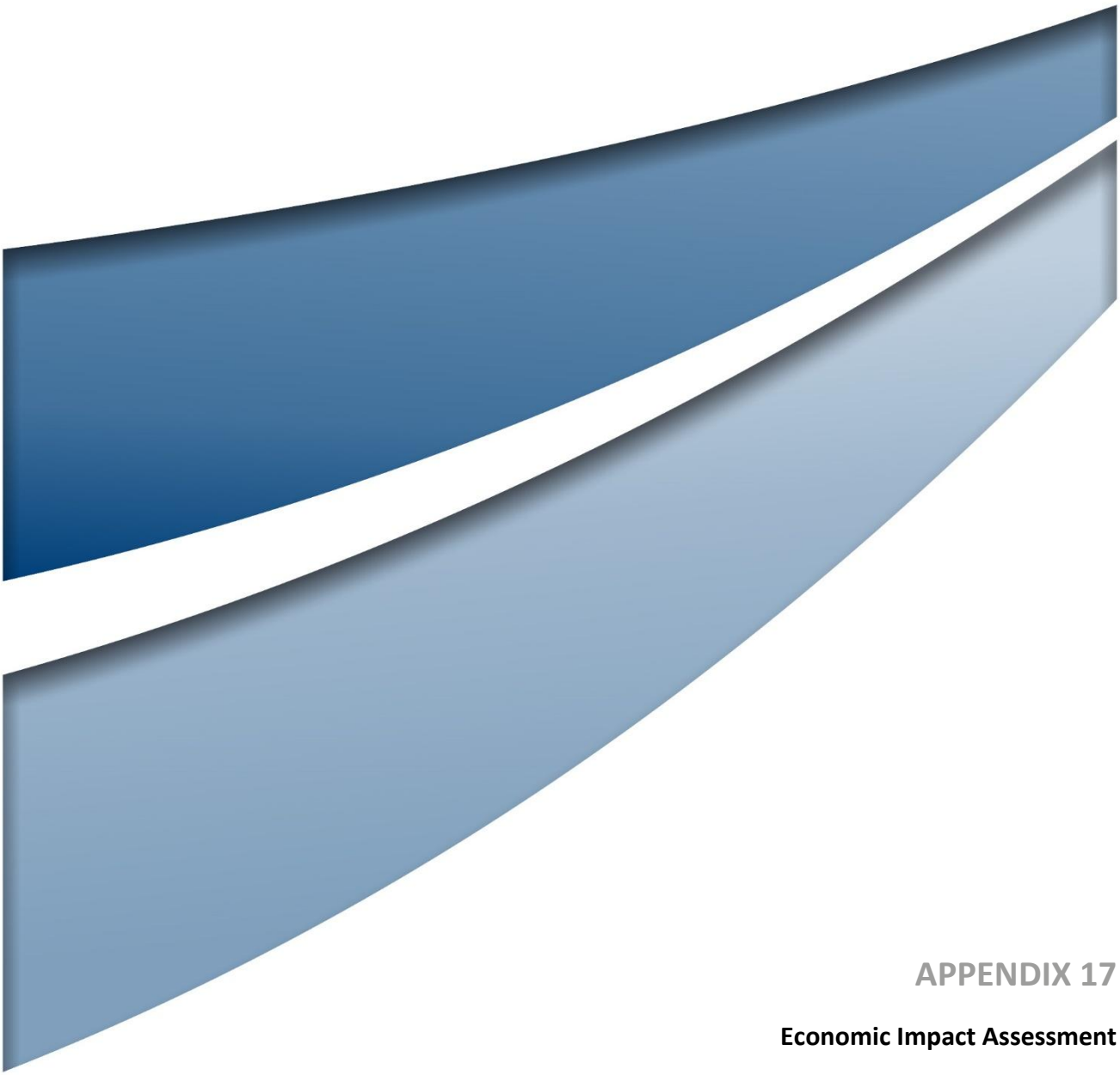

APPENDIX 17

Economic Impact Assessment

Wattle Creek– Battery Energy Storage System Project

SSD - 63345458

Economic Impact Assessment

on behalf of Spark Renewables Pty Ltd

Ethos Urban

Prepared by Ethos Urban

7 March 2025 | 3230190

'Gura Bulga'
Liz Belanjee Cameron

'Gura Bulga' – translates to Warm Green Country. Representing New South Wales.

'Dagura Buumarri'
Liz Belanjee Cameron

'Dagura Buumarri' – translates to Cold Brown Country. Representing Victoria.

'Gadalung Djarri'
Liz Belanjee Cameron

'Gadalung Djarri' – translates to Hot Red Country. Representing Queensland.

Ethos Urban acknowledges the Traditional Custodians of Country throughout Australia and recognises their continuing connection to land, waters and culture.

We pay our respects to their Elders past, present and emerging.

In supporting the Uluru Statement from the Heart, we walk with Aboriginal and Torres Strait Islander people in a movement of the Australian people for a better future.

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This document has been prepared by:		**This document has been reviewed by:**	
Stephanie Stamatellis (SS)	7 March 2025	John Noronha (JN)	7 March 2025

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Executive Summary

Spark Renewables (the Proponent) has commissioned Ethos Urban to prepare an Economic Impact Assessment (EIA) for the 350 MW Wattle Creek Battery Storage Energy System (BESS) Project (the Project), located approximately 15km northeast of Marulan and within the Upper Lachlan Shire Local Government Area (LGA). The Project will be located within an approximately 6,350ha site (the Project Area) known as Athursleigh Farm (Lot 3 of DP 1120270), and requires a total development footprint of around 75ha.

The main findings of this EIA are summarised as follows.

Regional Economic Context

1. The EIA Study Area defined for the purposes of this assessment comprises multiple LGA boundaries, including Upper Lachlan Shire, Goulburn Mulwaree, and Wingecarribee. The Project Area is located in the Upper Lachlan Shire, however, is positioned close to the boundaries of Goulburn Mulwaree and Wingecarribee, and accordingly is located centrally within the EIA Study Area.
2. The EIA Study Area comprises a population of 94,530 residents as of 2024. The population is forecast to increase to 120,620 residents by 2041, equating to growth of around +26,090 persons over the forecast period.
3. The Study Area's occupational and business structures indicates that a good base exists to service the needs of the BESS Project, including approximately 13,860 construction related workers (based on occupation) and approximately 1,873 construction related businesses.
4. The nearest township to the Project Area is Marulan, located approximately 15km south. The nearest surrounding major townships likely to have capacity to service some of the Project's requirements include Goulburn, Moss Vale, Bowral and Mittagong, such as accommodation, labour and services requirements.

Economic Impact Assessment

5. The Project has an Estimated Development Cost (EDC) of approximately $402 million, of which approximately $60 million (or 15% of the EDC) is expected to be retained in the EIA Study
6. Approximately 185 Full Time Equivalent (FTE) positions would be supported in the national economy over the 18-month construction period (71 Direct FTE jobs and 114 Indirect FTE jobs). Once operational, approximately 60 FTE jobs will be supported by the Project (15 Direct FTE jobs and 45 Indirect FTE jobs).
7. Of this total, the EIA Study Area is expected to benefit from 37 FTE local construction jobs and 24 FTE local operational jobs (includes direct and indirect jobs) associated with the Project.
8. The Project will likely need to compete with other concurrent major projects within the region, particularly with regard to accommodation, labour and other resources. Of significance, there are eight infrastructure projects recording a medium or high cumulative impact due to their location and potential for timing overlap with the Project. These projects include the Wattle Creek Solar Farm, Gundary Solar Farm, Merino Solar Farm, HumeLink, the Woodlawn Advanced Energy Recovery Centre, Marulan Quarry, Shoalhaven Hydro Scheme and Marulan Gas Fired Power Station. It is possible other identified projects may overlap with the Project, but this is not certain.
9. The 'external' project labour requirement would be expected to generate an accommodation need for 82 FTE workers at the peak of the Project. This represents 4.5% of total commercial accommodation rooms/cabins within the EIA Study Area. At this level of accommodation requirements, the Project in isolation is likely to have a limited impact on the EIA Study Area housing and accommodation market. However, given the number of concurrent projects likely to occur in the EIA Study Area during the Projects construction period, there will likely be accommodation shortages in key centres and townships such as Goulburn, Bowral, Mittagong and Moss Vale.
10. Construction workers relocating to the region would be expected to inject approximately $3.3 million in new spending into the economy over the construction phase (18 months), supporting approximately 11 FTE jobs in the service sector in the EIA Study Area over this time.
11. Approximately 6,350 ha of existing agricultural land will be required to host the Project, with a development footprint of approximately 75ha. The remainder of the Project Area will continue to be used for agricultural purposes. The development footprint is currently mainly used for grazing and has no identified high capability land, with the development footprint entirely consisting of LSC class 5 land (moderate – low capability land).

The Project is estimated to result in a negligible impact of just 0.02% on the Upper Lachlan Shires agricultural gross output. No loss of employment associated with the Project Area is anticipated, either directly (on-site) or through associated supply chains.

12. Ongoing economic stimulus associated with the operation of the Project is estimated at approximately $51.2 million (over 30 years, CPI adjusted) relating to operational wage stimulus and landowner lease payments.

13. Decommissioning of the Project is likely to support significant employment generation, new business contracts and provide a spending stimulus to the Study Area over the decommissioning period. However, given decommissioning will not occur for at least 30 years after the operation of the Project commences, it is not possible to estimate potential impacts and benefits at this stage noting economic, technological, environmental factors may change considerably over this period.

Net Economic Benefit Assessment (EIA Study Area)

A summary of the net economic benefits for the EIA Study Area as a result of the Project is summarised below in **Table 1**.

Table 1 Summary of Net Economic Benefits

Factor	Value
Negative Economic Outcomes	
Temporary loss of agricultural land (30 years) (development footprint)	75 ha
Loss of employment (includes direct and indirect jobs)	0 jobs
Positive Economic Outcomes	
Construction Phase (18-Months)	
Estimated Development Cost	+$402 million
EIA Study Area investment (including wage stimulus)	+$60 million (assumes 15% of total investment)
Average construction employment per month (direct plus indirect jobs)	71 FTE
Average EIA Study Area employment per month (direct and indirect jobs)	*14 FTE direct on-site* *23 FTE indirect off-site* *Total: 37 FTE*
Operational Phase (30 Years)	
Operational employment (direct and indirect jobs)	*15 FTE Direct + 45 FTE Indirect* *Total: 60 FTE*
EIA Study Area operational employment (direct and indirect jobs)	*15 FTE direct* *9 FTE indirect* *Total: 24 FTE*
Operational Economic Stimulus	
Total net local economic stimulus (operational wage stimulus, Community Fund payments, landowner lease payments. Excludes increased Council rates returns).	**$51.2 million**
Total Economic Benefits (Construction and Operational Phases)	**$110 million (rounded)**
Decommissioning Phase	
Likely to generate employment, business contract and spending stimulus benefits for the EIA Study Area	Not quantified

1.0 Introduction

1.1 Overview of the Project

Spark Renewables propose to develop the Wattle Creek Battery Energy Storage System (BESS) Project (the Project) located on Arthursleigh Farm (Lot 3 of DP 1120270), approximately 80 kilometres (km) west of Wollongong and approximately 15 km northwest of Marulan within the Upper Lachlan Shire Council Local Government Area (LGA).

The Project Area abuts the Wingecarribee Shire LGA to the east, and Goulburn Mulwaree Shire Council LGA to the south, refer to **Figure 1**.

The Project includes 350 MW capacity BESS (AC or DC coupled), and project-related infrastructure.

