy Falls Picnic Area, Nowra Road, Fitzroy FallsFitzroy Equestrian Centre, Sheepwash Road, Fitzroy FallsBarrengarry Nature Reserve, Moss Vale Road, BarrengarryMorton National Park, including the Fitzroy Falls to Kangaroo Valley Cycling Route (Redhills Firetrail) (refer to Section 4.5.1).
Health care and medical uses	<ul style="list-style-type: none">Kangaroo Valley Pharmacy, Moss Vale Road, Kangaroo ValleyKangaroo Valley Medical Centre, Broughton Street, Kangaroo Valley.

Facility	Name and location of facility
Emergency services	<ul style="list-style-type: none"> Kangaroo Valley Police Station, Moss Vale Road, Kangaroo Valley Kangaroo Valley Rural Fire Service, Broughton Street, Kangaroo Valley.
Cultural facilities	<ul style="list-style-type: none"> Church of the Good Shepherd, Moss Vale Road, Kangaroo Valley St Joseph's Catholic Church, Moss Vale Road, Kangaroo Valley Pioneer Village Museum, Moss Vale Road, Kangaroo Valley.
Education facilities	<ul style="list-style-type: none"> Kangaroo Valley Public School, Moss Vale Road, Kangaroo Valley Kangaroo Valley Preschool, Moss Vale Road, Kangaroo Valley The Scots College Glengarry Campus, Jacks Corner Road, Kangaroo Valley (refer to (refer to Section 4.5.1).
Other facilities	<ul style="list-style-type: none"> Kangaroo Valley General Cemetery, Moss Vale Road, Kangaroo Valley Kangaroo Valley Hall, Moss Vale Road, Kangaroo Valley Fitzroy Falls Visitor Centre, Nowra Road, Fitzroy Falls Myra Vale Cemetery, Myra Vale Road, Wildes Meadow.

4.5.3 Regional social infrastructure

Major urban centres such as Moss Vale, Bomaderry, Bowral, and Nowra accommodate a range of community services and facilities that cater for the needs of communities in the local and regional study areas. They include:

- Health and medical services, including Shoalhaven District Memorial Hospital at Nowra, and District Hospital in Bowral, with both hospitals offering emergency care and general medical services
- Tertiary education facilities such as Illawarra TAFE and University of Wollongong Southern Highlands Campus at Moss Vale
- Major sport and recreation facilities, including regional level sporting grounds, bushland reserves, aquatic and leisure centres, and open space and parkland areas.

The Wollongong Hospital is the closest major hospital to the Project. The hospital is the largest hospital in the Illawarra Shoalhaven Local Health District and is the region's tertiary referral hospital. The hospital has more than 500 beds and an emergency department that has about 70,000 presentations annually, making it one of the busiest emergency departments in NSW (NSW Health, 2019).

4.6 Community values

This section provides an overview of community values important to communities in the primary study area. Community values relate to those things held as important to communities for quality of life and well-being. They include physical elements such as parks, landscapes and connectivity, and intangible quality such as sense of place and community cohesion. Social infrastructure and demographic characteristics and local features are also valued by local communities.

The local amenity and character of the area surrounding the Project is dominated natural features such as Morton National Park and Kangaroo River; WaterNSW assets including Fitzroy Falls Reservoir; and farmland and rural landscapes, that are important to communities and visitors for the conservation, ecology and biodiversity, scenic amenity, recreation, and economic values that they offer. The Shoalhaven Pumped Hydro Scheme has also been a feature of the Kangaroo Valley since the mid-1970s when it was established as part of a dual-purpose water supply and hydro-electric power generation scheme. Key elements of the scheme include Bendeela Pumping and Power Station located on the Kangaroo River arm of Lake Yarrunga, Bendeela Pondage, Kangaroo Pumping and Power Station, Kangaroo pipeline and Fitzroy Canal, and Fitzroy Falls Reservoir.

The Kangaroo Valley is known for its scenic beauty and tranquil surroundings and is a popular destination for visitors who are attracted to the area for its rural lifestyle and amenity, historic heritage such as historic buildings in the Kangaroo Valley township and the landmark Hampden Bridge across the Kangaroo River, natural landscapes, and nature-based recreational opportunities such as bushwalking, kayaking and fishing. The Kangaroo Valley is also a location for "destination weddings" with venues offering opportunities for celebrations set within natural and bushland settings.

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The primary study area for part of the Shoalhaven drinking water catchment area, which provides water to the local Southern Highlands and Goulburn communities and can be fed into Warragamba Dam and Upper Nepean dams to supplement water supplies for Sydney and the Illawarra regions. Protection of the area's natural environment and flora and fauna values is important to local and regional communities, with groups such as the Kangaroo Valley Environment Group working to improve the natural environment through restoration Projects aimed at reducing serious weed problems, and repairing riparian habitats, and promote environmental awareness amongst local residents. The area's biodiversity and natural environment is also important for local tourism, with tourism businesses offering eco-tourism opportunities that seek to protect and enhance the natural environment to offer guests a low impact, and eco-friendly experience.

Communities in the primary study area show evidence of strong levels of community cohesion, and a sense of community and pride. Communities are supportive and connected, demonstrated by communities coming together to respond to the 2020 bushfires, and throughout the COVID-19 pandemic to manage impacts to tourism and businesses, and the high levels of volunteerism relating to community organisations and groups relating to the environment and natural assets, community safety (RFB), and local business and tourism, and recreation and sporting activities (e.g., sporting clubs, bushwalking groups). The sense of community and connection was also reflected in consultation for this assessment, businesses working together to support local tourism and produce within the Kangaroo Valley.

Communities in the primary and secondary study areas are also popular locations for events and festivals that foster social connections and that offer opportunities for community participation. An overview of some key events in the primary study area and surrounding communities are outlined in **Table 4-14**.

Residents, visitors, business and industry in the study area are serviced by several major roads and local roads. Major roads in the primary study area provide access to properties, towns and destinations in the primary study area, and larger urban centres in the secondary study area, with local roads providing access to residential uses, visitor accommodation, rural properties, and tourist destinations.

The following provides a summary of the key roads that have been identified for use by the Project.

- Moss Vale Road, which extends from the intersection of Nowra Road and the Promised Land Trail, through the town of Kangaroo Valley, and to the Princes Highway at Bombaderry. Within the town of Kangaroo Valley, Moss Vale Road provides access to residential uses, commercial uses and community facilities (e.g., primary school, sport and recreation facilities, emergency services, and cultural facilities) that front the roadway. Moss Vale Road also forms part of the Coast to Highlands Scenic Drive that extends from Nowra to Goulburn, through Kangaroo Valley
- Nowra Road, which extends from the intersection of Moss Vale Road and the Promised Land Trail to the Illawarra Highway at Moss Vale, via Fitzroy Falls. Nowra Road provides access to rural properties, residential uses, community uses (e.g., recreation areas at Fitzroy Falls Reservoir, Morton National Park, Southern Highlands Sailing Club, and Fitzroy Equestrian Centre), and local streets in Fitzroy Falls, and the Avoca RFB north of Fitzroy Falls. Nowra Road also forms part of the Coast to Highlands Scenic Drive
- Sheepwash Road extends from Nowra Road at Fitzroy Falls to the Illawarra Highway. It provides access to agricultural properties, residents of rural properties, tourist related businesses, and community uses such as Avoca Primary School
- Bendeela Road extends about 3.8 km from Moss Vale Road at Kangaroo Valley to the intersection of Lower Bendeela Road and Jack's Corner Road. Bendeela Road provides access to agricultural properties, residential uses, visitor accommodation on rural properties, and the Kangaroo Valley recycling and waste facility
- Lower Bendeela Road, which is a local road connecting from Bendeela Road south to the Bendeela Power Station and Bendeela Recreation Area. In addition to these uses, Lower Bendeela Road also provides access to visitor accommodation located east of the Bendeela Pond, and a secondary access to Scots College Glengarry Campus
- Jack's Corner Road, which is a local road connecting west from the intersection of Bendeela and Lower Bendeela Roads. Jack's Corner Road provides access for residents and visitors of rural and rural residential uses located north and south of the road, including visitor accommodation, Scots College Glengarry Campus, walking tracks within Morton National Park, and Kangaroo Valley Power Station
- Promised Land Trail, which is an 8 km fire trail within Morton National Park connecting from Moss Vale Road next the southern extent of the Fitzroy Canal. The trail provides maintenance access to the existing pipeline for the pumped hydro scheme and is also used for mountain biking, walking and hiking.

Table 4-14. Events and festivals near the Project.

Event name	Description
The Kangaroo Valley Agricultural Show	Hosted by the Kangaroo Valley Agricultural and Horticultural Association for over 136 years, the annual event takes place in February and include entertainment, attractions, and agriculture-related competitions. The show is held at the Kangaroo Valley Showgrounds at Moss Vale Road.
Kangaroo Valley Folk Festival	The annual folk festival is held over three days in October and typically attracts up to 5,000 visitors. A free shuttle bus operates between Bendeela Recreation Area and the festival site on the weekend for people camping. The event is held at the Kangaroo Valley Showgrounds.
Visual Arts in the Valley	The biennial arts festival includes multiple art prizes and events in Kangaroo Valley held over the October long weekend. The event is held at the Kangaroo Valley Showgrounds.
Summit Shoalhaven	Established in 1966, the Summit Shoalhaven is an annual off-road trail running event over Mount Scanzi to finish in the Kangaroo Valley. The event is held in July and includes various locations within the Kangaroo Valley.
Terra Nova 24 Adventure Run	Terra Nova is a 24-hour adventure team race held annually, involving trekking, mountain biking, kayaking and other disciplines over a 120 km course. The event is designed to move to a different location along the South Coast each year. In 2022, the event was held in the Kangaroo Valley.
Southern Highlands Food and Wine Festival	The Southern Highlands Food and Wine Festival is an annual event showcasing restaurants, regional food and wine producers, as well as farmers markets and live entertainment that attracts over 8,000 visitors from across NSW and interstate. The event is held in October at various locations such as Moss Vale and Bowral.
Tulip Time Festival	The Tulip Time Festival is of Australia's oldest floral festivals. Held at Corbett Gardens, Bowral the festival attracts tens of thousands of visitors annually. The festival is typically held over two weeks around September-October.
Bowral Classic	Combines multiple cycling events in October, including different distance courses through the Southern Highlands. The event is a major part of the cycling calendar and has been held annually since 2016, attracting more than 3,000 riders and many more spectators to Bowral and the region. The courses for various races pass through Moss Vale and Fitzroy Falls along Sheepwash Road, as well as Robertson and Mittagong, ending at Bowral. The 35 km race passes through the towns of Bowral, Burradoo, Moss Vale, and Berrima.

4.7 Transport and access

The primary study area is serviced by two public bus routes.

- Route 112, operated by Kennedy's Bus and Coach and connecting Kangaroo Valley with Nowra, via Cambewarra and Bomaderry. In the primary study area, the bus route uses Moss Vale Road, with five bus stops located between Hampton Bridge and Osborne Park Kangaroo Valley Showground. About 3-4 bus services operate between Nowra and Kangaroo Valley on weekdays, with four buses on Saturday, while 2-3 buses run between Kangaroo Valley and Nowra on weekdays
- Route 810, operated by Berrima Buslines and travelling between Moss Vale and Nowra, via Fitzroy Falls and Kangaroo Valley. Within the primary study area, the bus route uses Moss Vale and Nowra Roads, with 15 bus stops located between Sheepwash Road at Fitzroy Falls and Osborne Park Kangaroo Valley Showground at Kangaroo Valley, with these includes at the general store and Southern Highlands Sailing Club, and near to the Yarrunga Lookout access trail in Fitzroy Falls, and Hampton Bridge and Kangaroo Valley Public School in Kangaroo Valley, with another stop at Avoca Primary School on Sheepwash Road. One bus service runs in each direction on school days to provide access to primary and secondary schools.