The Economic Impact Assessment (EIA) has considered the economic impacts and benefits of the Project for the region and the State as a whole.

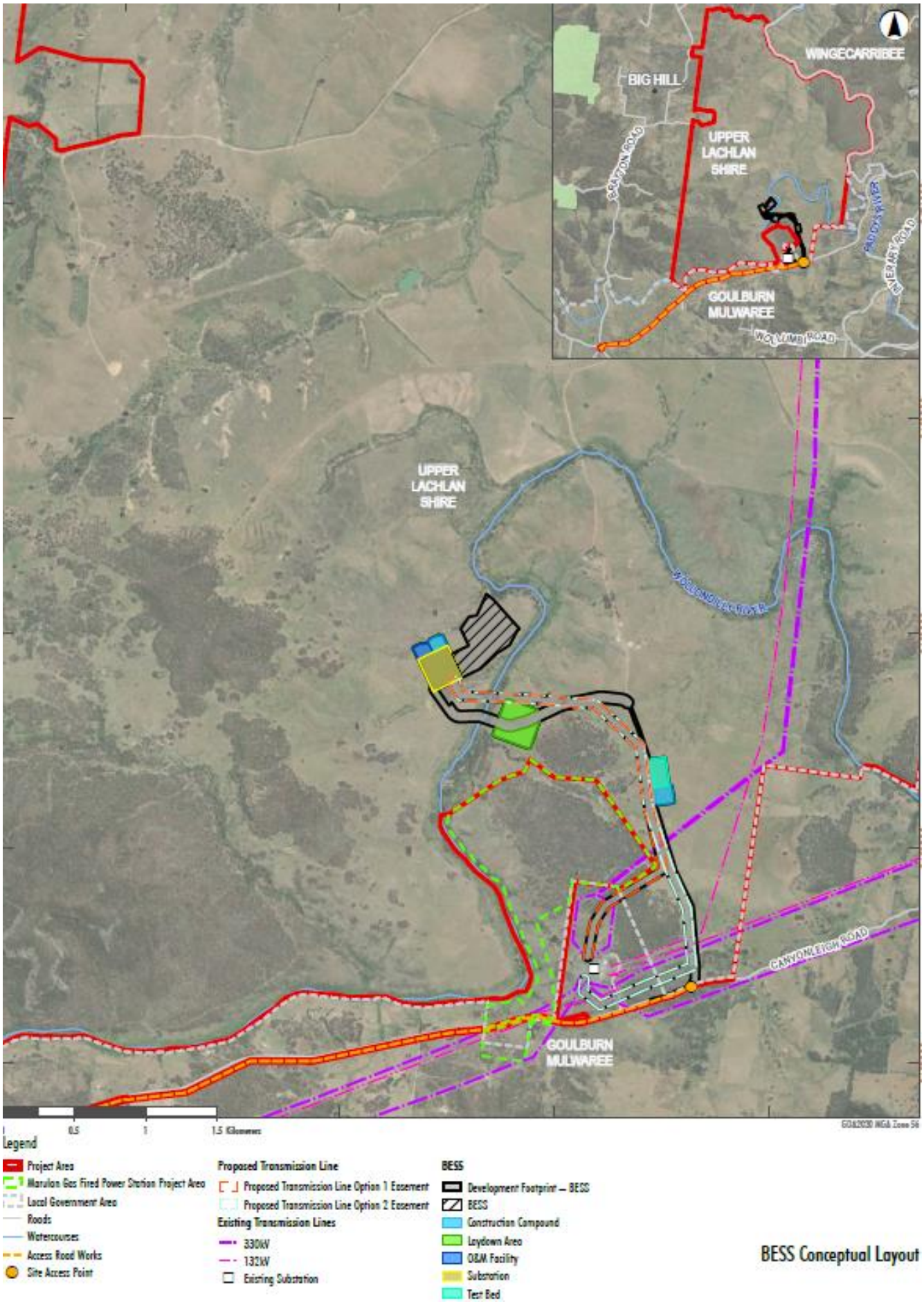


Figure 1 BESS Conceptual Layout

Source: Umwelt

1.2 Purpose and Scope of this Report

This Economic Impact Assessment has been prepared by Ethos Urban in accordance with the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning, Housing and Infrastructure (DPHI) on 22 December 2023.

The SEARs identify matters that must be addressed in the Environmental Impact Statement (EIS). **Table 2** below references the relevant requirements for economic matters and where the SEARs have been addressed in this report.

Table 2 SEARS Item and Responses

SEARS Requirement	Section where addressed in this report
Social and Economic – including an assessment of the social impacts in accordance with *Social Impact Assessment Guideline* (DPIE, Feb 2023), any benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services, consideration of construction workforce accommodation, assessment of impact on agricultural resources and agricultural production on the site and region.	Section 4.0

1.3 Methodology and Data Sources

1.3.1 Methodology

The following methodology has been applied to this EIA:

- Identification of a relevant EIA Study Area for the assessment which reflects likely local labour force, accommodation, and supply chain linkages available to support the Project. The EIA Study Area is defined in terms of local government areas (LGAs) as defined by the ABS; for this Project the following LGAs define the EIA Study Area, Goulburn Mulwaree, Wingecarribee and Upper Lachlan Shire.
- Review of federal and state policies relevant to investment in the renewable energy sector including The Paris Agreement and the NSW Electricity Strategy and Infrastructure Roadmap
- Baseline analysis of population, labour markets, occupational structure and business structure for the EIA Study Area and NSW, with reference to latest available data relating to ABS Estimated Resident Population, NSW Department of Planning, Housing and Infrastructure State and Local Government Population Projections, ABS Census, ABS Business Counts and Department of Education, Skills and Employment Small Area Labour Markets.
- Assessment of the capacity and opportunities of townships in the EIA Study Area to participate and service the Project. This information has been compiled through site visits, a desktop review of townships and accommodation data (accommodation provider websites, Airbnb and Vrbo databases, website searches) and discussions with the Proponent.
- Assessment of Project investment, with investment estimates provided by the Project's Estimated Development Cost (EDC) report and share of investment retained in the EIA Study Area informed by benchmarking analysis of similar sized completed renewable energy facilities located in regional areas.
- Assessment of Project employment (direct and indirect) for construction and operational phases. Direct employment is assessed as jobs created to support the on-site construction and operation of the Project. Indirect employment is assessed as jobs supported through the industrial and consumption/induced impacts of each Project stage. Relevant ABS multipliers are applied to construction and operational phases. Employment estimates have been provided by the Proponent based on requirements associated with similar scale BESS projects. Ratios of direct EIA Study Area (local) and non-EIA Study Area (imported) employment and share of indirect employment supported in the EIA Study Area are based on advice from the Proponent, based on experiences from previous renewable energy construction projects in similar regional locations.
- Identification of business and industry participation opportunities, with reference to baseline analysis outcomes regarding workforce size and skills composition and procurement activities proposed by the Proponent.
- Assessment of agricultural impacts which includes employment and production impacts through land consumption and disruption to activities, and benefits to host landowners from new incomes and improved on-site infrastructure.

- Assessment of accommodation and housing impacts, with reference to the baseline analysis and the estimated number of construction workers that may require accommodation at the Project's peak, and with regard to other infrastructure projects expected to be developed concurrently.
- Assessment of cumulative impacts relating to the potential concurrent construction of major infrastructure projects in the EIA Study Area and within 50km of the Project Area. This includes assessing potential impacts on accommodation, labour and services (construction and non-construction).
- Estimates of economic stimulus impacts (construction and operation phases) including project wages and spending, and host landowner payments. Construction stimulus is expressed in 2024 dollars (and calculated over 18 months), while operational stimulus is calculated over 30 years using 2024 dollars but indexed to 3.0% CPI annually.
- Summary of economic benefits arising for NSW (beyond the EIA Study Area) for construction and operational phases of the Project.
- Description of proposed mitigation measures relating to accommodation, workforce and procurement and community benefit sharing.
- High-level comments on potential impacts of the decommissioning phase of the Project.

Note, detailed assumptions and calculations are provided throughout the report.

1.3.2 Data Sources

The following specific data sources have been uses in compiling this EIA:

- ABS Average Weekly Earnings, November 2023
- ABS, Counts of Australian Businesses, including Entries and Exits, June 2018 to June 2023
- ABS Census of Population and Housing, 2021
- ABS Estimated Resident Population, 2023 (April 2024 release)
- ABS Household Expenditure Survey, 2015-16
- ABS Regional Internal Migration Estimates (Provisional), March 2021
- NSW Tourist Accommodation Snapshot December Qtr 2023, STR.com
- Australian National Accounts: Input-Output Tables, 1998-99
- Air DNA, April 2024
- Department of Employment – Small Area Labour Markets, March Quarter 2024
- Department of Environment and Planning NSW, State and Local Government Population Projections 2022, 2022 NSW Common Planning Assumption Projections
- Minesoils Pty Ltd – Soils, Land and Agricultural Impact Assessment
- Muller Partnership – Estimated Development Cost report
- NSW Major Projects
- Wattle Creek Energy Hub BESS Scoping Report, September 2023
- STR

2.0 Project Context

2.1 Site Location

The Project Area is approximately 6,350ha known as Arthursleigh Farm (Lot 3 of DP 1120270) NSW 2579, within the Upper Lachlan Shire LGA.

The Project Area can be accessed from existing entrances along Canyonleigh Road, approximately 30km north-east of Goulburn. The Project Area will have access to regional townships and centres located within a 60 minute drive which are listed below

- **Marulan:** small township located approximately a 20-minute drive south of the Project Area.
- **Goulburn:** regional city located approximately a 30-minute drive southwest of the Project Area.
- **Mittagong:** small township located approximately a 60-minute drive north east of the Project Area.
- **Bowral:** regional centre located approximately a 50-minute drive north east of the Project Area.
- **Moss Vale:** township located approximately a 40-minute drive north east of the Project Area.

These regional centres and townships, to differing extents, are likely to play important roles in supporting the requirements of the Project.

The local and regional context of the Project Area is shown over the page in **Figure 2.**

2.2 Regional Context

The Project Area is positioned approximately 80km west of Wollongong, 130km north of Canberra and 160km south of Sydney, and boarders Wingecarribee Shire and Goulburn Mulwaree LGAs. Goulburn is the nearest major regional centre to the Project Area, and is defined as a strategic centre under the NSW DPHI Regional Plans, and is a Regional City under the Transport and Infrastructure SEPP 2022.

As a regional city, Goulburn provides essential services to surrounding communities such as Marulan, Taralga and Crookwell. Accordingly, it is an important centre that provides access to necessary employment, services and infrastructure for residents throughout the region (including within the Upper Lachlan Shire).

The Southern Highlands, comprising Bowral, Mittagong and Moss Vale centres is another significant region that supports a range of essential services, employment and housing that is within proximate driving distance to the Project Area. Moss Vale is also defined as a strategic centre under the NSW DPHI Regional Plans.