5. Summary of community and stakeholder feedback

Community and stakeholder consultation, including with landowners, near neighbours, Councils, government agencies, and local communities has been conducted by Origin Energy since 2018 and is ongoing. This assessment has been informed by the outcomes of:

- Consultation undertaken by Origin for the Project, including with surrounding landowners at Lower Bendeela Road and Jacks Corner Road, WaterNSW, NPWS, Shoalhaven Council and Wingecarribee Shire Council
- Targeted engagement undertaken jointly by Origin and Jacobs' socio-economic impact specialist, with staff from Scots College Glengarry Campus, and owner of Wildwood Kangaroo Valley at Old Bendeela Road
- WaterNSW feedback on the use of the Bendeela Recreation Area
- Feedback from NSW government agencies and Councils on the SEARs for the Project.

Table 5-1 summarises the key issues raised by community members and stakeholders relevant to the socio-economic assessment. More detailed information on the consultation process for the Project, including stakeholders consulted and key issues raised, is provided in Chapter 5 of the EIS.

Table 5-1. Summary of issues raised during consultation relevant to the socio-economic assessment

Issue category	Consultation source	Issues raised
Property	Origin (2019)	<ul style="list-style-type: none"> ▪ Potential for property value to be adversely affected ▪ Damage and remediation of land and property should access to land be required.
	Origin (2022)	<ul style="list-style-type: none"> ▪ Tunnelling under properties and houses, including potential vibration impacts.
Traffic	Origin (2019)	<ul style="list-style-type: none"> ▪ Construction traffic impacts.
	Origin (2022)	<ul style="list-style-type: none"> ▪ Impacts to roads, which are already in bad condition in some areas ▪ Potential for speeding trucks and concerns about road safety for children and wildlife.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> ▪ Old Bendeela Road west of the Bendeela Power Station is used for emergency access for the Scots College campus to access Bendeela or as a secondary access if the main access is closed. Concerned that they would not be able to use this emergency access if there is any change in the level of water causing flooding ▪ Bendeela Road to Jack's Corner Road is a local road only – 'not a highway' – roads suffered a lot of damage and will need to be fixed if increasing traffic ▪ Concerned about trucks coming day and night and ruining the eco-resort.
Economic impacts	Origin (2019)	<ul style="list-style-type: none"> ▪ Impacts during construction on visitor economy and workforce accommodation.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> ▪ Wedding venue hosts about 50 events per year. Weddings are mainly held on Saturday night or Wednesday/ Thursday night. Bookings are typically made about three months in advance. Ceremonies are held in the afternoon. Engagement around timing of noisy works to help minimise impacts on ceremonies ▪ Peak periods are typically mid-autumn and spring – low period is December/January and June/July ▪ Current accommodation at the wedding venue has eight rooms. Currently aiming for January to develop the first

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Issue category	Consultation source	Issues raised
		<p>eco-cabin. Guests also use nearby guest accommodation (e.g., Wirramina).</p> <ul style="list-style-type: none"> Concerned with use of the WaterNSW laydown area – guests use the walking path that goes past this site and have plans to build eco-cabins along the northern boundary. Water line current runs adjacent to WaterNSW property and was looking to connect into this – relocation of cabins may require changes to layout Wedding photos are often taken on Old Bendeela Road.
Community values	Origin (2019)	<ul style="list-style-type: none"> Construction impacts to biodiversity, heritage, water quality and scenic character.
	Origin (2022)	<ul style="list-style-type: none"> Potential impacts on flora and fauna Concerns about wombat habitats being impacted based on previous experiences with other projects Concerns about potential impact on wildlife due to trucks, noting that there is currently a large amount of wildlife killed by vehicles.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> Number of creeks flow through the Scots College property that are used for hiking and science exploration. Would be concerned if any impact on these that increases turbidity of water, etc.
Amenity impacts	Origin (2019)	<ul style="list-style-type: none"> Whether ventilation shafts will emit emissions and noise under normal circumstances or in an emergency Noise and vibration during operations due to proximity to cavern location Operational impacts on rural and scenic character of the area as a result of additional above ground infrastructure.
	Origin (2022)	<ul style="list-style-type: none"> Impacts relating to noise, traffic movement and disposal of spoil.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> Concerns about potential for noise and dust impacts from construction Noise and vibration from tunnelling activities Minimise noise of trucks running parallel to the road.
Community uses	Origin (2019)	<ul style="list-style-type: none"> Operational impacts on recreational use of Fitzroy Falls Reservoir and Lake Yarrunga.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> Water level or flow changes in the Kangaroo River Scots College use Kangaroo River for teaching, canoeing and as a drinking water supply Concerned about potential for metals to be transferred in the water through the construction process and increased turbidity of water in the river, and water level or flow changes in the river Scots College students use roads for cycling and for 24 hour rogaining events (walk to Bendeela and use public roads and night-time) Parents of Scots College students come to the site a couple of times during the six-month program Scots College have plans to expand the campus, so students are there for nine months. Have commenced a master plan process and are looking to redevelop facilities

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Issue category	Consultation source	Issues raised
		lost to bushfire. Long-term Project over next couple of years.
Housing and accommodation	Origin (2022)	<ul style="list-style-type: none"> Size of the construction workforce and where they will be accommodated Scots College lost a lot of accommodation in the bushfire and are currently having trouble finding accommodation for staff.
Other	Origin (2022)	<ul style="list-style-type: none"> Concerns about no communications tower serving the Kangaroo Valley, even though this has been lobbied for years Equity issues with water being sent to Sydney in drought periods.
	Origin/ Jacobs (2022)	<ul style="list-style-type: none"> Construction work hours.

6. Potential construction impacts

This chapter describes potential impacts on socio-economic values and conditions during the construction phase of the Project.

6.1 Property

During construction, potential property-related impacts would mainly be associated with the temporary use of land to support construction activities (e.g., temporary laydown/ works areas and sites for spoil disposal) and amenity impacts for users and occupants of surrounding properties due to construction noise and vibration, dust and traffic. Discussion about temporary disruptions to local amenity for users and occupants of surrounding properties is in **Section 6.7**.

Above ground construction activities for the Project would be on land accommodating the current power stations and hydro scheme, or land owned by WaterNSW. Construction traffic access would also use the Promised Land Trail within the Morton National Park managed by the NSW National Parks and Wildlife Services (NPWS). Use of land during construction owned or managed by WaterNSW and NSW NPWS would be subject to agreement with the relevant stakeholder. The Project would also involve tunnelling beneath privately owned land located west of the Kangaroo Valley Power Station, WaterNSW land and Morton National Park, managed by NSW NPWS. During construction, sub-surface tunnelling works would not disrupt the use of these properties at the surface.

Following construction, areas disturbed by construction activities that are not required for ongoing operation of the Project would be rehabilitated and reinstated in consultation with WaterNSW and the NSW NPWS. Further discussion about property and land use impacts is in Chapter 6 of the EIS.

6.2 Population and demography

The construction phase of the Project is not expected to change population and demography in the primary or secondary study areas.

Potential effects from construction on population and demography are typically associated with the temporary increase in the number of non-resident construction workers into nearby towns and communities. Given the proximity of the Project to large towns and urban centres, it is anticipated that where possible, workers would generally be sourced from communities within the Southern Highlands and Shoalhaven region that are within commuting distance of the Project (i.e., up to about a 45-minute to one hour drive) and any non-resident workers would mainly be for specialist construction activities.

Limited availability of accommodation in the primary study area (refer to **Section 4.3**), would mean that any specialist workers required to temporarily relocate for the Project are also likely to stay in larger towns and centres in the secondary study area and travel to the site on a daily basis.

Urban centres and larger towns within commuting distance of the Project include:

- Bowral, Moss Vale, and Mittagong in the Wingecarribee LGA, which had a combined population of 35,205 people in 2021
- Nowra and Bomaderry in the Shoalhaven LGA, which had a population of about 38,682 in 2021 (ABS, 2021).

The Project is also within about an hours' drive of major population centres in such as Kiama, Shellharbour, Albion Park, Dapto, Port Kembla and Wollongong in the adjoining Illawarra SA4 region, which collectively had a population of about 313,835 people in 2021 (ABS, 2021).

Based on the average construction workforce of approximately 250 people, any temporary influx of non-resident workers for the Project would represent a very small percentage of the population of towns and centres within commuting distance of the Project.

6.3 Housing and accommodation

As indicated in **Section 6.2**, it is anticipated that the majority of the construction workforce for the Project would be sourced from existing residents of major centres and communities in the secondary study area. However, it is expected that non-resident workers would be required for tasks requiring specialist skills and experience, with these workers needing housing and accommodation in towns and centres near the Project.

Consultation for this assessment indicated a shortage of rental accommodation in the primary study area, with existing businesses experiencing challenges securing accommodation for local staff. Visitor accommodation in the primary study area is also focussed towards higher end boutique, eco, farmstay accommodation used by short-stay, 'weekend' visitors or people attending festivals or private events such as weddings, although as indicated in **Section 4.3.2**, there are also two caravan and holiday parks in Kangaroo Valley that offer a range of cabins and caravan sites. Consequently, it is anticipated that the majority of non-resident workers would seek housing and accommodation in larger towns and centres in the secondary study area that are within commuting distance of the Project (e.g., Bowral, Moss Vale, Mittagong, Wollongong, Nowra or Bomaderry).

As outlined in **Section 4.3.1**, there was a total of 1,806 rental houses³ in communities across the secondary study area in March 2022, although this is likely to be an underestimation of the total number of rental properties with some properties possibly vacant or rented from a family member for which a rental bond is not required to be paid. Rental vacancy rates in the primary and secondary area have declined over the past 10 years, with rental vacancy rates at about 1.5% in June 2022 up a low of 0.4% in 2021.

While it is anticipated that a large proportion of the construction workforce would be sourced from existing centres in the secondary study area, this assessment considers three scenarios for resident and non-resident workers, including:

- Scenario 1: 80% resident workers (i.e., existing residents of the primary and secondary study areas); 20% non-resident workers (from outside the primary and secondary study areas and needing housing and accommodation)
- Scenario 2: 50% resident workers; 50% non-resident workers
- Scenario 3: 20% resident workers; 80% non-resident workers.

Potential demand for rental housing from the construction workforce is outlined in **Table 6-1** for each of these scenarios. Depending on the number of local workers, demand for housing for the non-resident workforce is estimated to be between 50 dwellings and 200 dwellings on average, increasing to between 74 dwellings and 296 dwellings during the six-month peak construction period. Demand for housing from the non-resident construction workforce would represent up to about 11% of rental housing based on the average workforce, and up to about 16% for the peak workforce.

While this is likely to be a conservative estimate as it is based on houses for which rental bonds have been lodged, scenarios one and two would represent a relatively high proportion of rental houses, with the average and peak demand for houses in scenario three above the number of houses generally available each quarter (i.e., 169 houses in the March quarter 2022).

Maximising the number of construction workers that currently reside in the primary and secondary study areas would help to reduce the number of non-resident workers required for the Project and subsequent demand for housing and accommodation. The use of short-term visitor accommodation such as motels, cabins, caravans, and other 'guest' accommodation would also help to ease demand for rental housing and subsequent pressure on rental prices. Between July 2002 and June 2021, the average room occupancy rate for the tourism regions covering the primary and secondary study areas was 53.3% and 59.1% in the Capital Country and South Coast Tourism regions respectively, with pre-COVID-19 rates in the order of 66%. Even assuming occupancy rates return to levels similar to 2018-19, there is likely to be some capacity within the short-term accommodation in the secondary study area to accommodate the non-resident construction workforce, with this data excluding accommodation types such as smaller hotels, caravan sites, holiday houses (i.e., rented through Airbnb).

³ For which a rental bond was held

Table 6-1. Housing demand

Scenario	Estimated demand for housing*		Percentage of rental housing stock	
	Average workforce	Peak workforce	Average workforce	Peak workforce
Scenario 1: 80% resident workers; 20% non-resident workers	50	74	2.8%	4.1%
Scenario 2: 50% resident workers; 50% non-resident workers	125	185	6.9%	10.2%
Scenario 3: 20% resident workers; 80% non-resident workers	200	296	11.1%	16.4%

Note: *assumes each non-resident construction worker occupies a separate dwelling

The use of visitor accommodation for the non-resident construction workforce would have positive impacts for owners of accommodation by providing reliable and consistent business throughout the construction phase, particularly during the off-peak tourist seasons. Conversely, use of short-term visitor accommodation by non-resident construction workers has potential to reduce the availability of some visitor accommodation types for holiday makers, particularly if the six-month peak construction phase coincides with peak tourist periods for the primary and secondary study area. Further discussion about potential impacts on tourism businesses in the primary and secondary study area from the use of visitor accommodation by the construction workforce is in **Section 6.5**.

A workforce accommodation strategy would be prepared prior to construction in consultation with Wingecarribee Shire Council and Shoalhaven City Council and other relevant stakeholders that outlines strategies to manage demand for housing and accommodation during the construction phase. A local workforce strategy would also be prepared for the Project that outlines strategies to maximise employment opportunities for existing residents in the primary and secondary study areas.

6.4 Employment and training

The construction phase of the Project would have positive impacts for employment and training through the creation of direct employment and training opportunities on the Project.

The Project is expected to directly create approximately 250 full-time equivalent (FTE) jobs over an estimated five-year construction phase, with this increasing to about 370 FTE jobs during the six-month peak construction period. The Project is also anticipated to support additional indirect jobs during construction relating to such things as trade supplies, transportation and increased economic activity from the Project. As indicated in **Section 4.2.2**, while communities in the primary study area had relatively low levels of unemployment, the unemployment rate in the secondary study area was above NSW in June 2022, with these generally trending above the NSW average since 2012. The creation of direct employment during construction would support enhanced social and economic outcomes by supporting improved incomes, skills development, and future employment opportunities for individuals.

The Project's construction phase is also expected to provide training and apprenticeship opportunities that allow people to gain skills in the construction and energy industries, helping to build local workforce capacity of communities in the primary and secondary study areas, and supporting individuals through skills development, improved incomes, and enhanced opportunities for future employment in construction.

Employment and training opportunities for the Project have potential to deliver benefits for groups such as young people, Aboriginal people, and women, helping to increase the representation of these groups in the construction and energy industries, and enhancing future employment opportunities.

6.5 Business and industry

During construction, the Project is expected to have positive impacts for local and regional businesses through the procurement of goods and services to support construction activities (e.g., equipment hire, construction materials, technical contractors, and transport services). While it is acknowledged that specialist materials and equipment would be sourced elsewhere, maximising the use of local and regional suppliers in the procurement of construction related goods and services where possible, would support improved livelihoods for business owners and employees, and opportunities for increased business growth and development. The implementation of local and regional procurement strategies such as a register of local businesses, engagement with local and regional businesses, and communication about procurement opportunities would help to maximise socio-economic benefits of the Project.

Increased trade and spending associated with purchases by construction workers would also have positive impacts for businesses in the primary study area. Businesses most likely to benefit would include those that cater for the day-to-day needs of construction workers such as eateries, hospitality businesses, and fuel retailers, with potential benefits including increased business income, and opportunities for business growth. As indicated in **Section 4.4.1**, local businesses in the primary study area that are most likely to benefit are mainly concentrated in Kangaroo Valley with a general store also located in Fitzroy Falls.

As noted in **Section 6.2**, while it is anticipated that construction workers would be sourced from major centres and communities in the Southern Highlands and Shoalhaven region, where possible, it is expected that non-resident workers would also be required for specialist activities. It is anticipated that these workers would seek to use a mix of short-term visitor accommodation and private rental accommodation in towns and communities in the primary and secondary study areas.

As previously noted, the use of visitor accommodation for the non-resident construction workforce would have positive impacts for owners of accommodation by providing reliable and consistent business throughout the construction phase, particularly during the off-peak tourist seasons. This would provide opportunities for increased income for individual accommodation providers, and possibly provide opportunities for owners of accommodation to grow their business and invest in business improvements. Conversely, demand for accommodation by non-resident workers has potential to reduce the availability of some accommodation types for holiday makers (e.g., cabins, caravan sites, holiday apartments, hotel rooms), affecting the ability of the tourism sector to meet demand from tourists and visitors. This may discourage some people from visiting the primary and secondary study areas during the construction phase due to challenges in securing accommodation, possibly resulting in flow on effects for other business that rely on accommodation providers to support their business (e.g., hospitality businesses, wedding venues, recreation-based tour operators). This is likely to have the greatest impact during peak tourist seasons and regional events (e.g., Southern Highlands Food and Wine Festival, Kangaroo Valley Folk Festival), particularly if these coincide with the six-month peak construction period.

During construction, adverse changes to business amenity may also occur for some businesses located close to construction activities or that front roads used for haulage (e.g., Moss Vale Road, Nowra Road, Sheepwash Road, Bendeela Road). Potential amenity changes are most likely to affect businesses that rely on a quieter business environment, such as visitor accommodation, cafes and restaurants, wedding and function venues, and wellness retreats. Several businesses are located at Lower Bendeela Road, Bendeela Road and Jacks Corner Road:

- Wildwood Kangaroo Valley, which is an eco-wedding and function venue, with on-site accommodation at Lower Bendeela Road. This is adjacent to Laydown Area 7 and approximately 100 m from the proposed spoil emplacement area (with the accommodation and function space located about 250 m from the emplacement area)
- Wirramina, which is visitor accommodation at Lower Bendeela Road, which is about 200 m from the spoil haulage route on the eastern side of the Bendeela Pond
- Jacks Corner Retreat, which is located approximately 500 m west of the internal haulage route on the western side of Bendeela Pond. The business hosts retreats for small groups focussing on health and wellness (e.g., yoga)
- Tullawalla, which is self-contained farmstay accommodation at Jacks Corner Road, located approximately 450 m west of Laydown/ Work Area 5
- Cedarvale Health and Lifestyle Retreat, located at Moss Vale Road about 1,700 m west of Laydown/ Works Area 1, which offers health and wellness programs of between four and 12 days with on-site accommodation

- Various businesses offering accommodation on rural properties at Bendeela Road and Old Bendeela Road, ranging from about 950 m to 3 km from Laydown/ Work Area 5.

Noise from construction and haulage activities have potential to adversely affect the peaceful amenity currently experienced by occupants of these businesses. This may result in disturbances for customers and guests and potentially diminish the experience and enjoyment of their stay. This may also influence some people's choice to stay at accommodation near the Project and look for accommodation with less potential for disruption. Above ground construction activities would generally be limited to standard construction hours. Concerns were raised during consultation for this assessment about potential impacts on wedding ceremonies held at the Wildwood Kangaroo Valley, which typically occur in the afternoon. While ceremonies held on weekends are likely to occur outside of construction hours, weddings held on Wednesday or Thursday afternoons have potential to be affected by noise from construction activities. The establishment of the laydown area adjacent to the business and haulage and placement of spoil from tunnelling activities also has potential to disrupt guests use and enjoyment of the property during their stay.

Underground construction activities would be undertaken 24 hours a day, seven days a week. While there is likely to be less airborne noise associated with these works, spoil haulage and disposal activities, workers coming and going from the construction worksites and general movement of vehicles around worksites have potential to impact on the night-time amenity, either actual or perceived, for occupants of residential uses near to the Project at Lower Bendeela Road, Jack's Corner Road and Jim Edwardes Place.

As indicated in **Section 4.7**, key roads proposed to be used for construction access include Moss Vale Road, Nowra Road, Sheepwash Road, Bendeela Road, Lower Bendeela Road and Jacks Corner Road. Increased noise from construction traffic, particularly heavy vehicles, may be noticeable for occupants of properties at Moss Vale Road and Bendeela Road, potentially impacting on the amenity of noise-sensitive businesses located along these roads such as accommodation, cafes, and restaurants. Noise impacts are likely to be transient, due to the nature of construction traffic movements, however it may cause a nuisance or disruption for some visitors and customers, adversely affecting some peoples' enjoyment and experience of the business.

Other businesses near the Project that may be affected by construction activities include recreation and tourism operators that provide kayaking and bushwalking tours along the Kangaroo River and from Bendeela Recreation Area. The laydown area and intake outlet for the Project is located on the northern bank of Kangaroo River next to the existing Bendeela Power Station. While access would be maintained to the Bendeela Recreation Area and the Kangaroo River for water-based activities, noise and dust from construction activities may temporarily diminish the enjoyment and experience of the natural environment for customers. Public access to Bendeela Recreation Area would be maintained via Lower Bendeela Road during construction, although the movement of large plant and equipment may result in some access disruptions from time to time. Where possible, any access disruptions to Lower Bendeela Road would be planned to minimise inconvenience for local businesses that use this road, with any impacts likely to be minimal.

Ongoing consultation and communication will be undertaken with affected business owners and operators during construction in accordance with the SCEP about the timing, duration, and impacts of construction activities and measures proposed to mitigate or manage potential impacts.

6.6 Social infrastructure

6.6.1 Direct impacts on social infrastructure

Construction of the Project would mainly be undertaken on WaterNSW land with direct property impacts on social infrastructure mainly limited to temporary closure to the public of the northern section of the Promised Land Trail in Morton National Park. As indicated in **Section 4.5.1**, the trail is used for mountain biking, walking, and hiking. Closure of the trail at Moss Vale Road/ Nowra Road would require mountain bikers, walkers and hikers to use alternative sites for these activities for the duration of construction. While this may cause an inconvenience for some people, several other walking and cycling tracks are located in Morton National Park at Fitzroy Falls, including Fitzroy Falls to Kangaroo Valley Cycling Route, Griffins Walking Track, and the West Rim/East Rim Walking Tracks and temporary closure of the trail is unlikely to affect individuals' participation in these activities.

6.6.2 Impacts on social infrastructure in the primary study area

During construction, impacts on social infrastructure in the primary study area would mainly be associated with adverse changes to local amenity of nature-based recreational areas near to construction works and along haulage routes due to increased noise and dust from construction activities, potentially diminishing peoples' experience and enjoyment of the natural environment. Areas most likely to experience changes to amenity include:

- Kangaroo River near to construction works for the intake outlet and construction activities within Laydown Work Area 6, possibly diminishing the enjoyment of the river environment for people who are kayaking and canoeing
- Bendeela Recreation Area, temporarily diminishing the use and enjoyment of this area by campers and day-time recreation users for activities such as camping, picnicking, swimming, fishing, and nature observation
- Morton National Park, near to construction works for the upper intake and Laydown/ Works Area 1, including people using the East Rim Walking Track located north of the construction works.