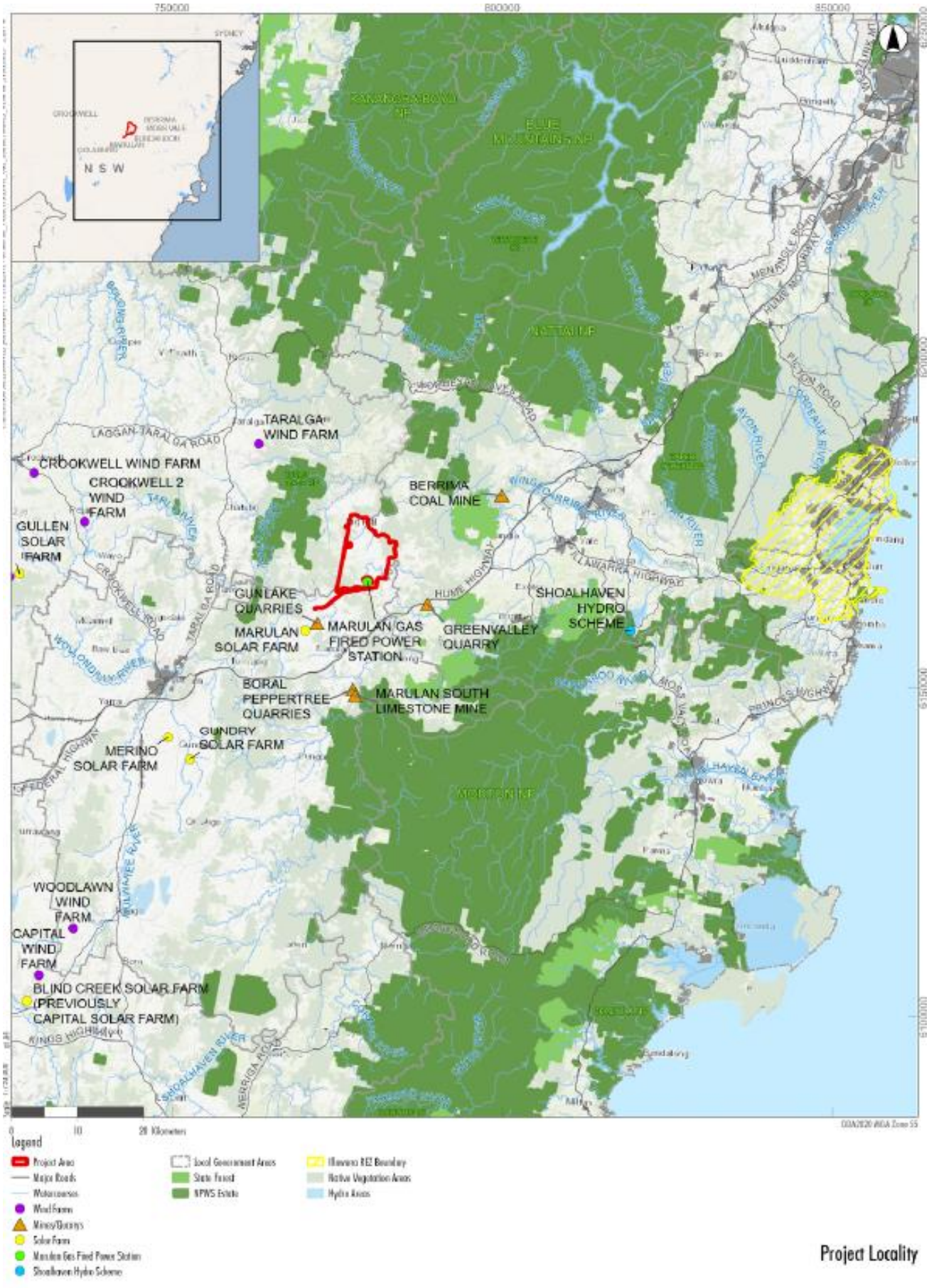


Figure 2 Local and Regional Context

Source: Umwelt Scoping Report

2.3 Project Description

The Project comprises the installation, operation, maintenance and decommissioning of a large-scale BESS, supported by associated infrastructure. The Project will have a capacity of up to approximately 350 MW (AC or DC coupled) and will have provision for up to four (4) hours of storage (1400 MWh), with the aim of providing both storage as well as firming capacity to the NEM and assisting in grid stability by providing frequency control ancillary services. The design of the Project will allow for the storage and exportation of renewable energy within the network so that it can be used during times of peak demand.

Two transmission line options are being investigated, to allow for optionality during the assessment process and greater flexibility in the connection design. Only one transmission option will be, the two transmission options are assessed separately.

The conceptual project layout represents a development footprint of approximately 75 ha, including associated ancillary infrastructure (i.e. substations, the operations and maintenance facility, test bed and both transmission line corridors for optionality). The conceptual project layout is shown in **Figure 1**, with the indicative project components are outlined in **Table 3.**

Table 3 Indicative Project Components and Appropriate Dimensions/Capacity

Project component(s) / infrastructure	Approximate dimensions and/or capacity	Quantity
BESS Modules		
Maximum height	3 m	Nil
Minimum height	1.5 m	
Containers	Approximately 3.85 MWh per container (number and size of units is subject to detailed design and tender)	Approximately 370
Ancillary Infrastructure		
Collector (on-site) substation	6 ha	1
High voltage Transformers	230 megavolt amperes (MVA) high voltage transformers within substation (size and number of transformers is subject to detailed design)	3
Inverters and medium voltage transformers	4200 kVA inverters, with one medium voltage per transformer (number of inverters and size of inverters is subject to detailed design)	248
Overhead transmission lines (high to low voltage)	Approximately 7 km of internal overhead cables i.e. high voltage transmission lines from the Project to the grid connection point. Two transmission alignments currently under investigation.	n/a
Underground cables (medium to low voltage)	2 km	n/a
Internal access tracks	Approximately 5 km of internal roads.	n/a
Primary site access point(s)	Canyonleigh Road and Arthursleigh Road, however subject to further intersection design during the EIS.	2
Operations and maintenance facility	100 m x 100 m	1
Temporary Construction Facilities		
Construction compound, including: • construction laydown areas for equipment and supplies, • stockpile and material storage areas; • Temporary wash-down facility; • concrete batching plants, as required; • construction compounds, site office, etc.	Approximately 2 ha	1

Source: Umwelt

2.4 Policy Context

International and domestic agreements and government policy settings play an important role in influencing demand and investment in the renewable energy sector, as noted below.

The Paris Agreement

The Paris Agreement is a comprehensive international and legally binding climate agreement to which Australia is a party. The Agreement sets out a global consensus to limit temperature increases to below two degrees Celsius when compared to pre-industrial levels. Participating nations were required to set themselves nationally determined contributions (NDCs) beginning in 2020, with review at five-year intervals. NDCs do not have any set lower limit but are required to progress over time (beginning with the intended NDC pledged during the Paris conference) and to be 'ambitious.' Australia's previous target was to achieve a reduction of emissions by 5% from 2000 levels by 2020 and the previous Liberal Federal Government committed to a reduction of 26-28% below 2005 levels by 2030 and net zero emissions by 2050.

In July 2022, an updated Nationally Determined Contribution (NDC) was submitted by the newly elected Federal (Labor) Government and reflected a pre-election promised by the Labor Party to fulfill Australia's obligations under the Paris Agreement. The updated NDC includes a commitment to a reduce greenhouse gas emissions by 43% by 2030 and reaffirms the previous commitment to net zero emissions by 2050.

NSW Electricity Strategy and Infrastructure Roadmap

Renewable electricity development is supported through the NSW Governments Electricity Strategy, and the NSW Electricity Infrastructure Roadmap which builds on the framework set out in the Electricity Strategy. The aim of the strategies is to consider an integrated electricity approach that addressed demand and supply management, electricity affordability, households and businesses, reliable generation and investment in large scale generation. This is outlined in Action 5, which encourages the development of reliable, affordable and clean technologies to take pressure off the grid.

Specifically, the strategy notes that renewables are the most economical form of reliable electricity, and will be able to reduce energy costs through the development of more reliable renewable generation with the aid of battery energy storage systems.

The Project supports the aims and objectives of the Electricity Strategy and Infrastructure Roadmap, by providing a large-scale battery energy storage system that can ensure a secure and reliable energy for the region.

South East and Tablelands Regional Plan 2036

The South East and Tablelands Regional Plan sets out the blueprint for region for the next two decades. Direction 6 of the Strategy aims to *position the region as a hub of renewable energy excellence*. To achieve this direction, the Strategy outlines the following actions:

- Identify opportunities for renewable energy industries
- Encourage the co-location of renewable energy projects to maximise infrastructure, including corridors with access to the electricity network.
- Promote appropriate smaller-scale renewable energy projects using bioenergy, solar, wind, small-scale hydro, geothermal or other innovative storage technologies.

The Project will strongly align with the above objectives by delivering an innovative storage technology that is co-located within a proposed solar farm on the Project Area. The Project is also well positioned close to an existing substation and future transmission line (HumeLink East), and is within proximity to a number of other renewable energy projects that are either planned, approved or under construction.

Importantly, the Strategy outlines that renewable energy will also create a more sustainable energy future for the region. The Project will contribute to this by creating storage that enables a secure renewable energy supply.

2.5 EIA Study Area

The Study Area for this EIA has been defined with consideration to townships, major regional centres and cities within a 60-minute drive time from the Project Area. For the purposes of this assessment, the EIA Study Area comprises the following Local Government Areas (LGAs):

- Upper Lachlan Shire LGA

- Goulburn Mulwaree LGA
- Wingecarribee Shire LGA

The Study Area's local and regional communities, to differing extents, have the potential to contribute to and derive economic benefits from both the construction and ongoing phases of the Project.

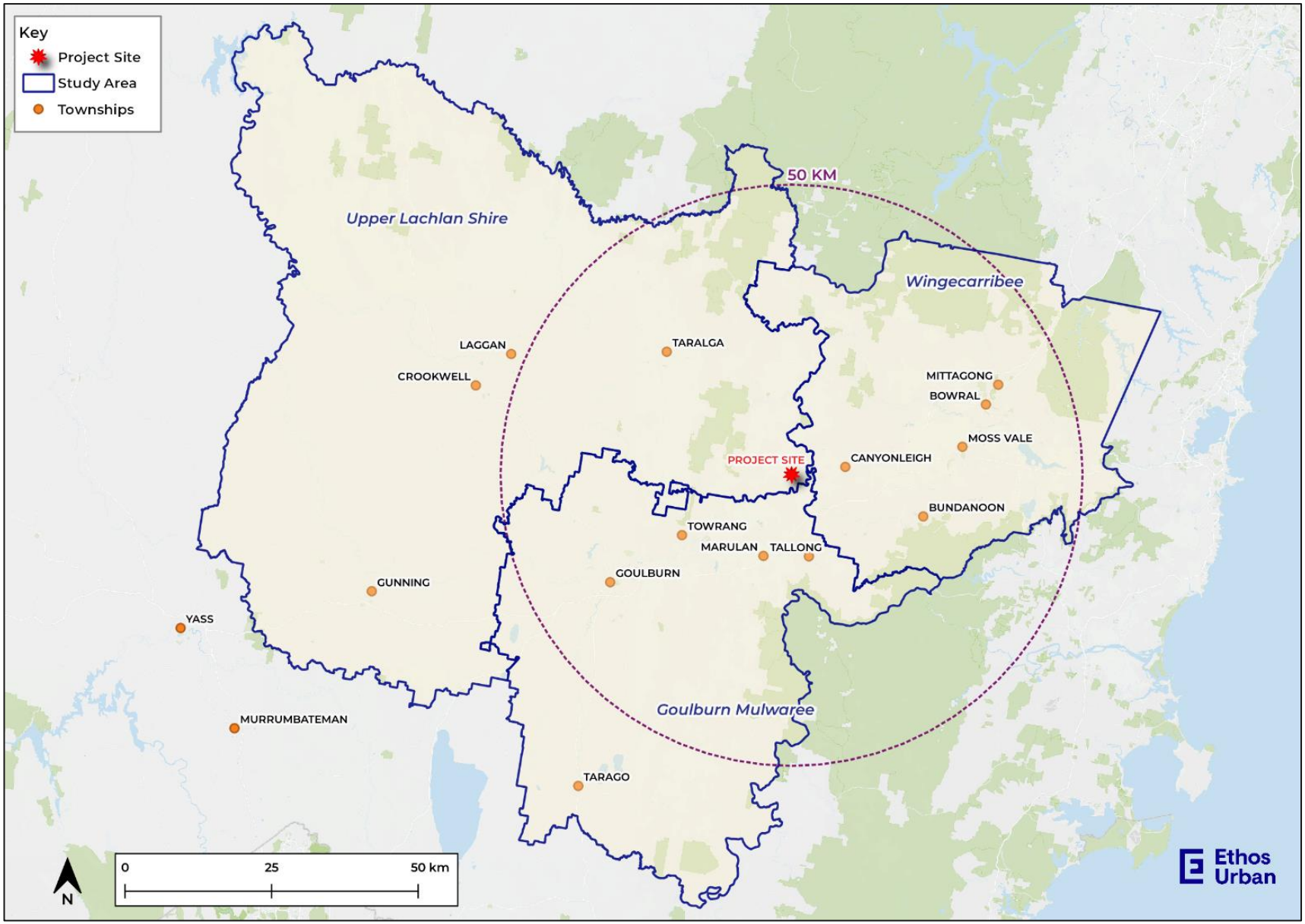


Figure 3 Study Area Map

Source: Ethos Urban

3.0 Baseline Regional Economic Profile

3.1 Resident Population

The estimated population of the EIA Study Area totalled 94,530 persons for 2023 (ABS Estimated Resident Population, 2023). Over the period 2023-2041, population growth in the EIA Study Area is expected to grow to an additional +24,780 persons.