Users of these areas may be deterred from accessing these facilities for the duration of the construction phase. Numerous other campgrounds, recreation areas and walking trails are located in the Morton National Park and nearby Budderoo National Park that would provide opportunities for community members to participate in these activities (e.g., Fitzroy Falls to Kangaroo Valley Cycling Route, Griffins Walking Track and the West Rim/East Rim Walking Tracks, Toorooroo campground, Carrington Falls campground, Gambells Rest campground). Camping sites are also available at the caravan and holiday parks in Kangaroo Valley, although it is recognised that these do not offer the natural setting to the extent of Bendeela Recreation Area.

Public access to the Bendeela Recreation Area from Lower Bendeela Road would be maintained during the Project's construction phase, although movement of large plant and equipment may result in some access disruptions from time to time. As indicated in **Section 4.5.1**, the recreation area is a popular location for overnight campers, particularly during holiday periods such as long weekends, new year period, and local events and festivals, with space to accommodate up to 1,000 people nightly. The camping area is also regularly used by large groups including mid-week by school groups, and on weekends by Scouts/ Rovers groups, community groups and for events and festivals. Temporary access disruptions to Lower Bendeela Road are not expected to impact on the use of the Bendeela Recreation Area by campers or day-visitors, with any access disruptions to Lower Bendeela Road planned to avoid peak use times for the recreation area, where possible. Ongoing notification of any access disruptions and consultation with WaterNSW as the managers of the recreation area will assist in avoiding or minimising disruptions to campers and on regular large group bookings (e.g., school groups, community groups, Scout/ Rover groups, festivals) from construction activities for the Project.

Construction activities at the Bendeela Power Station and Kangaroo Valley Power Station also has potential to result in temporary disturbances for students and staff of Scots College Glengarry Campus. As noted in **Section 4.5.1**, the campus is used for six-month outdoor education programs for Year 9 students at Scots College, with involves a mix of academic lessons and recreation-based learning. The campus has about 130 students and 35-40 staff members on site at any one time over about 40 weeks. Noise from construction activities may impact on outdoor teaching classes that are carried out in areas of the campus closest to the Project. Consultation for this assessment also indicated that some activities are conducted off-site, including cycling trips on local roads, and 24-hour rogaining events that involve students walking to Bendeela, using public roads at night-time. Use of Bendeela Road, Jacks Corner Road, and Lower Bendeela Road, for construction access, and construction activities at Kangaroo Valley Power Station and Bendeela Power Station, have potential to introduce road safety risks for students. Engagement with the college about the timing of activities such as the 24-hour rogaining event and implementation of traffic management measures near to construction works will be important in managing potential risks students and disruption to the college's activities. Consultation with Scots College for this assessment indicated that Lower Bendeela Road west of the Bendeela Power Station was used as an emergency access for the Glengarry Campus, or as an alternate access during temporary closures of their access at Jacks Corner Road (e.g., due to a fallen tree over the roadway). Any closure of Lower Bendeela Road in the vicinity of the Laydown/ Works Area 6 has potential to impact on the use of this road by the college as an emergency access. Engagement with the college would be undertaken prior to any access changes through the works area to minimise the potential for safety risks or disruptions for students and staff during an emergency or closure of the college's main access.

Increased construction traffic and associated changes to road traffic noise may temporarily diminish local amenity for users of social infrastructure near to Moss Vale Road, Nowra Road and Sheepwash Road. This may impact on the use of these facilities for some people, particularly those that may be more sensitive to changes in noise levels (e.g., schools and churches). Increased construction traffic, including heavy vehicles, may also impact on perceptions of road safety, particularly for facilities that attract higher numbers of children, people with mobility challenges (e.g., elderly, people with disability), and pedestrians more generally.

Ongoing consultation and communication will be undertaken with managers of social infrastructure near the Project during construction in accordance with the SCEP about the timing, duration, and impacts of construction activities and measures proposed to mitigate or manage potential impacts.

6.6.3 Impacts on social infrastructure in the secondary study area

Impacts for social infrastructure in the secondary study area such as regional level education, health and medical, sport and recreation facilities are generally expected to be minor, if any, due to the size of the workforce relative to the existing population in the secondary study area; current level of resources currently involved in larger towns and major centres such as Moss Vale, Nowra, and Bombaderry; and proximity of the Project to the greater Sydney area.

The construction phase also has potential to increase demand on emergency services in the primary and secondary study areas in response to possible construction related safety events, particularly in the event of major incidents. Emergency services in the secondary study area are likely to be familiar with responding to events relating to major incidents given the types of industries that currently operate in the secondary study area and surrounding region. Consultation with emergency service providers (e.g., NSW Police, NSW Fire and Rescue Services, NSW Ambulance) prior to and during construction, and during the preparation of emergency response procedures would assist in managing potential impacts.

6.7 Community values

During construction, potential impacts on community values in the primary study area would mainly be associated with:

- Clearing of vegetation for construction laydown areas and spoil emplacement area, impacting on community values relating to natural environment
- Potential for impacts on wildlife (e.g., wombats) due to construction traffic, vegetation clearing, and presence of construction works
- Noise, dust, vibration, and traffic associated with construction activities, resulting in reduced amenity for users of nearby residential uses, visitor accommodation, and community uses, and impacting on community perceptions of safety
- Presence of construction infrastructure, resulting in changes to the landscape and visual character of the local area around the Project, including Bendeela Recreation Area and along Bendeela Road.

Vegetation clearing would be required for temporary construction infrastructure such as the laydown areas and spoil emplacement area and permanent infrastructure such as the pipeline, surge tank and operations compound. The Project has been designed to minimise the clearing of native vegetation through the use of previously disturbed land. As indicated in **Section 4.6**, the biodiversity, and natural environment are valued by communities in the primary study area and the removal of native vegetation for the Project is likely to be a concern for community members.

The area surrounding the Project is a rural and natural environment, that is valued for its peacefulness and tranquillity with uses including natural areas used by the public, community uses, residential uses on rural properties, visitor accommodation and rural landscapes. Noise and dust from construction activities have potential to result in temporary impacts on the rural and natural amenity for occupants of residential uses near the Project and users of community uses such as Glengarry Campus and recreation areas. This may affect some peoples' use and enjoyment of these properties and appreciation of their surroundings. Properties most likely to experience the greatest impacts include residential uses and tourism businesses at Lower Bendeela Road, Jacks Corner Road and Bendeela Road near to works at Bendeela Power Station, Kangaroo Valley Power Station, and spoil emplacement. Construction activities at Laydown Area 7 also have potential to affect the amenity of users of the adjoining Wildwood property (refer to **Section 6.5** for discussion on potential business impacts).

Underground construction activities would be undertaken 24 hours a day, seven days a week. While there is likely to be less airborne noise associated with these works, spoil haulage and disposal, workers coming and going from the construction worksites and general movement of vehicles around worksites have potential to impact on the night-time amenity, either actual or perceived, for occupants of residential uses near to the Project. Vibration from tunnel construction may also be noticeable for occupants of properties at Jim Edwardes Place. While unlikely, noise from underground works have potential to disrupt sleep for some occupants of residential uses closest to the Project. Sleep disturbances occurring over extended periods may cause increased fatigue for some people, possibly leading to reduced mental, physical, and emotional health and wellbeing of some individuals.

Adverse changes to local amenity may also occur for some occupants of residential, community and commercial uses fronting roads used for haulage (e.g., Moss Vale Road, Nowra Road, Sheepwash Road, Bendeela Road). It is anticipated that most haulage activities would occur during daytime hours, helping to minimise potential impacts on night-time amenity and possible sleep disturbance, although there is potential that some haulage activities (e.g., over size over mass deliveries) would need to be carried out outside of standard daytime construction hours. Noise from construction traffic may be noticeable at properties along Moss Vale Road during the daytime and at properties along Bendeela Road during the daytime and night-time. Increased road traffic noise during the day time has potential to disrupt some peoples' enjoyment of properties along these roads. Noise from night-time construction traffic has potential to disrupt sleeping patterns for some occupants of residential uses along Bendeela Road due to the quieter rural amenity in the primary study area. It is expected that any potential for sleep disturbance from haulage activities would be transient and would not result in any extended periods of disruption. Consequently, the potential for individuals to experience increased fatigue or diminishment of their mental, physical, or emotional health and wellbeing due to night-time haulage activities would be minor, if any.

Potential changes to road safety risks or community perceptions of road safety are described in **Section 6.8**.

6.8 Access and connectivity

Construction of the Project would generate construction traffic associated with the haulage of plant and materials, spoil from underground works, and transport of construction workers. Access would be maintained to private property near the Project during construction, although construction works and possible temporary access changes at Jacks Corner Road and Lower Bendeela Road may result in short-term disruptions for people accessing these properties.

Construction activities for the Project would temporarily impact on access to public land along the Promised Land Trail within the Morton National Park. Further discussion about potential impacts for users of the trail is in **Section 6.6**.

Increased use of local and regional roads for construction including by heavy vehicles and for over-size, over-mass deliveries, may result in temporary delays and disruptions for local residents, visitors, commercial traffic, and farmers of agricultural properties in the primary study area. Increased construction traffic may also impact on community perceptions of road safety, particularly in locations that have higher levels of pedestrians, such as near schools (e.g., Kangaroo Valley Public School at Moss Vale Road, and Avoca School at Sheepwash Road), Kangaroo Valley township, Fitzroy Falls in the vicinity of the recreation area, visitor centre and Fitzroy Falls Lookout. The implementation of traffic management measures would assist in minimising any traffic delays and disruptions and road safety risks along haulage routes.

It is anticipated that construction workers for the Project would be transported to site on a daily basis by shuttle bus from towns and centres such as Moss Vale, Nowra, and Bomaderry. The use of shuttle buses for the transport of construction workers would reduce the number of private vehicles associated with the Project using local and regional roads, helping to minimise the impacts of the Project for other road users.

Access for emergency vehicles would be maintained near to construction works, helping to minimise any potential disruptions for these services. Consultation with Scots College for this assessment indicated that Lower Bendeela Road west of the Bendeela Power Station was used as an emergency access for the Glengarry Campus, or as an alternate access during temporary closures of their access at Jacks Corner Road. Engagement with the college would be undertaken prior to any temporary closure of Lower Bendeela Road through the works area to ensure emergency access is maintained and any disruptions for students and staff are minimised, including identifying any alternative access routes if required.

As indicated in **Section 4.7**, Moss Vale Road, Nowra Road and Sheepwash Road are used by local bus services, including those that provide transport for students to Kangaroo Valley Public School and Avoca Primary School in the primary study area. During construction, any potential disruptions to these bus services and the operation of the bus stops within the primary study area are expected to be negligible.

Traffic management measures will be detailed in a Traffic Management Plan to maintain access and road safety and minimise disruptions for road users, including local communities, tourists, commercial traffic, and farmers. This would include engagement and communication with local councils, emergency services, local communities, visitors, and road users in accordance with the SCEP about potential impacts on local and regional roads and proposed mitigation measures.

6.9 Evaluation of significance

Table 6-2 provides a summary of potential socio-economic impacts of the construction phase, along with an evaluation of the likely level of significance. The evaluation of significance is based on the evaluation framework outlined in **Section 3.3.2** and is based on the implementation of the mitigation measures outlined in **Chapter 9**.