The majority of this forecast growth is projected to occur in Wingecarribee and Goulburn Mulwaree LGAs, anchored around key centres such as Goulburn, Moss Vale and Bowral. The Upper Lachlan Shire will support a smaller amount of growth estimated at +1,230 residents between 2023 and 2041.

Official population projections prepared by NSW government and rebased to the most recent ABS estimated resident population figures for 2023, are shown in **Table 4.**

Table 4 Resident Population Forecasts

Population (no.)	2023	2026	2031	2036	2041	2023 to 2041
Upper Lachlan Shire	8,710	8,970	9,360	9,680	9,940	+1,230
Goulburn Mulwaree	32,710	34,050	36,270	38,400	40,430	+7,720
Wingecarribee	53,110	55,760	60,630	65,470	70,250	+17,140
Total Study Area	**94,530**	**98,780**	**106,250**	**113,550**	**120,620**	**+26,090**

Source: ABS, 3218.0 Regional Population Growth, Australia; Department of Environment and Planning – NSW State and Local Government Population Projections 2022
Notes: Figures rounded

3.2 Labour Force

As of March 2024 (latest available), the EIA Study Area had a labour force of 48,960 persons and an unemployment rate of 1.9%, based on information from the Australian Government Small Area Labour Markets data. This is a significantly lower unemployment rate compared to NSW (3.5%). The EIA Study Area currently has approximately 920 persons who are unemployed as shown in **Table 5**.

The Project is likely to require some 96 FTE workers onsite during the construction phase on average. It is anticipated that approximately 20% of these workers will be sourced from within the EIA Study Area, providing some new opportunities for unemployed job seekers (subject to appropriate skills match) or 'back filling' employment opportunities associated with jobs vacated by workers taking up Project employment. It is anticipated that the remaining 80% of non-local workers will require accommodation during the construction phase. Labour supply factors are further explored in **Section 4.**

Table 5 Resident Labour Force Statistics – EIA Study Area, September 2023

LGA/Area	Labour Force	Unemployed	Employed	Unemployment Rate
Upper Lachlan	4,873	77	4,796	1.6%
Goulburn Mulwaree	17,209	493	16,716	2.9%
Wingecarribee	25,630	351	25,279	1.4%
Total EIA Study Area	**47,712**	**921**	**46,791**	**1.9%**
New South Wales	4,540,280	158,847	4,381,433	3.5%

Source: Australian Government National Skills Commission, *Small Area Labour Markets,* March Quarter 2024

3.3 Occupational Structure

The skills base of the EIA Study Area is reflected in its occupational structure. ABS Census data for 2021 highlights that the occupations of approximately 32.6% of employed residents in the EIA Study Area were broadly aligned with the types of skills required for the construction of major utility-scale renewable energy projects (e.g., technicians and trades workers, machinery operators and drivers, and labourers). Refer to **Table 6**.

The representation of these occupations in the EIA Study Area is significantly above the State average (26.1%), indicating a generally suitable occupational base for the Project is present in the region (subject to availability). In

total numbers, 13,680 workers in the EIA Study Area are occupied in construction-related activities, highlighting the strong worker base available to support larger infrastructure projects.

Table 6 Occupational Structure – EIA Study Area

Occupation	Study Area		New South Wales
	(no.)	(%)	(%)
Managers	6,630	15.8%	14.6%
Professionals	7,830	18.6%	25.8%
Technicians and Trades Workers	6,440	15.3%	11.9%
Community and Personal Service Workers	5,150	12.3%	10.6%
Clerical and Administrative Workers	4,740	11.3%	13.0%
Sales Workers	3,510	8.4%	8.0%
Machinery Operators and Drivers	2,800	6.7%	6.0%
Labourers	4,440	10.6%	8.2%
Inadequately described	450	1.1%	1.1%
Not stated	340	0.8%	0.8%
Total	**41,990**	**100.0%**	**100.0%**

Source: ABS Census of Population and Housing, 2021, TableBuilder – Usual Place of Residence
Note: Figures Rounded
Note: Blue rows represent construction related activities

3.4 Industry Structure

According to the 2021 Census data around 21.4% of the resident population in the EIA Study Area (9,050) are employed in industries with skills that broadly align with those needed to for this project like construction and manufacturing among others. This share is higher than the NSW total of 19.7%.

Table 7 Industry of Employment

Industry of Employment	EIA Study Area		New South Wales
	(no.)	(%)	(%)
Agriculture, Forestry and Fishing	2,240	5.3%	2.0%
Mining	500	1.2%	1.0%
Manufacturing	2,580	6.1%	5.5%
Electricity, Gas, Water and Waste Services	410	1.0%	1.0%
Construction	4,370	10.3%	8.6%
Wholesale Trade	1,090	2.6%	2.8%
Retail Trade	3,780	8.9%	9.0%
Accommodation and Food Services	3,080	7.3%	6.2%
Transport, Postal and Warehousing	1,690	4.0%	4.6%
Information Media and Telecommunications	400	0.9%	1.8%
Financial and Insurance Services	830	2.0%	5.3%
Rental, Hiring and Real Estate Services	690	1.6%	1.7%
Professional, Scientific and Technical Services	2,620	6.2%	8.9%
Administrative and Support Services	1,480	3.5%	3.2%
Public Administration and Safety	2,980	7.0%	6.1%
Education and Training	3,650	8.6%	8.7%
Health Care and Social Assistance	5,930	14.0%	14.4%
Arts and Recreation Services	570	1.3%	1.4%
Other Services	1,670	4.0%	3.4%
Inadequately described	1,130	2.7%	3.2%
Not stated	580	1.4%	1.3%
Total	**42,270**	**100.0%**	**100.0%**

Source: ABS Census of Population and Housing, 2021, TableBuilder – Usual Place of Residence
Note: Figures Rounded

3.5 Business Structure

A tangible benefit of a major investment project is the extent to which local businesses can participate through project contracts and other service provision.

ABS Business Count data for September 2023 shows the EIA Study Area includes some 2,710 construction, manufacturing and transport/warehousing related businesses, representing 25.6%% of all businesses located in the EIA Study Area (refer **Table 8**).This data indicates a reasonable presence in the EIA Study Area of the types of firms that have potential to service aspects of the Project. This opportunity is discussed in more detail in the following chapter (**Section 4**).

Table 8 Construction Related Businesses – EIA Study Area

Businesses Project Role/Influence	Total Business (No.)	Total Business (%)
Construction Related	1,873	17.7%
Small Scale Construction Contribution	384	3.6%
Contractor Employee Support	2,919	27.6%
Total Businesses Likely to Assist Development of Project	**8,176**	**48.9%**

Source: ABS, Counts of Australian Businesses, including Entries and Exists, September 2023
Notes: Figures Rounded

Although construction-related businesses (highlighted in yellow) will likely be the main beneficiaries), businesses in other sectors supporting the Project (directly and indirectly) as highlighted in blue are also likely to benefit, including:

- Retail trade
- Accommodation and food services
- Rental, hiring and real estate services
- Health care and social assistance.

These sectors make up approximately 23.0% of all businesses located in the EIA Study Area and their services will likely play a role in supporting the needs of project workers, especially those relocating to the EIA Study Area to work on the Project. This data is included in **Table 9**.

Table 9 Business Structure – EIA Study Area

Industry	Goulburn Mulwaree	Upper Lachlan Shire	Wingecarribee	Total EIA Study Area	EIA Study Area Industry Share
Agriculture, Forestry and Fishing	491	874	585	1,950	18.4%
Mining	7	3	18	28	0.3%
Manufacturing	100	30	254	384	3.6%
Electricity, Gas, Water and Waste Services	11	3	16	30	0.3%
Construction	524	160	1,189	1,873	17.7%
Wholesale Trade	56	22	188	266	2.5%
Retail Trade	176	47	431	654	6.2%
Accommodation and Food Services	103	40	303	446	4.2%
Transport, Postal and Warehousing	152	38	262	452	4.3%
Information Media and Telecommunications	14	3	83	100	0.9%
Financial and Insurance Services	62	13	245	320	3.0%
Rental, Hiring and Real Estate Services	206	63	649	918	8.7%
Professional, Scientific and Technical Services	214	86	971	1,271	12.0%
Administrative and Support Services	117	19	328	464	4.4%
Public Administration and Safety	8	0	11	19	0.2%
Education and Training	29	11	100	140	1.3%
Health Care and Social Assistance	129	37	415	581	5.5%
Arts and Recreation Services	47	10	126	183	1.7%
Other Services	156	36	297	489	4.6%

Industry	Goulburn Mulwaree	Upper Lachlan Shire	Wingecarribee	Total EIA Study Area	EIA Study Area Industry Share
Currently Unknown	0	0	4	4	0.0%
Total	**2,602**	**1,495**	**6,475**	**10,572**	**100.0%**

Source: ABS, Counts of Australian Businesses, including Entries and Exists, September 2023

3.6 Township Services Capacity

This section provides an overview of townships located within 1 hours drive time of the Project Area that may have the capacity to support the Project through accommodation, labour and supplier needs.

3.6.1 Accommodation

Commercial Accommodation

The non-local construction workforce will require accommodation during the construction phase of the Project. Some of this requirement can be satisfied through the use of commercial accommodation. However, the capacity of existing accommodation providers across the Study Area, needs to be taken into consideration. This is particularly relevant given the need for this accommodation to service many sectors such as tourism and visitor groups, especially within Goulburn as a regional city, and the Southern Highlands (Moss Vale, Bowral and Mittagong) as a key tourism destination.

An audit has been undertaken of commercial and private accommodation located within the EIA Study Area's major townships. These townships generally represent a maximum drivetime of 60-minutes the Project Area. The EIA Study Area's commercial accommodation capacity is currently approximately 1,710 rooms, as shown by **Table 10**.

Most accommodation options in the EIA Study Area are located at Goulburn (767 rooms), Bowral (386 rooms) and Mittagong (256 rooms) reflecting their role as regional service centres or tourism destinations. A more limited provision of visitor accommodation is located in the smaller towns of Marulan, Taralga, Bundanoon, Gunning and Crookwell.

The range of short-term commercial accommodation options available in the EIA Study Area is diverse and includes motels, hotels, guest houses, caravan/holiday parks. However, the depth of supply may not be sufficient to service the accommodation demands associated with multiple concurrent infrastructure projects in the EIA Study Area. **Section 4.5** of this report assesses the housing and commercial accommodation sector impacts, with regard to cumulative projects in the EIA Study Area.

From an economic perspective, the key concern is that the commercial accommodation demands of the Project, in addition to other large infrastructure projects in the EIA Study Area, results in a shortage of rooms for other sectors, including general business visitation and tourism visitation which negatively impacts these sectors.

Table 10 Commercial Accommodation – EIA Study Area April 2024

Township	Establishments	Total Rooms Supply
Goulburn	27	767
Marulan	5	55
Moss Vale	12	159
Mittagong	13	256
Bowral	23	386
Taralga	3	18
Crookwell	3	37
Gunning	23	24
Bundanoon	20	27
Remainder of Study Area	21	113
EIA Study Area	**86**	**1,842**

Source: STR and Tripadvisor, Ethos Urban

Commercial Room Occupancy Rates

The NSW Government publishes quarterly snapshot of room occupancy rates from data sourced from the STR database (an official Australian Government database). The STR Tourist Accommodation Snapshot for December Quarter 2023 (which covers the main summer holiday period) shows that Capital Country, in which the EIA Study Area is located, had annual room occupancy rates of 59.1%.

NSW Tourist Accommodation Snapshot for December Quater 2023 is summarised in **Table 11**.

Table 11 Commercial Room Accommodation Occupancy Rates by Tourism Region

Tourism Region	Occupancy Dec Qtr. 2023
Blue Mountains	54.9%
Capital Country	59.1%
Central Coast	67.7%
Central NSW	68.0%
Hunter	71.2%
New England North West	61.1%
North Coast NSW	65.6%
Riverina	68.5%
Snowy Mountains	47.8%
South Coast	67.0%
The Murray	67.0%

Source: STR Tourist Accommodation Snapshot – December Qtr 2023

Private Accommodation

Private accommodation is often used to support construction worker needs for major renewable energy projects. This could be through leasing of holiday homes and investment properties, either privately (including Airbnb), or through real estate agents.

Within the Study Area, there is a total of 194 vacant dwellings. Specifically, based on information from SQM, in April 2024, the 2580 postcode (which includes Goulburn) had a vacancy rate of just 1.6%.

Short-term/temporary accommodation is another option for construction workers, with 1,110 active short-term rentals currently advertised in the EIA Study Area (based on data sourced from www.airdna.co in April 2024). Based on an average short-term rental of 2.7 rooms per listing across the EIA Study Area, a total of 2,980 rooms could be available. However, it is likely that many of these rooms already play a role in servicing a range of visitor sectors including business travellers, tourists, seasonal agriculture workers and the visiting friends and family cohort. There is the possibility that more short-term accommodation supply may enter the market to meet increased demand.

Table 12 Residential Vacancy – Study Area by Postcodes

Postcode/Region	Major Township	Vacant Dwellings (No.)	Vacancy Rate (%)
2580	Goulburn	57	1.6%
2575	Mittagong	30	2.0%
2576	Bowral	34	3.5%
2577	Moss Vale	37	2.7%
2578	Bundanoon	9	5.4%
2579	Marulan	21	9.7%
2581	Gunning	5	4.5%
2583	Crookwell	1	0.5%
EIA Study Area		**194**	**2.6%**

Source: SQM

The EIA Study Area has a higher share of unoccupied dwellings (12.4%) when compared to the NSW average (9.4%). According to the ABS 2021 Census, some 23.3% of dwellings within the Upper Lachlan Shire were unoccupied (equating to 983 dwellings). These shares were lower in Goulburn Mulwaree and Wingecarribee municipalities (13.0% and 12.4% of dwelling stock). It is acknowledged that most of these unoccupied dwellings will not be available for project workers, with many being secondary homes that are not available on the rental markets. However, some new stock may enter to the market on a temporary basis to support the Project and other major infrastructure projects in the region.

Table 13 Unoccupied Private Dwellings – EIA Study Area 2021

LGA	Occupied Dwellings		Unoccupied Dwellings	
	no.	%	no.	%
Upper Lachlan Shire	3,249	76.8%	983	23.2%
Goulburn Mulwaree	12,045	87.0%	1,799	13.0%
Wingecarribee	20,184	90.0%	2,250	10.0%
EIA Study Area	**35,478**	**87.6%**	**5,032**	**12.4%**
NSW	**2,900,470**	**90.6%**	**299,520**	**9.4%**

Source: ABS Census of Population and Housing 2021

The development of large infrastructure projects in regional areas can result in local rental markets reaching full utilisation due to accommodation demand from non-local construction workers. Potential exists that the private accommodation demands of the multiple concurrent renewable energy projects in the EIA Study Area (including the Project) could result in a shortage of established (long-term) rental supply and thereby upward pressure prices, and the potential for local renters to be priced out of the market.

3.6.2 Township Services

Workers locating temporarily to the EIA Study Area will require a wide range of convenience services, including retail, health and food and dining for example. In addition to this, the Project will also need to source, trade, equipment hire, fuel, vehicle mechanical services, and other services from business located in the immediate region.

The following sections provide an overview of the services located in the regional centres/main townships within the EIA Study Area.

Goulburn

Goulburn is a major regional centre located strategically along the Hume Highway, acting as a key destination between Canberra and Sydney. The regional city supports a population of 25,017 (ABS) and is located around 40km south west of the Project Area. This town provides critical services to surrounding regional townships, such as Crookwell, Taralga, Marulan and Gunning.

Goulburn supports a range of major civic, education, health, retail and commercial services, and is a key centre for employment within the Goulburn Mulwaree LGA. Key services include:

- Wide range of accommodation options within the town centre. Goulburn serves a regional function being a strategic stopping point before Sydney, and more broadly along the eastern seaboard between Victoria and Queensland. There is a diversity of accommodation options including hotels, motels and caravan parks.
- Higher order retailing including:
  - Goulburn Square: Anchored by Coles and Kmart
  - Goulburn Marketplace Anchored by Woolworths
  - Retailing along Auburn Street, including provision of cafes, restaurants, clubs (i.e. RSL), pubs, takeaway shops and other retail suppliers and services (i.e. apparel and homewares).
- Banks and other financial institutions and services
- Engineering and mechanical services
- Goulburn Base Hospital – which operates as the major regional hospital with an emergency department for Goulburn Mulwaree LGA. The hospital has recently undergone a major upgrade.
- Other health services – including general practitioners, allied health, and pharmacies.
- Airport – Private owned facility that offers general aviation services only, including recreational skydiving activities.
- Goulburn Correctional Centre – Australia's super maximum-security prison.
- Education – Goulburn has a strong presence of educational institutions, including primary and secondary schools, as well as tertiary education facilities. Of significance, this includes institutions such as TAFE, as well as the NSW Police Academy operated by Charles Sturt University. The NSW Police Force host major events a number of times throughout the year that attract visitation to Goulburn.
- Entertainment and community spaces – parks, hotels, clubs, recreational activities, aquatic centre, library, performing arts centre/theatre and cinema.
- Post Office, Police Station, Rural Fire Services
- Multiple real estate agents
- Multiple service stations
- Hardware stores (Bunnings, Mitre 10), wholesale trade supplies, plumbing (Reece), earthworks and demolition, builders, concreting services, electricians, transport and bulk haulage, quarries, plant hire companies (Kennards) and other industrial suppliers.
- Agricultural services including equipment hire, produce, irrigation and general rural supplies.

Figure 4 Goulburn – Auburn Street

Source: Ethos Urban

Marulan

Marulan is a village located 20km south of the Project Area, along the Hume Highway. Marulan supports an estimated population of 354 residents within the urban area. The village includes a limited provision of local retail services including an IGA, butcher, baker, pub, cafes, general store, and retail services (i.e. hairdressing). Marulan supports some visitor accommodation, primarily serving passing traffic and acts as a truck stop destination. Marulan's other key services include:

- A Boral concreting facility
- Plant hire

- Rural supplies
- Two quarries operated by Holcim and Gunlake. There is also a major quarry and limestone mine located in Marulan South operated by Boral.

Moss Vale

Moss Vale is designated strategic centre of an estimated 9,497 residents. Moss Vale is located within the Southern Highlands region, approximately 35km east of the Project Area, supports a range of critical services for local residents, including the following:

- Limited commercial visitor accommodation, with accommodation services predominantly including boutique homes/bed and breakfasts, caravan parks or pub/hotel accommodation.
- A strong provision of retail including:
  - A SUPA IGA
  - A supermarket centre (anchored by Coles)
  - Large format retailing, including major stores such as Harvey Norman.
  - Retailing along the Illawarra Highway including pubs, cafes, restaurants, takeaway food, bakeries, apparel, homewares, retail services (i.e. hairdressing and health/fitness)
- Health services – including allied health, pharmacies, dentists and medical centres (General Practitioners)
- Education – including University of Wollongong Southern Highlands Campus, TAFE NSW, primary and high schools.
- Hardware stores (Mitre 10), irrigation and machinery services.
- Resource recovery centre and other waste management services

Bundanoon

Bundanoon is a small historic township located approximately 35km east of the Project Area, and supports a population of 2,601 in 2023. The township is serviced by Bundanoon Station, and is accessed via Penrose Road which connects to the Illawarra Highway (north) and Hume Highway (south). Bundanoon supports the following:

- Small grocer and store
- Bank
- Pharmacy
- Cafes, restaurants and bakeries
- Public swimming pool
- Rural Fire Service
- Newsagency
- Services such as hairdressers, real estate and post office.

Berrima

Berrima is a historic township located around 35km northeast of the Project Area in Wingecarribee Shire LGA. Berrima had a population of 994 persons, and overall is a relatively small township that would offer a limited provision of services to support the Project. Services and facilities provided in Berrima include:

- Several restaurants, pubs, cafes and bakeries
- Gallery
- General stores and markets
- Rural Fire Service
- Several private accommodation options (Airbnb and cottages etc)

Bowral

Located approximately 45km northeast of the Project Area, Bowral is one of the major townships within a 60-minute drive from the Project Area in the Study Area within the Wingecarribee LGA. The estimated population for Bowral in 2023 was 10,727 residents. This township in the Southern Highlands provides range of services for neighbouring towns within the LGA and will also function as an important centre providing a range of basic amenities and services for the Project workers during the construction and operation period after Goulburn. Key services include:

- A number of accommodation options within the town centre. Bowral serves being a strategic stopping point between Syndey and Canberra

- Range of restaurant and cafes
- Grocery shops: Coles, Woolworths, ALDI and Harris Farm
- Accommodation options include cottages, hotels, bed and breakfast, cabins and caravan parks
- Recreation facilities such as Bowral Golf club, Bradman Cricket and International Hall of Fame and Bowral Bowling Club
- Entertainment and community spaces – parks, hotels, clubs, aquatic centre, library, performing arts centre/theatre and cinema
- Educations centres including several childcare centres, primary and high schools.
- Post Office, Police Station, Rural Fire Services
- Bowral and District Hospital and a range of other smaller medical centres and nursing homes
- Several hardware stores including Mitre 10, Plumbing Co-op, Reece Plumbing and Bowral Toolbox and equipment hire and supplies.