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Table 6-2. Evaluation of significance – construction impacts

Impact		Without mitigation			Mitigation measure	With mitigation		
		Likelihood	Magnitude	Significance		Likelihood	Magnitude	Significance
Property	Temporary disruptions to the use or access to land owned by WaterNSW and NPWS used for construction.	2	A	Low	▪ No mitigation measures required.	2	A	Low
Population and demography	Temporary changes to population and demography due to influx of non-local construction workers in the secondary study area.	5	A	Low	▪ No mitigation measures required.	5	A	Low
Housing and accommodation	Reduced rental housing affordability and increased housing stress for low- and fixed-income earners due to demand for housing by construction workers.	3	B	Med	▪ Develop and implement workforce accommodation strategy.	4	B	Low
Housing and accommodation	Reduced availability of visitor accommodation for tourists due to increased demand by construction workers.	3	C	Med	▪ Maximise the use of local workers during construction ▪ Develop and implement workforce accommodation strategy.	4	B	Low
Employment and training	Improved incomes and skills developments for individuals employed for the Project.	2	C	High	▪ Develop and implement local workforce strategy to maximise employment opportunities for residents in the study areas.	1	C	High
Employment and training	Skills development relating to training and apprenticeship opportunities on the Project.	2	C	High	▪ Develop and implement local workforce strategy, which includes strategies relating to training and apprenticeships for Aboriginal people, young people, and women ▪ Work with local contractors and relevant stakeholders (e.g., Aboriginal groups,	1	C	High

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Impact		Without mitigation			Mitigation measure	With mitigation		
					youth, and women organisations) to identify and develop training and education opportunities.			
Business and industry	Direct procurement of local and regional suppliers for the Project, leading to improved business income and opportunities for business growth and development.	2	D	High	<ul style="list-style-type: none"> Develop and implement local procurement strategy that includes measures for engaging with local business and contractors about potential opportunities. 	1	C	High
Business and industry	Increased trade and spending on purchases by the construction workforce leading to increased business income and opportunities for business growth and development.	3	B	Med	<ul style="list-style-type: none"> Promote and encourage the use of local businesses amongst workers. 	3	C	Med
Business and industry	Increased income for individual accommodation providers, leading to opportunities for owners of accommodation to grow their business and invest in business improvements.	2	B	Med	<ul style="list-style-type: none"> Implement workforce accommodation strategy that includes the use of local visitor accommodation. 	2	C	High
Business and industry	Decline in trade for tourism related businesses due to visitors facing challenges securing accommodation in the primary and secondary study area.	3	C	High	<ul style="list-style-type: none"> Encourage workers to stay in accommodation in several towns and centres in the secondary study area to minimise potential impacts on any one location. 	4	B	Low
Business and industry	Amenity changes for businesses immediately surrounding the Project construction, discouraging people from using local accommodation and wedding businesses.	2	D	High	<ul style="list-style-type: none"> Engage with local business owners about the timing and duration of construction activities. Implementation of environmental management measures (e.g., noise, dust, traffic management). 	3	D	Med
Business and industry	Reduced business amenity due to increased road traffic noise on haulage routes.	3	B	Med	<ul style="list-style-type: none"> Communication with local businesses about the timing and duration of major haulage activities 	3	A	Low

Socio-economic impact assessment

Impact		Without mitigation			Mitigation measure	With mitigation		
					<ul style="list-style-type: none"> Implement traffic management measures and environmental management measures (e.g., road traffic noise, driver behaviour). 			
Business and industry	Disruptions to businesses that use Lower Bendeela Road and Bendeela Recreation Area due to access disruptions at Lower Bendeela Road.	4	A	Low	<ul style="list-style-type: none"> Provide advance notice to road users about timing of any access disruptions. 	5	A	Low
Social infrastructure	Disruptions to recreational users due to the loss of access to Promised Land Trail.	2	C	High	<ul style="list-style-type: none"> Minimise the duration of the closure as far as practicable Provide advanced notice of closure period to allow users to seek alternative facilities Provide information on alternative facilities available locally. 	2	A	Low
Social infrastructure	Changes to local amenity of nature-based recreation areas, possibly deterring people from accessing these facilities.	3	C	Med	<ul style="list-style-type: none"> Implementation of environmental management measures (e.g., noise, dust, traffic management) Where possible, avoid noise intensive activities during peak use periods (e.g., weekends, holiday periods). 	3	B	Med
Social infrastructure	Changes to use of Bendeela Recreation Area due to construction traffic use of Lower Bendeela Road.	3	B	Med	<ul style="list-style-type: none"> Maintain public access to Lower Bendeela Road Provide advance notice about the timing of any access disruptions associated with the movement of large plant and equipment 	4	B	Low
Social infrastructure	Disruption to outdoor teaching classes at Glengarry Campus.	3	C	Med	<ul style="list-style-type: none"> Implementation of environmental management measures (e.g., noise, dust) Engagement with managers of Scots College about the timing and duration of 	4	B	Low

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Impact		Without mitigation			Mitigation measure	With mitigation		
					construction activities and potential impacts.			
Social infrastructure	Increased road safety risks for students of Glengarry Campus during activities that use local roads.	3	C	Med	<ul style="list-style-type: none"> Implementation of traffic management measures Engagement with managers of Scots College about the timing and duration of construction activities and potential impacts. 	4	B	Low
Social infrastructure	Increased construction traffic on haulage routes impacted on perceptions of safety for users of social infrastructure.	3	B	Med	<ul style="list-style-type: none"> Implementation of traffic management measures Communication with local and regional communities about any periods of increased haulage. 	4	B	Low
Social infrastructure	Increased demand for social infrastructure in the secondary study area due to influx of non-resident construction workers.	3	B	Med	<ul style="list-style-type: none"> Maximise the use of local workers Encourage non-resident workers to stay in several towns and centres in the secondary study area. 	4	B	Low
Social infrastructure	Increased demand for emergency services in response to possible construction related safety incidents.	3	B	Med	<ul style="list-style-type: none"> Implement worker health and safety measures on site Engagement with local emergency service providers in the preparation and planning of emergency response procedures. 	4	B	Low
Community values	Impact on community values relating to the environment due to clearing of native vegetation	3	B	Med	<ul style="list-style-type: none"> Minimise extent of native vegetation clearing, where possible 	3	A	Low
Community values	Disruption to local amenity for users of properties near to construction works due to increased construction noise, dust, and traffic.	2	D	High	<ul style="list-style-type: none"> Implementation of environmental management measures (e.g., noise, dust, traffic management) Early and ongoing communication with local residents closest to construction activities. 	3	C	Med

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Impact		Without mitigation			Mitigation measure	With mitigation		
Community values	Possible sleep disturbance due to 24 hour works for tunnelling, resulting in health and wellbeing impacts for individuals.	3	C	Med	<ul style="list-style-type: none"> Implementation of environmental management measures as outlined in the Noise and Vibration Impact Assessment Early and ongoing communication with local residents closest to construction activities. 	4	A	Low
Community values	Temporary amenity impacts for residents and businesses along Moss Vale Road, Bendeela Road and Sheepwash Road due to increased traffic noise.	3	B	Med	<ul style="list-style-type: none"> Communication with local communities about the timing and duration of major haulage activities Implement traffic management measures and environmental management measures (e.g., road traffic noise, driver behaviour). 	3	A	Low
Community values	Possible sleep disturbance due to night-time haulage activities on local and regional road network.	3	B	Med	<ul style="list-style-type: none"> Communication with local communities about the timing and duration of major night-time haulage activities that have potential to cause sleep disturbance Implementation of environmental and traffic management measures. 	4	A	Low
Access and connectivity	Temporary traffic disruptions and road safety risks from use of local and regional roads by construction traffic.	3	B	Med	<ul style="list-style-type: none"> Implementation of traffic management measures Early and ongoing engagement and communication with communities and road users in the primary and secondary study areas about potential construction traffic impacts Implementation of local road and intersection upgrades used for construction access. 	4	A	Low

7. Potential operational impacts

7.1 Property

Potential impacts on public and private property would mainly be associated with direct impacts from the siting of Project infrastructure, including both above ground and sub-surface infrastructure. As with infrastructure for the existing pumped hydro scheme, new above ground infrastructure for the Project would be located on land owned by WaterNSW. Use of this land for the Project would be subject to agreement between Origin and WaterNSW.

Sub-surface works, including the power station cavern; tailrace tunnel connecting the power station cavern to the new outlet/intake structure at Lake Yarrunga; and access tunnel connecting from power station cavern to Lower Bendeela Road, would be beneath:

- Land owned by WaterNSW and used for water supply
- Land within Morton National Park managed by NSW NPWS
- Crown Land
- Privately owned rural and rural residential properties located either side of Jacks Corner Road, west of Kangaroo Valley Power Station.

The tunnels and power station cavern would be located at depths of up to 450m below ground, with the tunnel under private property between 85m to 100m below ground. The location of the tunnels under private and public property would not impact on the ongoing use of these properties. Origin will continue to engage with private property owners directly affected by the sub-surface works about the Project and potential implications.

Operation of the Project is also not expected to result in changes to property access or local amenity for nearby properties, with operational activities similar to those in place for the existing pumped hydro scheme.

7.2 Population and demography

Operation of the Project is not expected to change population and demography in the primary or secondary study areas.

Once operational, ongoing operation and maintenance activities for the Project would require up to three FTE workers. It is anticipated that these workers would either be sourced from existing residents living in the secondary study area, or that any non-local workers would choose to live in larger towns or centres in the secondary study area. Even assuming that people move to the primary study area for the Project, the operational workforce (and their families) would represent less than one per cent of the primary study area's population in 2021.

7.3 Housing and accommodation

During operation, potential impacts of on housing and accommodation in the primary study area (e.g., decreased availability of rental housing and loss of affordable rental housing for fixed- and low- income households) associated with increased demand for housing by the operational workforce are expected to be negligible. As indicated in **Section 7.2**, operational activities for the Project would require up to three FTE workers, with these anticipated to live in the secondary study area, either currently or following employment on the Project.

7.4 Employment and training

The Project would have positive impacts on employment and training through the employment of local workers to support ongoing operation and maintenance activities. While community level benefits would be minimal due to the size of the operational workforce, operational employment would provide opportunities to enhance social and economic outcomes for individuals over the long-term through ongoing income, and skills development in the energy sector.

7.5 Business and industry

Once operational, the Project would create approximately 235MW of additional capacity, resulting in -long term benefits for business and industry customers through improved security and continuity of energy supply to NSW and the National Energy Market during periods of maximum demand. This may support cost savings for businesses and reduce potential energy constraints for businesses, helping to increase business confidence and supporting business investment and growth.

Operation of the Project would be similar to the existing pumped hydro scheme. Consequently, any impacts on local business and industry in the primary study area are expected to be minimal. The existing pumped hydro scheme currently supports opportunities for businesses in the primary and secondary study area including contractors and suppliers that support ongoing operation and maintenance activities. These opportunities would continue following operation of the Project.

7.6 Social infrastructure

The Project would operate under similar conditions to the existing pumped hydro scheme and any impacts on social infrastructure near the Project are expected to be minimal.

Concerns were raised during consultation for the Project about potential for the Project to impact on water-based recreation uses at the Fitzroy Falls Reservoir such as sailing. The Project would use Origin's current water allocation and would not require any additional water allocation for the Project's operation. The concurrent operation of the Project with the existing scheme would result in the current water allocation being drawn and returned over shorter cycles. While this would result in an increase in the rate that the water levels change in Fitzroy Falls Reservoir and Lake Yarrunga, it would not change the maximum or minimum water levels. Consequently, any impacts on the use of Fitzroy Falls Reservoir for activities such as sailing are expected to be minimal.

Land based activities associated with Fitzroy Falls Reservoir would not be affected by the operation of the Project.

7.7 Community values

Operation of the Project is not expected to result in changes to community values in the primary or secondary study area relating to matters such as local character and amenity, community health and safety and cohesion, with operational activities similar to those in place for the existing pumped hydro scheme.