Mittagong

Located approximately 50km northeast of the Project Area, Mittagong is one of the large township situated within the Wingecarribee LGA. The estimated population for Mittagong in 2023 is 10,820 persons across the district area. This township in the Southern Highlands provides range of services for neighbouring towns within the LGA and could function as an important centre providing a range of basic amenities and services for the Project workers during the construction and operation period. Key services include:

- Several accommodation options (hotels and motels)
- Range of restaurant and cafes
- Range of grocery shops, including Woolworths and ALDI
- Post Office
- Emergency services including Police and Rural Fire Services
- Hardware Stores such as Mitre 10, Bunnings, Total Tools, Hudson Home Timber, Plumbers Co-op and Supercheap Auto as well as equipment hire and supplies
- Education – Mittagong has a number of educational institutions, including primary and secondary schools and early learning centres.

Taralga

Taralga is a small township located around 60km north of the Project Area. The 2023 population of Taralga was 283 (within the urban area). The township overall supports a limited provision of services, and includes the following:

- General Store
- Post Office
- RSL and hotels
- Medical Practice
- Café
- Service Station
- Rural supplies and hardware stores

Crookwell

Located within an approximately 80km drive northwest of Project Area, Crookwell supports an estimated population of 2,095 residents as of 2023 (within the urban rea). The township functions as a smaller local service centre for residents in the Upper Lachlan Shire. Residents in Crookwell rely on surrounding towns especially Goulburn for services (i.e. major supermarkets, businesses and other retail), with the township supporting basic services for the local population, including:

- IGA Plus Liquor
- Cafes
- Bakery
- Veterinary Hospital
- Crookwell Public School
- Service stations

- Agricultural services such as hardware, supplies and livestock produce.
- Commonwealth Bank Branch

Gunning

Located between Goulburn and Yass along the Hume Highway, Gunning is a small township with an estimated population of 609 residents (within the urban area) and is located approximately 85km west of the Project Area. The township is located around 85km west of the Project Area and has a limited provision of supporting services for the Project, and includes the following:

- Two commercial residence options
- Education – A small primary school
- Retail – including cafes, pubs, butcher, small homeware and apparel stores.
- Post office
- Agricultural supplies and services

Figure 5 Taralga

Source: Ethos Urban

Figure 6 Marulan (Motor Inn)

Source: Ethos Urban

Figure 7 Bowral – Bong Bong Street

Source: Ethos Urban

Figure 8 Moss Vale – Shopping Centre

Source: Ethos Urban

Figure 9 Crookwell – Goulburn Street

Source: Ethos Urban

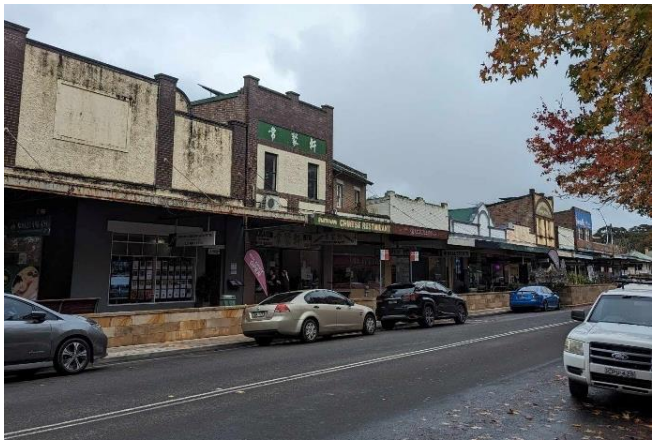


Figure 10 Bundanoon – Railway Avenue Shops

Source: Ethos Urban

3.7 Summary

The following key findings are highlighted:

1. The population of the EIA Study Area totalled 94,530 persons of 2023. Between 2023 and 2041, the population of the EIA Study Area is forecast to increase by + 26,090 residents.
2. Local investment in renewable energy projects (such as the Project) can generate new employment opportunities for residents and generate economic stimulus in the local region as well as provide new income streams for local farmers. These factors may contribute to population levels within the EIA Study Area being retained or potentially increasing. Importantly, renewable energy projects can service increased electricity demands as the number of residents and subsequently households in the Study Area increases in the coming years.
3. The EIA Study Area had an unemployment rate of approximately 1.9% in March 2023, with 921 jobseekers unemployed. Goulburn Mulwaree LGA has the highest unemployment rate (2.9%) compared to Wingecarribee and Upper Lachlan Shire LGAs. New short-term employment opportunities for the region's labour force participants (including unemployed job seekers, subject to suitable skills match) will be generated by the Project, with a small amount of ongoing employment also supported once the facility is operational.
4. The EIA Study Area's occupational and business structures indicate a good base exists to service the needs of the Project, with approximately 1,873 business and 13,680 workers involved in construction related industries.
5. The EIA Study Area supports a substantial provision of commercial accommodation rooms (1,842 rooms) across a diverse range of accommodation options (hotels, motels, caravan parks and guest houses). The majority of this accommodation is supported in larger townships such as Goulburn, Bowral and Mittagong, with a more limited provision in the smaller townships of Marulan, Taralga and Bundanoon etc. In addition to this, the EIA Study Area has around 1,110 short term rental properties that may be available to service some of the Projects accommodation requirements.
6. The major regional townships of Goulburn, Mittagong, Moss Vale and Bowral have the capacity and labour force to service aspects of the Project, while smaller settlements such Crookwell, Taralga, Gunning, and Marulan have the potential to provide more limited provision of labour, accommodation, and other general services.

4.0 Economic Impact Assessment

4.1 Project Investment

The Project has an Estimated Development Cost (EDC) of approximately $402 million, based on a cost report prepared by Mullen Partnership. Investment costs are associated with the purchase of BESS modules, substation construction and associated equipment etc. Significant investment is also required for civil, electrical and grid connection works.

A review of confidential information from constructed renewable energy projects in Australia (based on unpublished Engineering, Procurement and Construction (EPC) data) shows approximately 15% of construction investment is generally retained within the host EIA Study Area for these types of projects. Applying this ratio to total investment indicates approximately $60 million in wages (rounded), contracts and other service provision may be generated for the EIA Study Area's economy up to 18 months.

Table 14 Project Investment and EIA Study Area Retention

	Value
Total Project Capital Investment Value	$402 million
Retained Investment in EIA Study Area (%)	15%
Retained Investment in EIA Study Area (No.)	$60 million

Source: Mullen Partnership, Ethos Urban

4.2 Project Employment

Project employment is assessed in terms of direct jobs (i.e., site-related) and indirect (or flow-on) jobs in the local and wider economies (i.e., jobs that are generated through the industrial and consumption impacts of the initial investment).

4.2.1 Construction Phase

Direct Construction Phase

Data provided by the Proponent indicates 71 direct Full Time Equivalent (FTE) jobs will be generated over the construction phase, which is expected to be 18 months (assumed for this EIA). That is, on average 71 direct FTE jobs will be sustained for each of the 18 months of construction activities. However, actual workforce numbers will vary from month to month depending on the intensity of construction at the time. At the Project's peak, which may last for several months, the Proponent estimates 102 direct FTE positions will be supported by on-site construction activities.

Based on the Proponent's experience of BESS construction projects in similar rural locations, the following employment split is considered realistic:

- 20% or 14 FTE jobs sourced from within the EIA Study Area (local employment) – rising to 20 FTE at peak
- 80% or 57 FTE jobs sourced from outside the EIA Study Area (non-local employment) – rising to 82 FTE at peak

It is important to note that sourcing 20% of the construction workforce locally should be considered a target rather than a commitment by the Proponent.

Construction-related jobs are expected to be associated with a wide-range of on and off-site activities, including:

- Labour recruitment
- Training
- Vehicle and equipment hire
- Earthworks
- Foundations
- Engineering services
- Roads and access tracks
- Electrical works (cabling and connections)
- Installation of monitoring equipment
- Fencing
- Landscaping
- Security
- Waste disposal
- Business and financial services

- Transport and logistics
- Assembly and installation of key components.
- Administrative services.

As highlighted in **Section 3**, the business structure of the EIA Study Area indicates that a good mix of these types of services is available in the EIA Study Area, especially in Goulburn. It is reasonable to expect, therefore, that businesses located in the EIA Study Area will be well-positioned to provide services and secure contracts during the construction phase of the Project either directly or indirectly.

Indirect Construction Employment

In addition to direct employment, significant employment will be generated indirectly by the Project through the employment multiplier effect. By applying an industry-standard multiplier for the construction industry of 1.6 (based on ABS Type B multipliers), the Project is estimated to generate an additional 114 indirect FTE jobs over the construction period, increasing to 163 indirect FTE jobs during the projects peak.

Indirect or flow-on jobs (which captures industry and consumption effects) include those supported locally and in the wider economy (including within other parts of NSW, and nationally), as the economic effects of the capital investment flow through the economy. Indirect employment creation in local and regional economies includes jobs supported through catering, accommodation, trade supplies, fuel supplies, transportation, food and drink etc.

For the purposes of this assessment, it is assumed 20% of the 114 indirect jobs (equating to 23 indirect FTE jobs) are supported locally in the EIA Study Area. This assumption is made with reference to findings from completed renewable energy projects in regional areas, where generally a 20% share of indirect jobs is applied and noting the significant influx of non-local workers (and their spending) likely to be associated with the Project.

Total Construction Employment

A summary of total average construction employment to be supported by the Project is provided below.

Table 15 Construction Employment Summary

	Average Local FTE Jobs per Month	Average Non- Local FTE Jobs per Month	Average FTE Jobs per Month
Direct Average Jobs	14	57	71
Indirect Average FTE Jobs	23	91	114
Total Average FTE Jobs	**37**	**148**	**185**

Source: Ethos Urban, Umwelt

Note: Figures Rounded

4.2.2 Operational Phase

Direct Operational Employment

The Proponent indicates that 15 FTE direct jobs will be supported locally (on-site) on an ongoing basis through the operation and maintenance of the Project.

Indirect Operational Employment

A number of additional jobs will also be supported indirectly through the employment multiplier effect. By applying an industry-standard multiplier for the electricity industry of 2.9 (based on ABS Type B multipliers) to the direct operational and maintenance jobs, a further 45 FTE indirect jobs (rounded) would be generated in the wider State and national economies, with some of these jobs supported locally through operational supply chains and consumption impacts.

As noted previously, it is assumed that 20% of indirect operational jobs are created in the EIA Study Area. This equates to approximately 9 ongoing FTE EIA Study Area positions.

Operational-related employment is for the lifetime of the Project (30 years); therefore, while ongoing job creation is relatively small, it represents new long-term employment opportunities at a local, regional and national level.

Total Operational Employment

In summary, approximately 60 FTE jobs (15 FTE direct and 45 FTE indirect) are expected to be generated by the Project, with 24 FTE positions supported in the EIA Study Area. A summary of total operational employment is provided in **Table 16** below.

Table 16 Total Operational Employment

	Total Employment	Total Employment – EIA Study Area
Direct FTE Jobs	15	15
Indirect FTE Jobs	45	9
Total FTE Jobs	**60**	**24**

Source: Ethos Urban, Umwelt

Note: Figures Rounded

4.3 Cumulative Effects Assessment

Construction of the Project will potentially need to compete for labour, accommodation, and other resources with major infrastructure projects under construction in the EIA Study Area at the same time. For the purposes of this assessment, major projects include other energy and storage projects, as well as significant civil or other infrastructure projects that may compete with the Project for labour, accommodation and other services.

Projects within a 1-hour drivetime (broadly reflecting the EIA Study Area) of the Project Area have been considered as part of the cumulative impact assessment.