The Project would introduce new above ground infrastructure such as the approximately 2.5km surface pipeline used to convey water from the end of the Fitzroy Canal to the vertical shaft, a surge tank and operations compound. While the siting of these facilities adjacent or near to infrastructure for the existing scheme would help to minimise the level of impact, there is potential for adverse impacts on values relating to the environment or visual values, particularly in locations where clearing of vegetation is required to support construction of the infrastructure. It is likely that the level of impact would diminish over time as vegetation within the construction areas become established and views of the infrastructure are screened.

7.8 Access and connectivity

Operational activities that would generate traffic would mainly be associated with the carrying out of operation and maintenance activities, and transport of workers to site. These activities are not expected to have any day-to-day impacts on local access and connectivity in the primary or secondary study area, including community perceptions of road safety.

7.9 Evaluation of significance

Table 7-1 provides a summary of potential socio-economic impacts of the construction phase, along with an evaluation of the likely level of significance. The evaluation of significance is based on the evaluation framework outlined in **Section 3.3.2** and is based on the implementation of the mitigation measures outlined in **Chapter 9**.

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Table 7-1. Evaluation of significance – operational impacts

Impact category	Description of impact	Without mitigation			Mitigation measure	With mitigation		
		Likelihood	Magnitude	Significance		Likelihood	Magnitude	Significance
Property	Changes to the use of Water NSW land from the siting of Project infrastructure.	4	B	Low	▪ No mitigation measures required.	4	B	Low
Property	Changes to the use of private property from the siting of sub-surface infrastructure.	5	B	Low	▪ No mitigation measures required.	5	B	Low
Property	Changes to the use of public land from the siting of sub-surface infrastructure.	5	A	Low	▪ No mitigation measures required.	5	A	Low
Property	Disruptions for property owners due to changes to property access.	4	A	Low	▪ No mitigation measures required.	4	A	Low
Population and demography	Changes to population and demography due to relocation of non-resident workers to the primary or secondary study area.	5	A	Low	▪ No mitigation measures required.	5	A	Low
Housing and accommodation	Potential impacts on housing and accommodation due to operational workforce.	4	A	Low	▪ Encourage workers to look for rental accommodation in larger centres and towns in the secondary study area.	5	A	Low
Employment and training	Enhanced social and economic outcomes of individuals employed for operation (e.g., ongoing income, skills development).	3	A	Low	<ul style="list-style-type: none"> ▪ Develop and implement local workforce strategy to maximise employment opportunities ▪ Work with relevant stakeholders to implement training and education relevant to the Project operation. 	3	A	Low

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Impact category	Description of impact	Without mitigation			Mitigation measure	With mitigation		
Business and industry	Opportunities for participation of local businesses supporting improved incomes and opportunities for business development.	3	B	Med	▪ Development and implement local procurement strategy aimed at increasing participation of local and regional suppliers in operation and maintenance activities.	2	C	High
	Improved security and continuity of energy supply for business customers, supporting cost savings for businesses, reduce energy constraints and support business investment and growth.	2	C	High	▪ No mitigation measures required.	2	C	High
	Changes to local business environment due to operation of the Project.	5	A	Low	▪ No mitigation measures required.	5	A	Low
Social infrastructure	Effects on activities of recreational users of Fitzroy Falls Reservoir (e.g., sailing competitions, fishing) due to increased rate of change for water levels.	4	B	Low	▪ Engage with the Southern Highlands Sailing Club about water level changes and continue to monitor potential for impacts.	4	A	Low
Community values	Changes to local character and amenity, community health and safety, and community cohesion from operation of the Project.	5	A	Low	▪ No mitigation measures required.	5	A	Low
	Diminished community values relating to environment and visual amenity due to new above ground infrastructure.	3	C	Med	▪ Minimise extent of vegetation clearing during construction. ▪ Progressive reinstatement and rehabilitation of areas disturbed by construction and not required for ongoing construction.	3	B	Med
Access and connectivity	Changes to local access and connectivity and community perceptions of road safety due to traffic generated by operation and maintenance activities.	5	A	Low	▪ No mitigation measures required.	5	A	Low

8. Cumulative impacts

Cumulative impacts have the potential to occur when impacts of a Project interact or overlap with impacts of other projects either due to their temporal relationship (i.e., occurring before, after or at the same time as the Project), or spatial relationship (e.g., occurring near the Project). Cumulative impacts (positive or negative) can result in actions that, individually may be minor, but collectively could result in considerable changes to social and economic conditions, or that individually may have positive socio-economic impacts, but collectively could result in negative socio-economic impacts.

8.1 Legislative and policy context

The Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021) has been used to inform this assessment. The guidelines indicate the following future projects should be considered in the cumulative impact assessment:

- Changes to existing projects (expansions, modifications, closure)
- Approved projects (approved but construction has not commenced)
- Projects under assessment (application of the project has been exhibited and is currently under assessment)
- Related development (development that is required for the Project but subject to separate development).

8.2 Assessment methodology

The assessment methodology for the assessment of cumulative socio-economic impacts of the Project involved:

- Identification of projects (which have publicly available information) that could be considered for cumulative impacts, using the following initial criteria:
 - Major projects located in the same LGAs as the Project, which may result in social and economic impacts
 - Other energy projects, including wind, solar and battery
 - Local road or infrastructure projects published on the relevant Council website
 - Transport projects published on the TfNSW, Sydney Trains, Australian Rail Track Corporation website or other relevant government agency websites
- Application of detailed screening criteria to determine which projects should be taken forward to the cumulative impact assessment
- Identification of projects that would be carried through to the cumulative impact assessment.

The assessment methodology is detailed in the following sections.

8.3 Screening criteria

An initial list of projects was developed using publicly available information. Following the identification of the initial list, four screening criteria shown in **Table 8-1** were applied to identify whether a project should be assessed for cumulative impacts. Several triggers were developed for each screening criteria to objectively determine whether a project could potentially cause a cumulative impact with the Project and should be considered in the cumulative impact assessment.

Table 8-1. Screening criteria for cumulative impact assessment

Screening criteria	Triggers
Location	<ul style="list-style-type: none"> ▪ Direct overlap – construction footprints of a project intersect with this proposal ▪ In the area – construction footprints are adjacent or in close proximity to this proposal.
Timeframe	<ul style="list-style-type: none"> ▪ Concurrent construction program with the proposal ▪ Consecutive construction program with the program.
Status	<ul style="list-style-type: none"> ▪ Changes to existing projects (expansions, modifications, closure) ▪ Approved projects (approved but construction has not commenced) ▪ Projects under assessment (application of the project has been exhibited and is currently under assessment) ▪ Related development (development that is required for the Project but subject to separate development).
Scale	<ul style="list-style-type: none"> ▪ A project was considered relevant where it is a large-scale major development or infrastructure project that could cause cumulative impacts with the proposal.

8.4 Identification of projects

Table 8-2 describes the projects that met at least one of the triggers in each of the four screening criteria and that have been included in the cumulative impact assessment.

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Table 8-2. Projects considered in the cumulative impact assessment

Project	Brief project description	Potential cumulative impacts
Shoalhaven Hospital Redevelopment (SSD-35999468)	Proposed construction of a new hospital building and ancillary works, including demolition of existing structures within the footprint of the new building. Construction is due to commence in early 2023 with commencement of operation planned for mid-2024.	The project is located in the secondary study area identified in the socio-economic impact assessment for the Project. Details of the construction workforce are not available. There is potential for overlap of construction timeframes, resulting in increased competition for local construction workers and contractors, and demand for accommodation for non-resident workers.
Nowra Biogas Project (SSD-26264096)	Construction and operation a large-scale renewable energy biogas power plant to process up to 170,000 tonnes (t) per year of waste to produce electricity. The project would create employment for up to 50 people during the peak construction period.	The project is located in the secondary study area for the Project. Construction is planned to commence in 2022 and take 18 months to complete, although the EIS is being prepared and this timeframe may be deferred. There is potential for overlap of the construction timeframes resulting in increased competition for local construction workers and contractors, and demand for accommodation for non-resident workers.
Shoalhaven Starches Mod 22 – Beverage Grade Ethanol Plant Stage 3 (MP06_0228-Mod-22)	Proposed expansion to the Beverage Grade Ethanol Plant including proposed increased production capacity to 450 ML of Ethanol, new distillery columns and associated plant infrastructure. The expansion will lead to double the current flour being transported to site.	The project is located in the secondary study area identified in the socio-economic impact assessment for the Project. Construction details including timing and size of the construction workforce are not publicly available. Depending on construction timing, there is potential for increased competition for local construction workers and contractors.
Shoalhaven Starches Modification 25 Rail Line Extension & Addition to Product Dryers	Extension of existing rail line by 1,280 m including an 850 m train reverse loop and 180 m rail maintenance spur; and the addition of a roof baghouse to Product Dryer 3 & 4.	The project is located in the secondary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available to inform an assessment of potential cumulative socio-economic impacts.
Dendrobium Mine Extension (SSI-33143123)	Proposed extension of mining within Area 5 and extension of the life of Dendrobium Mine until 2041 Area 5 is located in the Wingecarribee LGA, about 40 km north of the project area. The mine extension would involve extraction of coal from the Bulli Seam un the proposed Area 5, with an increase in workforce anticipated during construction and operation.	The project is outside the primary or secondary study area identified in the socio-economic impact assessment for the Project. While the project is partly within the Wingecarribee LGA, the study area for the project social impact assessment refers to suburbs within the Wollongong LGA only (Holm, undated). Potential cumulative social impacts with this project are expected to be minor, if any.
Moss Vale Plastics Recycling Facility (SSD-9409987)	Plasrefine Recycling Pty Ltd has proposed to construct and operate a plastics recycling and reprocessing facility at Beaconsfield Road, Moss Vale. Construction and	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Construction of the project is planned to commence in 2022 and take about 12 months

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Project	Brief project description	Potential cumulative impacts
	commissioning of the facility is expected to take approximately 15 months with operation commencing shortly after commissioning. The construction workforce is anticipated to be up to 200 people across the entire space of construction, with a peak of up to 30 people.	to construct, although the EIS is yet to be approved. There is potential for overlap of the construction timeframes resulting in increased competition for local construction workers and contractors, and demand for accommodation for non-resident workers.
Berrima Cement Works Solid Waste Derived Fuels & Delivery Variation Project (DA 401-11-2002-I)	Boral Ltd is seeking approval to increase the waste consumption, storage, and operational capabilities of the existing Berrima Cement Works facility. Approval of the modification would increase the number of truck deliveries and delivery times to the facility. The Cement Works facility is located at New Berrima in the Wingecarribee LGA. The project would have a construction workforce of about 55 people.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Review of available information for the project, suggests that the road connection would take approximately 18 weeks to construct, with construction of the sheds also anticipated to take 18 weeks (Boral Limited, 2021). The potential for overlap with the project is unclear. Depending on construction timing, there is potential for increased competition for local construction workers and contractors, and demand for worker accommodation.
Sutton Forest Sand Quarry	Proposed sand quarry which seeks to extract up to 1 million t of friable sandstone per year for up to 30 years.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available about the construction workforce and timing to inform an assessment of potential cumulative socio-economic impacts.
Moss Vale Road Urban Release Area	The Moss Vale Road Urban Release Area is a regionally significant residential development located between Bomaderry and Cambewarra village. The project includes two areas known as Moss Vale Road North and Moss Vale Road South. Once completed, the two urban release areas are currently project to provide 3,400 residential lots with a population of about 5,850 residents.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. There is potential for overlap of construction timeframes, which may increase competition for local construction workers and contractors.
Shoalhaven Community and Recreational Precinct – Artie Smith Oval Development	Upgrade of the oval, located about 15 km southeast of the project area. Construction commenced in October 2021 and is due to be completed in the first half of 2023.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Construction of the oval is expected to be completed before the commencement of construction on the project and cumulative socio-economic impacts are not expected.
Shoalhaven Community and Recreational Precinct – Shoalhaven Indoor Sports Centre Extension	Extension of the sports centre including the refurbishment of the Bomaderry Basketball Stadium.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available about the timing of construction to inform an assessment of potential cumulative socio-economic impacts.