The Assessment Risk ratings are based on the following:

- **Low:** No further consideration of cumulative impacts undertaken.
- **Medium:** Potential for overlap however unlikely to result in substantial cumulative impacts – qualitative assessment of cumulative impacts undertaken.
- **High:** Overlap is certain and there is potential for substantial cumulative impacts – qualitative assessment of the cumulative impacts undertaken.

A list of potentially competing projects in the EIA Study Area and associated level of anticipated impact is shown in **Table 17.** These projects are considered likely to have varying degrees of interaction with the Project from an economics perspective (i.e. timing of the construction phase overlaps, proximity to other major centres, and distance from the Project Area).

To assess impacts, the construction timing for the Project is assumed to commence in 2026, and construction phase run for 18 months (i.e. until mid-2027).

In relation to proposed renewable energy projects, the following is noted:

- The projects outlined in the cumulative impact table are within various stages of the development cycles, including some planned or approved. With this in mind, many of the projects outlined do not have clear or definitive construction programs available, as such timing and construction overlap with the Project is not certain. Further, not all identified projects may end up proceeding. It should be noted that where limited information is available on timing and phasing of a project, it has been assumed that there is potential for overlap with the Wattle Creek Solar Farm located within the Project Area.
- The location of competing renewable energy projects (and other major energy projects) in the EIA Study Area is shown in **Figure 12**. The figure also shows proposed renewable energy and storage projects immediately beyond the EIA Study Area. These projects are shown for illustrative purposes only and excluded from the cumulative impact assessment (unless otherwise stated,) given their distance from the Project Area (over 1 hour drive), and proximity to other major centres (i.e. Canberra, Yass, and Bathurst), therefore, the Project is highly unlikely to compete with for resources such as accommodation, labour and services.

The assessment highlights that the construction phase of eight major infrastructure projects may overlap with the construction of the Project. These projects include:

- **Wattle Creek Solar Farm Project -** The proposed 265 MW Wattle Creek Solar Farm will be constructed concurrently (over 18 months) with the Project (High Risk).
- **Gundary Solar Farm –** A proposed 400 MWp solar farm proposed approximately 10km south of Goulburn, and is likely to overlap with the Projects construction timeframe (High Risk).

- **Marulan Gas Fired Power Station –** The approved Power Station is located directly south of the Project Area. The modified consent requires physical commencement of the project by October 2024, and a modification application to extend the projects approval lapse date was lodged in August 2024. The latest modification report indicates construction timing of early 2028 to 2030. Accordingly, this may overlap with the Project. Taking this into account the project's proximity to the Project Area, the Marulan Gas Fired Power Station is considered High Risk.
- **HumeLink –** a significant transmission infrastructure project which is likely to overlap with the Project, but uncertainty exists regarding construction timeframe and location of construction activities (High Risk).
- **Merino Solar Farm –** A proposed Merino Solar Farm located immediately south of Goulburn. The Merino Solar Farm is still in the planning phase, and for the purposes of this assessment is assumed to commence construction in late 2025. The project scoping report indicates a 12-18 month construction timeframe, and accordingly may overlap with the Project (High Risk).
- **Marulan Solar Farm** – The approved Marulan Solar Farm located around 15km west of the Project Area in Carrick. Construction is planned to commence in late 2024 and will continue for around 18 months, supporting 300 workers during the projects peak period. Construction is likely to be nearing completion at commencement of the construction phase of the Project, however any delay in the project timeframe could result in greater overlap (Medium Risk).
- **Woodlawn Advanced Energy Recovery Centre** –has a proposed 3-year construction timeframe that will support around 300 workers. The Woodlawn Advanced Energy Recovery Centre was initially planned to commence construction in 2023, however, details from the NSW Government Major Projects website shows that it is yet to be approved. For the purposes of this analysis, construction is assumed to start in H1 2025, and accordingly may overlap with the construction phase of the Project. However, the distance from the Project Area may result in reduced competition impacts (Medium Risk).
- **Shoalhaven Hydro Scheme** - Likely to overlap with the construction timeframe of Project, with a 5 year construction timeframe (assumed to commence in late 2026 for the purposes of this assessment only). However, given its distance from the Project Site and proximity to other markets in the Illawarra and South Coast (i.e. Wollongong, Port Kembla and Nowra), competition impacts for construction services, labour and accommodation likely to be less significant (Medium Risk).

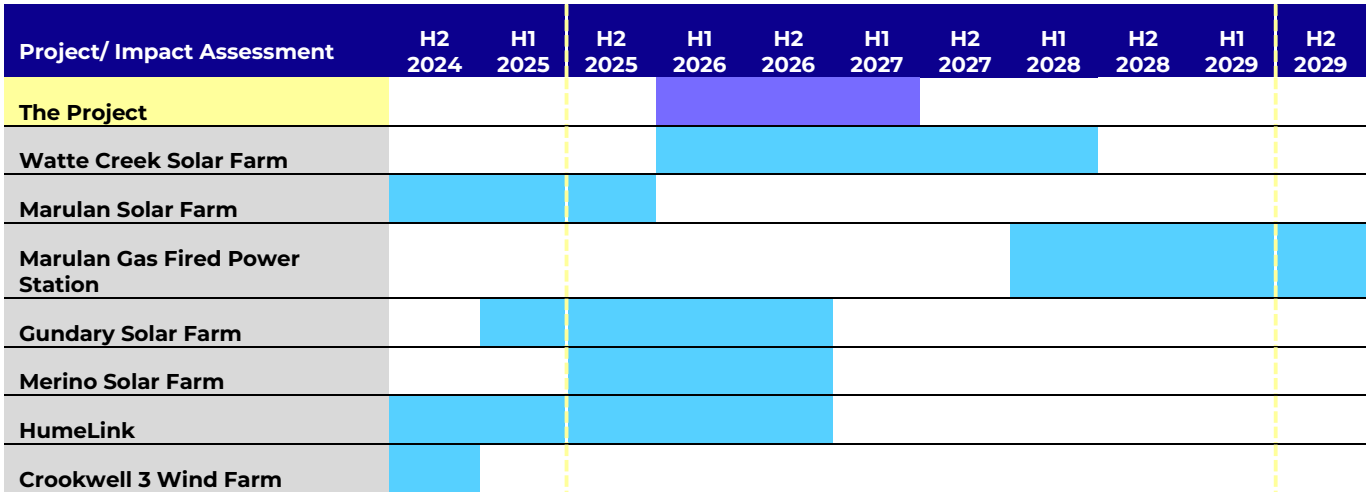
It should be recognised that the multiple major infrastructure projects constructed concurrently in the EIA Study Area (including the Project) will generate cumulative benefits for the regional economy, including:

- Spending stimulus from non-local workers on accommodation, goods and services
- Generate new short-term employment for local communities.
- Increase revenues for local businesses through construction contracts and services provision.
- Develop a renewable energy skills base that may result in efficiencies and further economic opportunities for the region.

Other infrastructure projects that may have low cumulative socio-economic risks/impacts include:

- **Crookwell 3 Windfarm** – Construction is likely to be completed before any commencement of works on the Project (Low Risk).
- **Marulan Quarry** – A short construction period of only 6 months means that the Marulan Quarry is likely to have none or minimal overlap with the Project (Low Risk).

Figure 11 Indicative Timing of Surrounding Projects



Project/ Impact Assessment	H2 2024	H1 2025	H2 2025	H1 2026	H2 2026	H1 2027	H2 2027	H1 2028	H2 2028	H1 2029	H2 2029
Woodlawn Advanced Energy Recovery Centre											
Marulan Quarry											
Shoalhaven Hydro Scheme											

Source: NSW Major Projects Portal; Ethos Urban

Table 17 Cumulative Impacts Assessment

Project	Proximity/Location	Economic Impact
Renewables Project – Approved/Construction not yet commenced		
Crookwell 3 Windfarm	32 km west Crookwell, Upper Lachlan Shire LGA	**Low** Likely to be operational by the time the Project construction phase commences.
Marulan Solar Farm Terrain Solar	15km west Carrick, Goulburn Mulwaree LGA	**Medium** Approved and is likely to be nearing completion during the early phases of construction of the Project. However, any delay to construction could result in greater socio-economic impacts, particularly noting the proximity to the Project Area.
Renewables Project – Proposed/under assessment or in planning and design phases		
Merino Solar Farm ITP	52.0km south west Tirranaville, Goulburn Mulwaree LGA	**High** Potential overlap with The Project if the Merino Solar Farm project extends beyond its planned timeframe. In this instance, the project may compete for construction services, labour and accommodation.
Wattle Creek Solar Farm Project Spark Renewables	Within Project Area Big Hill, Upper Lachlan Shire LGA	**High** The Project is planned to be delivered concurrently with the Wattle Creek Solar Farm Project, and accordingly will overlap.
Marulan Gas Fired Power Station Energy Australia	Adjacent to Project Area Marulan, Goulburn Mulwaree LGA	**High** Construction is planned to start in 2028 and accordingly may overlap with the Project. Given the proximity to the Project Area, any overlap may result in high socio-economic impacts, including competition for construction services, labour and accommodation, as well as amenity, noise and traffic impacts to neighbouring properties.
Gundary Solar Farm Lightsource bp	45km south west Gundary, Goulburn Mulwaree LGA	**High** Likely to overlap with the construction timeframe of the Project. Impacts will be high on construction services, labour and accommodation in Study Area LGAs, particularly Goulburn Mulwaree LGA and Goulburn specifically.
Other Projects – Proposed/Approved, not yet commenced		
HumeLink Transgrid	32km south of the nearest construction facility at Bannaby Located across 5 LGAs, including the Upper Lachlan Shire	**High** Likely to overlap with the construction timeframe of the Project. However, impacts will be dependent on the location of where works are occurring at any particular time. Impacts will be high on construction services, labour and accommodation in Study Area LGA of Upper Lachlan Shire.

Project	Proximity/Location	Economic Impact
Marulan Quarry Global Quarries Australia Pty Ltd	30km south west Marulan, Goulburn Mulwaree LGA	**Low** Likely to be operational by the time the Project construction phase commences.
Shoalhaven Hydro Scheme	41km east Shoalhaven, Shoalhaven City LGA	**Medium** Likely to overlap with the construction phase of the Project. However, given the distance from the Project Site and proximity to larger markets in the Illawarra (I.e. Port Kembla, Wollongong and Nowra), there will likely be less competition for services, labour and accommodation.
Woodlawn Advanced Energy Recovery Centre Veolia	88km south west Tarago, Goulburn Mulwaree LGA	**Medium** Construction timing likely to overlap with the Project. However, given its distance from the Project Area (over 80km) and proximity to the ACT and Queanbeyan, competition impacts for construction services, labour and accommodation may be less significant.

Source: Major Projects, Ethos Urban

Figure 12 Surrounding Renewable Energy and Other Major Projects (Planned, Approved, Under Construction) – EIA Study Area

Source: Major Projects, Ethos Urban

4.4 Labour Force and Business Participation Assessment

In terms of cost efficiencies (lower transport, labour costs etc), many large construction projects located in regional areas are, where possible, serviced locally or from within the immediate region (EIA Study Area).

The EIA Study Area has a comparably moderate provision of construction-related workers (7,360 workers) and construction-related businesses (1,873 businesses), including some located in the immediate region.

The EIA Study Area currently contains 921 unemployed labour force participants, some of whom could work on the Project. Alternatively, unemployed jobseekers may play a 'backfill' role in the labour market, engaging in jobs vacated by other workers transferring to employment on the Project or other major infrastructure projects.

In isolation, and in view of regional labour market, the workforce requirement of 71 Direct FTE workers should not present a constraint to labour supply for the Project. In fact, the Study Area is likely to have the capacity to service the identified local elements of the Project (20% of all direct labour). However, potential does exist for labour market constraints due to the cumulative impacts of concurrent large infrastructure projects in the region.

4.5 Housing and Commercial Accommodation Sector Impacts

As outlined above, the Proponent indicates 82 non-local FTE workers may need to be accommodated in the EIA Study Area at the Project's peak (which is likely to last for several months).

This calculation is based on 80% of the 102 peak on-site FTE workers and represents workers coming from outside the EIA Study Area and requiring accommodation. This level of accommodation relates to the Project's peak only. The average number of non-local staff requiring accommodation across the 18-month construction phase is estimated at 57 FTE workers (noting this number will be much lower during periods of low site activity).

With consideration to the above, the 82 non-local workers requiring accommodation during the Project's peak would equate to just 4.5% of the total 1,842 commercial accommodation rooms available in the EIA Study Area. This requirement decreases to 3.1% of total commercial accommodation rooms, when considering the average monthly 57 FTE non-local workers over the 18-month construction phase. At this level of employment, the Project in isolation would have a negligible impact on the EIA Study Area housing and commercial accommodation sector.

However, the cumulative impact assessment shows that there is a number of projects likely to overlap with the Project construction phase (including the Wattle Creek Solar Farm Project). Accordingly, it is highly likely that there could be a shortage of local accommodation in the EIA Study Area to support multiple major infrastructure projects concurrently, as well as support local industry and population growth pressures. Given the greatest provision of accommodation is located across Goulburn Mulwaree and Wingecarribee LGAs, townships in these areas such as Goulburn, Mittagong, Moss Vale and Bowral are more likely to have the capacity to support some accommodation requirements of the Project. However, these townships will also be more likely to experience housing and accommodation impacts as a result of demand from multiple concurrent projects, other industry sectors (i.e. tourism) and ongoing population growth.

4.6 Local Wage Spending Stimulus (Construction Phase)

Construction employment estimates outlined in this report indicate that 80% of the 71 direct FTE construction jobs, equating to 57 FTE workers, may need to be sourced from non-local areas beyond the EIA Study Area, particularly specialist and management positions.

This level of employment would equate to around $8.7 million in wages (2024 dollars) on average, on the basis that each non-local worker is employed for 18 months and earns the average construction wage of around $102,000 pa (source: ABS, *Average Weekly Earnings 6302.0 - Full Time Adult Ordinary Time Earnings*, May 2024).

A considerable portion of these wages would be spent in the EIA Study Area, where these workers will be based. An estimated $3.3 million in wages (2024 dollars) would likely be directed to local and regional businesses and service providers during the construction period. This estimate is based on reference to the ABS *Household Expenditure Survey* which indicates that approximately 50% of post-tax wages are likely to be spent by workers in the regional economy in view of the wide range of goods and services available in the EIA Study Area, especially in Goulburn. This spending would include the following:

- Housing expenditure, including spending on accommodation at hotels, motels, caravan/holiday parks, B&Bs, and private rental dwellings

- Retail expenditure, including spending on supermarket items, clothing, books, homewares etc
- Recreation spending associated with day trips and excursions, gaming (lottery, sports betting, etc), purchases in pubs and clubs (although noting that expenditures at restaurants is included in the retail category)
- Personal, medical and other services, such as GP fees and local prescriptions, fuel, vehicle maintenance and so on.

This level of personal spending would generate the equivalent of approximately 11 FTE jobs in the services sector and associated supply chains for each of the 18 months of the construction phase (based on 1 FTE job allocated for every $200,000 of induced spending pa), supporting jobs in the EIA Study Area and beyond such as in retail, accommodation, trade supplies, health services, fuel supplies, cafes and restaurants etc. These jobs are included in the 'indirect employment' estimates outlined in **Section 4.2** above.

4.7 Agricultural Impacts

The Project Area encompasses approximately 6,350ha of existing agricultural land that will be required to support the construction and ongoing operation of the Project. Specifically, the development footprint is approximately 75ha, representing some 1.2% of the Project Area.

A Soils, Land and Agricultural Impact Assessment has been prepared by Minesoils Pty Ltd, which assesses the likely impacts of the Project on agricultural productivity. The Assessment outlines that the development footprint consists of the following Land Soil Classification (LSC):

- **LSC Class 5:** Moderate-low capability land – has high limitation for high-impact land uses. Land is mostly restricted to uses including grazing, some horticulture (orchards), forestry and nature conservation. These uses need to be carefully managed to prevent severe land and environmental degradation.

The above outlines that the Project Area does not include any high capability land that could be used for a variety of agricultural and land uses such as cropping, grazing, forestry, horticulture or nature conservation. Accordingly, the Project will not significantly impact on the agricultural productivity or capability of the Project Area. In fact, the Soils, Land and Agricultural Impact Assessment highlights that the temporary decrease of 75ha of land as a result of the Project will have a negligible impact of just 0.02% on the Upper Lachlan Shires agricultural gross output. This is productivity impact is considered immaterial and is based on the total Upper Lachlan Shire agricultural productivity gross value of $153,233,230.

Further to the above, the Project will not result in a loss of agricultural employment at the Project Area (either directly or indirectly through agricultural supply chains). In fact, the Project will support 24 local FTE jobs (direct and indirect) in the regional economy through renewable energy generation, which is higher than the existing number of jobs support at the Project Area.

4.8 Ongoing Economic Stimulus

Financial Returns to Landowners

The landowner involved in the Project will receive annual lease payments to host Project infrastructure. These payments are confidential between the Proponent and landowners.

Financial Returns to the Community

The Proponent has indicated that the Project will not support a community benefit fund, with this benefit to be entirely supported by the Wattle Creek Solar Farm (assessed under separate Economic Impact Assessment and EIS).

Local Operational Wage Stimulus

The Project will support 24 FTE jobs (direct and indirect) in the EIA Study Area during the operational phase. These 24 FTE jobs will provide an estimated stimulus within the EIA Study Area of approximately $1.03 million (2024 dollars) in Year 1 of operations. Over the 30 year operational lifespan of the Project, this stimulus would equate to a total of $49.2 million (CPI inflated).

This figure is based on the assessment that there will be no loss in direct or indirect agricultural jobs associated with the Project (i.e., agricultural activities will continue at existing levels across the Project Area). Refer to **Section 4.6** for wage stimulus methodology.

Total Operational Stimulus

The total economic stimulus associated with the operation of the Project is estimated at approximately $51.2 million over 30 years of operation, (2024 dollars, CPI adjusted) relating to operational wage stimulus and host landowner payments.

4.9 Summary of State Benefits

In addition to supporting the NSW State policy directions and national grid supply benefits outlined above, the Project will deliver the following key State-wide economic benefits:

- **Capital investment:** $100 million or 25% of the total project EDC. The remaining 60% is attributed to imports, and 15% to other states and territories.
- **Construction employment**: 138 FTE direct and indirect construction jobs, or 75% of total construction employment (71 direct and 114 indirect FTE jobs). The remaining 25% is attributed to other states or territories.
- **Ongoing employment:** 55 FTE direct and indirect jobs, or 90% of the total operating employment (60 direct and indirect FTE jobs). The remaining 10% is attributed to other states and territories.
- **Supporting diversification of the economy** through investment in the renewable energy sector.

A summary of state benefits is provided in **Table 18**

Table 18 Summary of State Benefits

Benefit Type	NSW State Benefit	Remaining Benefit to Other States and Territories, and internationally	Total Benefit
Capital Investment	$100 million	$302 million	$402 million
Construction Employment	138 FTE Jobs	46 FTE Jobs	185 FTE Jobs
Ongoing Employment	55 FTE Jobs	5 FTE Jobs	60 FTE Jobs

Source: Ethos Urban

4.10 Decommissioning Impacts

The Project has an operating life of approximately 30 years, at which stage there are likely to be three main options for consideration:

- Continue to use the Project Area as a BESS facility, using the existing infrastructure, potentially with some refurbishments
- Replace/modernise Project infrastructure and continue to operate as a new/significantly upgraded BESS.
- Decommission the Project and rehabilitate the Project Area so the land can be returned to agricultural use.

The decision on whether to refurbish, replace or decommission the Project would be subject to an assessment of the economic viability closer to the time, and in consultation with host landowner, key stakeholders and approval authorities.

If decommissioning were to occur, these activities pose similar potential impacts and benefits as construction activities, albeit over a shorter timescale. Decommissioning activities would involve a significant on-site workforce to dismantle the infrastructure and other workers to transport project components from the site for disposal or recycling. The Project Area would then require a range of resources to undertake rehabilitation activities.

Decommissioning would therefore support significant employment, business contracts and provide a spending stimulus to the EIA Study Area over the decommissioning period.

Given decommissioning will not occur for at least 30 years after the operation of the Project commences, it is not possible to estimate potential impacts and benefits at this stage noting economic, technological and environmental factors may change considerably over this period. Note however, the Proponent is committed to ensure as much infrastructure as possible is recycled on decommissioning.

5.0 Conclusions

1. The Project has an Estimated Development Cost (EDC) of approximately $402 million, of which approximately $60 million is expected to be retained in the EIA Study Area. Approximately 71 direct and 114 indirect FTE positions will be supported in the national economy on average over the 18-month construction period. Once operational, 15 direct and 45 indirect FTE jobs will be supported nationally by the Project. Of this national total, the EIA Study Area is expected to benefit from 37 FTE construction jobs and 24 FTE ongoing jobs supported locally (direct and indirect) as a result of the Project.
2. The anticipated number of direct and indirect FTE jobs in the EIA Study Area during construction (37 FTE) represents only 0.3% of the total labour force in construction-related activities (13,680 workers), noting that many of the indirect jobs will be supported in non-construction sectors (e.g., services sector). The EIA Study Area has some 921 unemployed labour force participants, some of whom could work on the Project and/or other major infrastructure projects (subject to suitable skills mix).
3. It is estimated that construction workers relocating to the region will inject approximately $3.3 million in new spending into the economy over the construction phase, supporting approximately 11 FTE jobs in the service sector in the EIA Study Area over this time.
4. It is possible that the construction of 8 renewable and other major infrastructure projects could overlap with the construction of the Project, although there are a range of uncertainties associated with the timing of approval and subsequent construction of projects that will influence cumulative impacts.
5. The Project is estimated to have a negligible impact of just 0.02% on the Upper Lachan Shires agricultural gross output. Furthermore, the Project Area has no identified high capability land for agricultural purposes. The Project will not result in a loss of agricultural jobs at the Project Area.
6. Ongoing economic stimulus associated with the operation of the Project is estimated at approximately $51.2 million (rounded) (over 30 years, CPI adjusted) relating to landowner payments and operational wage stimulus.
7. In addition to supporting NSW State policy directions and national grid supply benefits, the Project will deliver the following key Statewide economic benefits:
   - Capital investment of around $100 million (25% of the Projects total EDC)
   - 138 FTE direct and indirect construction jobs (75% of total FTE workers to be supported by the Project).
   - 55 FTE direct and indirect ongoing jobs (90% of the total FTE ongoing workers to be supported by the Project).
8. Decommissioning of the Project is likely to support significant employment generation, new business contracts and provide a spending stimulus to the EIA Study Area over the decommissioning period. However, given decommissioning will not occur for at least 30 years after the operation of the Project commences, it is not possible to estimate potential impacts and benefits at this stage noting economic, technological and environmental factors may change considerably over this period.