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Project	Brief project description	Potential cumulative impacts
Shoalhaven Community and Recreational Precinct – Northern Section – Bomaderry Sporting Complex	Redevelopment of the area to the north of Cambewarra Road Bomaderry Sporting Complex, and provide new facilities including a new Community Hub, new pools, development of an athletics track and two senior rugby league fields with associated change rooms and amenities. Construction of the new facilities is currently planned to commence in 2024.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. There is potential for overlap of construction timeframes, which may increase competition for local construction workers and contractors.
Moss Vale Sewage Treatment Plant Upgrade	Proposed upgrade to provide treatment capacity to meet current and future population needs within the catchment, located about 18 km northwest of the project area. The design would be completed in 2022 with progress to tendering for construction to be determined.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available about the project timing to inform an assessment of potential cumulative socio-economic impacts.
Moss Vale Bypass	The project would provide a bypass of Moss Vale. Council is currently completing the concept design to inform the construction phase and detailed cost estimates.	The project is in the secondary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available about the project timing to inform an assessment of potential cumulative socio-economic impacts.
Ritters Creek, Meryla Road, Meryla - Bridge Replacement	Replacement of the single span timber bridge on Meryla Road with a new crossing, widening and other works such as bank stabilisation.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. The bridge replacement is away project potential changes to amenity, local access, or impact on social infrastructure would be localised. The construction workforce is also anticipated to be relatively minor. Consequently, cumulative socio-economic impacts are not anticipated.
Fitzroy Falls RFS	A new shed for the Fitzroy Falls RFS will be built at the corner of Myra Vale Road and Nowra Road, to replace the current RFS shed at Avoca. The Development Application is currently being reviewed.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. Potential changes to amenity from construction activities for the shed would be localised and are not expected to change the level of impacts relating to the project. The construction workforce is also expected to be minor. Consequently, cumulative socio-economic impacts are not expected.
Bowral and District Hospital Redevelopment Stage 2	Proposed redevelopment of the Bowral & District Hospital to expand clinical services. The project is expected to generate 225 jobs at the peak construction phase. The EIS for the project has been approved.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. The project is anticipated to take 24 months to construct. There is potential for overlap of construction timeframes, resulting in increased

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Project	Brief project description	Potential cumulative impacts
		competition for local construction workers and contractors, and possible demand for accommodation for non-resident workers.
Bay and Basin Leisure Centre Redevelopment	Redevelop the existing Bay and Basin Leisure Centre and Vincentia Oval to enhance the current facilities, including upgrading and extending the existing centre, sporting precinct. The project is currently in the design phase.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. Insufficient details are available about the project timing to inform an assessment of potential cumulative socio-economic impacts.
East Nowra Sub Arterial Road	Proposed to connect Greenwell Point Road (in the vicinity of Old Southern Road) to the Princes Highway, at North Street and Junction Street. The project would provide an alternative connection to the highway from the East Nowra, Worrigea, and coastal village areas.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. A decision on the future of the project is yet to be made by Council and insufficient details are available about the project timing to inform an assessment of potential cumulative socio-economic impacts.
Shoalhaven Resource Recovery Facility (RRF) West Nowra Resource Recovery Park Stage 2 (SSD-9887)	Proposal for constructing and operating a resource recovery facility with pre-treatment for mixed municipal waste of up to 130,000 t per year. Works are planned to commence in 2022 and it is expected that the project would be fully operational by late 2023. The construction workforce is anticipated to include a maximum of 200 staff across the entire span of the project.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. Any overlap in timing with the project is expected to be minimal and potential for cumulative socio-economic impacts is likely to be minimal, if any.
Nowra Bridge Project – Princes Highway Upgrade	The project will provide a new four lane bridge over the Shoalhaven River, upgraded intersections and additional lanes on the Princes Highway. Construction of the project has commenced and is due to be completed by mid-2024.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. There is potential for overlap of the construction timeframes resulting in increased competition for local construction workers and contractors, and demand for accommodation for non-resident workers. Other cumulative socio-economic impacts are expected to be minimal, if any.
Jervis Bay Road and Princes Highway intersection upgrade at Falls Creek	The project will provide a grade separated interchange, or flyover, with roundabouts on either side. Early works for the project are expected to commence in late 2022 with major construction due to commence in 2023. The construction workforce is anticipated to be up to 60 people during the intersection construction, with between 10-20 people required for other phases.	The project is in the primary study area identified in the socio-economic impact assessment for the Project. There is potential for overlap of the construction timeframes resulting in increased competition for local construction workers and contractors, and demand for accommodation for non-resident workers. Other cumulative socio-economic impacts are expected to be minimal, if any.

8.5 Assessment of cumulative impacts

An assessment of possible cumulative socio-economic impacts of each project is provided in **Table 8-2**. Overall, potential cumulative socio-economic impacts with other projects are anticipated to mainly occur during the construction phase and would mainly be associated with:

- Demand for local construction workers from communities in the primary and secondary study area, resulting in:
 - Reduced availability of local workers for the Project, increasing the need for construction workers to be sourced from areas outside of the primary and secondary study areas. This would result in increased demand for visitor accommodation and rental housing to accommodate construction workers (refer below for discussion of possible cumulative impacts of increased demand for housing and accommodation)
 - Increased potential for workers from existing industries to be attracted to work on the Project, resulting in possible worker shortages for local businesses and industries, possibly leading to increased costs and availability of some construction-related services, and increased wage costs for businesses to retain workers
- Demand for accommodation by construction workforces of multiple projects, including as a result of the need to increase the number of non-local residents due to reduced availability of local workers. This has potential to result in:
 - Additional positive impacts for accommodation providers such as increased business income by providing reliable and consistent business throughout the construction phase
 - Potential to further reduce the availability of some visitor accommodation types (e.g., hotels, motels, and caravan park cabins) for tourists and visitors, making it more difficult for visitors to secure accommodation and increasing the possibility that some people may be discouraged from visiting the primary and secondary study area during the construction phase. This may exacerbate potential flow on effects for other businesses that rely on accommodation providers to support their business such as reduced trade
 - Potential to further increase demand for rental housing and increasing upward pressure on rental prices in towns in the primary and secondary study areas, exacerbating potential impacts on rental housing affordability and possible housing stress for vulnerable households
- An increase in the number of non-local workers temporarily moving to towns and centres in the primary and secondary study area, exacerbating potential impacts on community cohesion (i.e., due to incidents of poor worker behaviour) and demand for social infrastructure, and further increasing the possibility that some community members will feel resentment to non-local workers and the Project.

9. Mitigation measures

Table 9-1 outlines the recommended environmental management measures identified through this assessment to avoid, mitigate or manage identified negative social and economic impacts of the Project's construction and operation, and maximise or enhance positive impacts.

Social and economic impacts of the Project would also be managed through the implementation of mitigation measures recommended in other technical studies, including:

- Land use and property (e.g., impacts on property and the use of land during construction and operation)
- Noise and vibration (e.g., effects of construction noise and vibration on local amenity)
- Air quality (e.g., effects of dust from construction activities on local amenity)
- Landscape and visual amenity (e.g., changes to landscape and visual amenity from the introduction of Project infrastructure)
- Biodiversity (e.g., impacts on community values relating to the environment)
- Traffic and transport (e.g., potential road safety risks and traffic disruptions).

Consultation and communication with communities and stakeholders through the planning, construction, and operation phases will also be important in avoiding, minimising, or managing identified socio-economic impacts of the Project.

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Table 9-1 Socio-economic mitigation measures

Reference	Impact	Mitigation measure	Timing
SE1	General	<p>A Stakeholder and Community Engagement Plan (SCEP) will be prepared to guide communication and engagement activities to ensure the timely and accurate provision of information to the community and stakeholders during construction. The elements of the SCEP will be consistent with the International Association of Public Participant (IAP2) principles and outline (as a minimum):</p> <ul style="list-style-type: none"> ▪ Engagement principles and objectives ▪ Project stakeholders who either have an interest in the Project or may possibly be impacted by the proposed expansion ▪ Communication and consultation tools that provide: <ul style="list-style-type: none"> - Details and timing of proposed construction activities to local communities and affected stakeholders - Opportunities for affected community members to input to the identification of mitigation and management controls (e.g., for noise and vibration, property impacts, construction dust) - Policies and procedures for receiving and responding to queries and about the Project and for handling of grievances and complaints - Procedures for reviewing and monitoring of the effectiveness of the SCEP, including updating the SCEP in response to outcomes of the review and monitoring process or in response to continued community and stakeholder complaints about environmental issues. 	Prior to construction, and construction
SE2	Housing and accommodation	<p>A Workforce Accommodation Strategy will be prepared for the Project, in consultation with relevant stakeholders, to manage demand for housing and accommodation from the construction workforce during the construction phase, which includes (among other things):</p> <ul style="list-style-type: none"> ▪ Indication of demand for housing and accommodation by the construction workforce and available options to accommodate the construction workforce ▪ Strategies to maximise the use of short-term accommodation, while also managing potential effects on tourists and holiday makers during peak tourist periods and major regional events, and seasonal workers ▪ Processes for engaging with local accommodation providers, housing support agencies and other relevant stakeholders in accordance with the SCEP, about anticipated demand for housing and accommodation by the construction workforce, peak accommodation periods, construction timing ▪ Processes and procedures for managing potential negative effects on visitor accommodation in the primary study area due to demand by the construction workforce 	Prior to construction, construction

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Reference	Impact	Mitigation measure	Timing
		<ul style="list-style-type: none"> Encourage non-local operational workers to look at housing in towns across the study areas to minimise housing demand in one town only Measures for reviewing worker accommodation requirements and monitoring potential impacts due to demand by the construction workforce. 	
SE3	Employment and training	<p>A Local Workforce Strategy will be prepared for the Project, in consultation with relevant stakeholders, that includes (among other things):</p> <ul style="list-style-type: none"> Strategies to maximise employment opportunities for residents in the primary and secondary study areas, including strategies to communicate to local communities (prior to and during construction) opportunities and requirements for work on the Project Strategies relating to training and apprenticeships for Aboriginal people, young people, and women, including consultation with local contractors and relevant stakeholders (e.g., Aboriginal groups, youth, and women organisations) to identify and develop training and education opportunities. 	Prior to construction, construction
SE4	Business and industry	<p>A Local Procurement Strategy will be prepared for the Project, in consultation with relevant stakeholders, aimed at maximising procurement opportunities for regional businesses. Among other things, this would outline:</p> <ul style="list-style-type: none"> Communication and engagement strategies with local businesses, and other stakeholders in accordance with the SCEP about potential business opportunities and minimum requirements for workers and businesses (e.g., certifications, procurement standards, etc) Strategies for maximising the participation of regional businesses in the construction phase, including establishment of a local business register and preferences for regional businesses (subject to meeting relevant minimum standards) Measures for reviewing business requirements and monitoring the level of participation of regional businesses Implement training to increase local skills and availability of labour. 	Prior to construction, construction
SE5	Business and industry	<ul style="list-style-type: none"> Consult with owners of surrounding businesses in accordance with the SCEP about the timing, duration, impacts and management of construction activities, including (but not limited to): <ul style="list-style-type: none"> Wildwood Kangaroo Valley, at Lower Bendeela Road Wirramina, at Lower Bendeela Road Jack's Corner Retreat, at Jack's Corner Road Tullawalla, at Jack's Corner Road Cedarvale Health and Lifestyle Retreat, at Moss Vale Road Accommodation provides at Bendeela Road and Old Bendeela Road 	Prior to construction, construction

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Reference	Impact	Mitigation measure	Timing
		<ul style="list-style-type: none"> - Kangaroo Valley Safaris - Kangaroo Valley Kayaks - Kangaroo Valley Adventure Company - Valley Outdoors ▪ Development and implement processes and procedures, in accordance with the SCEP, for the review and monitoring of potential impacts and the effectiveness of mitigation measures for local businesses near to construction activities, including identifying any additional mitigation measures as required. ▪ Where possible, consider opportunities to minimise potential impacts on adjoining businesses in the layout of Laydown Area 7 (e.g., through siting of noisy activities and equipment, maintaining vegetation buffers along boundaries). 	
SE6	Social infrastructure	<ul style="list-style-type: none"> ▪ Engage with users and managers of community facilities near to construction activities in accordance with the SCEP about the timing and duration of potential construction activities and any potential impacts for users. This should include, but not be limited to, the following facilities: <ul style="list-style-type: none"> - Bendeela Recreation Area - Morton National Park - Scots College Glengarry Campus - Southern Highlands Sailing Club ▪ Communicate to wider communities through the CSEP about any disruptions to social infrastructure from construction and decommissioning activities for the Project ▪ Monitor community complaints received through the CSEP processes relating to social infrastructure near the Project and review relevant mitigation and management measures as required. 	Prior to construction, construction
SE7	Social infrastructure	<p>Engage with managers of Scots College in accordance with the SCEP about:</p> <ul style="list-style-type: none"> ▪ The timing of major college activities that use local roads (e.g., bicycle rides, 24-hour rogaining) and proposed management measure ▪ Any construction activities that may impact on the college's use of Lower Bendeela Road for emergency access ▪ Timing and duration of construction activities that have potential to impact on activities within the college campus (e.g., noise intensive works). 	Construction
SE8	Social infrastructure	<ul style="list-style-type: none"> ▪ Engage with WaterNSW in accordance with the SCEP about any construction activities that may impact on public use or access to the Bendeela Recreation Reserve 	Operation

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Reference	Impact	Mitigation measure	Timing
		<ul style="list-style-type: none"> Minimise the duration of any short-term closures on Bendeela Recreation Area. 	
SE9	Social infrastructure	<ul style="list-style-type: none"> Minimise the duration of any closure of the Promised Land Trail Communicate with local communities and users of the Promised Land Trail about the closure of trail Reinstate the Promised Land Trail as soon as practicable following construction. 	Construction
SE10	Social infrastructure	Development and implement processes and procedures, in accordance with the SCEP, for the review and monitoring of potential impacts on activities of the Southern Highlands Sailing Club from the drawdown or release of water in Fitzroy Falls Reservoir.	Operation
SE11	Community values	<ul style="list-style-type: none"> Minimise the extent of native vegetation clearing on WaterNSW land and within Morton National Park, as far as practicable Early and ongoing communication and consultation in accordance with the SCEP with local residents closest to construction activities about the timing, duration and potential impacts on construction and haulage activities Communication with communities in Kangaroo Valley, Fitzroy Falls, Wildes Meadow, and Barrengarry about the timing and duration of major haulage activities Where possible, restrict haulage activities during night-time hours Develop and implement protocols relating to worker code of conduct to minimise potential disruptions on community cohesion. 	Construction

10. Residual impacts

10.1 Construction

During construction, there is potential for some impacts to have ongoing medium negative impacts following the implementation of mitigation measures.

Socio-economic impacts considered to have potential for medium ongoing negative impacts would include:

- Disruption to local amenity for users of properties near to construction works due to increased construction noise, dust, and traffic. These impacts would mainly be limited to occupants of properties closest to construction have potential to extend over the five-year duration of the construction activities, although the levels of impact are likely to vary due to changes in intensity of construction activities in specific locations
- Amenity changes for businesses immediately surrounding the Project construction, discouraging people from using local accommodation and wedding businesses. These impacts would most likely be limited to businesses immediately surrounding construction activities and have potential to extend over the five-year construction period, although the levels of impacts would vary due to changes in intensity of construction activities
- Changes to local amenity of nature-based recreation areas, possibly deterring people from accessing these facilities. These impacts would most likely be limited to businesses immediately surrounding construction activities and have potential to extend over the five-year construction period, although the levels of impacts would vary due to changes in intensity of construction activities
- Possible sleep disturbance due to 24 hour works for tunnelling, resulting in health and wellbeing impacts for individuals. These impacts would mainly be limited to occupants of properties closest to construction have potential to extend over the five-year duration of the construction activities, although the levels of impact are likely to vary due to changes in intensity of construction activities in specific locations.

Ongoing communication with affected stakeholders and monitoring of potential impacts and the effectiveness of mitigation measures, including identification of additional mitigation measures as required would be important in managing any ongoing impacts.

10.2 Operation

During operation, potential for residual impacts would mainly be associated with community values relating to the environment and visual amenity due to the presence of the new above ground infrastructure. Over time, these impacts are likely to diminish as any areas of vegetation that were cleared for construction and are outside of operation areas re-establish and people become familiar with the new infrastructure.

11. Conclusion

This report assesses potential impacts on socio-economic values of the Project's construction and operation.

The Project would provide long-term benefits for business, industry, and domestic energy customers across NSW through improved energy security and reliability of supply to the NEM during periods of high demand. Locally, potential socio-economic impacts would mainly be associated with the construction phase and would generally relate to:

- Changes in amenity for occupants of properties surrounding the proposed construction works, possibly diminishing individuals use and enjoyment of their properties
- Construction traffic use of local and regional road networks
- Impacts community facilities near to construction works, including changes in amenity that diminish people's enjoyment and experience of these facilities.

It is anticipated that most construction impacts would be effectively managed with the implementation of mitigation measures, including communication and engagement with communities and stakeholders, although there is potential for ongoing residual impacts during the construction phase relating to:

- Disruption to local amenity for users of properties near to construction works due to increased construction noise, dust and traffic
- Amenity changes for businesses immediately surrounding the Project construction, discouraging people from using local accommodation and wedding businesses
- Changes to local amenity of nature-based recreation areas, possibly deterring people from accessing these facilities
- Possible sleep disturbance due to 24 hour works for tunnelling, resulting in health and wellbeing impacts for individuals.

Ongoing communication with affected stakeholders and monitoring of potential impacts and the effectiveness of mitigation measures, including identification of additional mitigation measures as required would be important in managing any ongoing impacts.

Socio-economic impacts of the Project's operation would be similar to the existing pumped hydro scheme, with the main impact likely to relate to changes to community values relating to the environment associated with the clearing of vegetation. These impacts are likely to diminish over time as vegetation becomes re-established.

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Appendix A. Socio-economic impact assessment authorship and declaration

Details of the authors of this socio-economic impact assessment are provided in **Table A-1**. The socio-economic impact assessment contributors hold appropriate qualifications and have the relevant experience to carry out the socio-economic impact assessment for this Project.

I, Nicole Sommerville, declare that this socio-economic impact assessment contains all available information relevant to the socio-economic impact assessment for the Project and does not contain information that is false or misleading. Dated: 20 October 2022.

Table A-1. Socio-economic impact assessment authors

Name and role	Qualifications	Professional memberships	Relevant experience
Nicole Sommerville, Socio-economic Impact Assessment Lead	Bachelor of Planning (Hons 1), University of South Australia, 1997 Associate Diploma in Built Environment (Architecture), University of South Australia, 1996 Graduate Certificate in Legal Studies, Northern Territory University, 2001	Member, Planning Institute of Australia	Nicole has 25 years' experience in urban planning, community and stakeholder engagement, social planning, social impact assessment and environmental assessment. Nicole has managed the preparation of socio-economic impact assessments for energy, resources, transport, health care, urban development, and water infrastructure projects in Australia and overseas.
Ada Zeng, Socio-economic Impact Assessment Support	Bachelor of Science (Environmental Studies), University of Sydney, 2019 Bachelor of Arts (Socio-Legal Studies), University of Sydney, 2019	Associate Member, Environmental Institute of Australia and New Zealand (EIANZ)	Ada has two years' experience in environmental approvals for infrastructure projects in the energy, transport and water sectors. Ada has delivered EIS and SIA reports under the EP&A Act in NSW.

Appendix B. Population and demographic data

Table B-1. Population and demography, 2021

Indicator	Primary study area			
	Wildes Meadow (SAL)	Fitzroy Falls (SAL)	Barrengarry (SAL)	Kangaroo Valley (SAL)
Population and age				
Total population	249	220	214	856
0-14 years	12.0%	15.5%	15.0%	14.3%
15-64 years	59.8%	59.1%	56.1%	60.3%
65 years or over	30.9%	28.2%	22.4%	26.2%
Median age	57 years	50 years	50 years	54 years
Cultural diversity				
Overseas born	12.9%	6.4%	7.0%	21.0%
Speaks language other than English	1.2%	2.3%	2.8%	3.5%
Aboriginal and/or Torres Strait Islander	0.0%	2.3%	0.0%	1.2%
Families and households				
Total households	97	90	73	338
Family households	79.4%	68.9%	76.7%	70.1%
Lone person households	15.5%	27.8%	16.4%	27.2%
Group households	4.1%	0.0%	0.0%	1.8%
Couple only families	71.6%	55.6%	64.3%	54.6%
Couple family with children	24.7%	42.9%	33.9%	32.5%
One parent family with children	6.2%	7.9%	7.1%	10.8%

Source: Based on ABS Census 2021

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Table B-2. Income and employment indicators for the primary and secondary study areas, 2016 and 2021

Indicator	Primary study area			
	Wildes Meadow (SAL)	Fitzroy Falls (SAL)	Barrengarry (SAL)	Kangaroo Valley (SAL)
Median weekly personal income (2021 Census)	\$846	\$953	\$966	\$766
Median weekly household income (2021 Census)	\$2,100	\$2,250	\$2,062	\$1,578
Unemployment rate (2016 Census)	0.0%	0.0%	0.0%	2.4%
Worked full time (2016 Census)	61.8%	62.6%	54.0%	52.7%
Labour force participation (2016 Census)	60.7%	58.0%	57.1%	54.6%
Top 3 industries of employment (2016 Census)	<ul style="list-style-type: none"> ▪ Agriculture, Forestry and Fishing ▪ Health Care and Social Assistance ▪ Professional, Scientific and Technical Services 	<ul style="list-style-type: none"> ▪ Health Care and Social Assistance ▪ Construction ▪ Accommodation and Food Services 	<ul style="list-style-type: none"> ▪ Agriculture, Forestry and Fishing ▪ Accommodation and Food Services ▪ Education and Training 	<ul style="list-style-type: none"> ▪ Education and Training ▪ Accommodation and Food Services ▪ Health Care and Social Assistance

Source: ABS Census 2016 and 2021

Table B-3. Housing indicators, 2021

Indicator	Primary study area			
	Wildes Meadow (SAL)	Fitzroy Falls (SAL)	Barrengarry (SAL)	Kangaroo Valley (SAL)
Total private dwellings	139	106	109	470
Total occupied private dwellings	69.8%	84.9%	67.0%	71.9%
Owned outright	55.7%	44.4%	53.4%	50.6%
Owned with a mortgage	16.5%	31.1%	28.8%	32.0%
Rented (excluding dwellings occupied rent-free)	16.5%	17.8%	11.0%	12.1%
Median weekly rent	\$450	\$440	\$415	\$310

Source: ABS (2016; 2021)