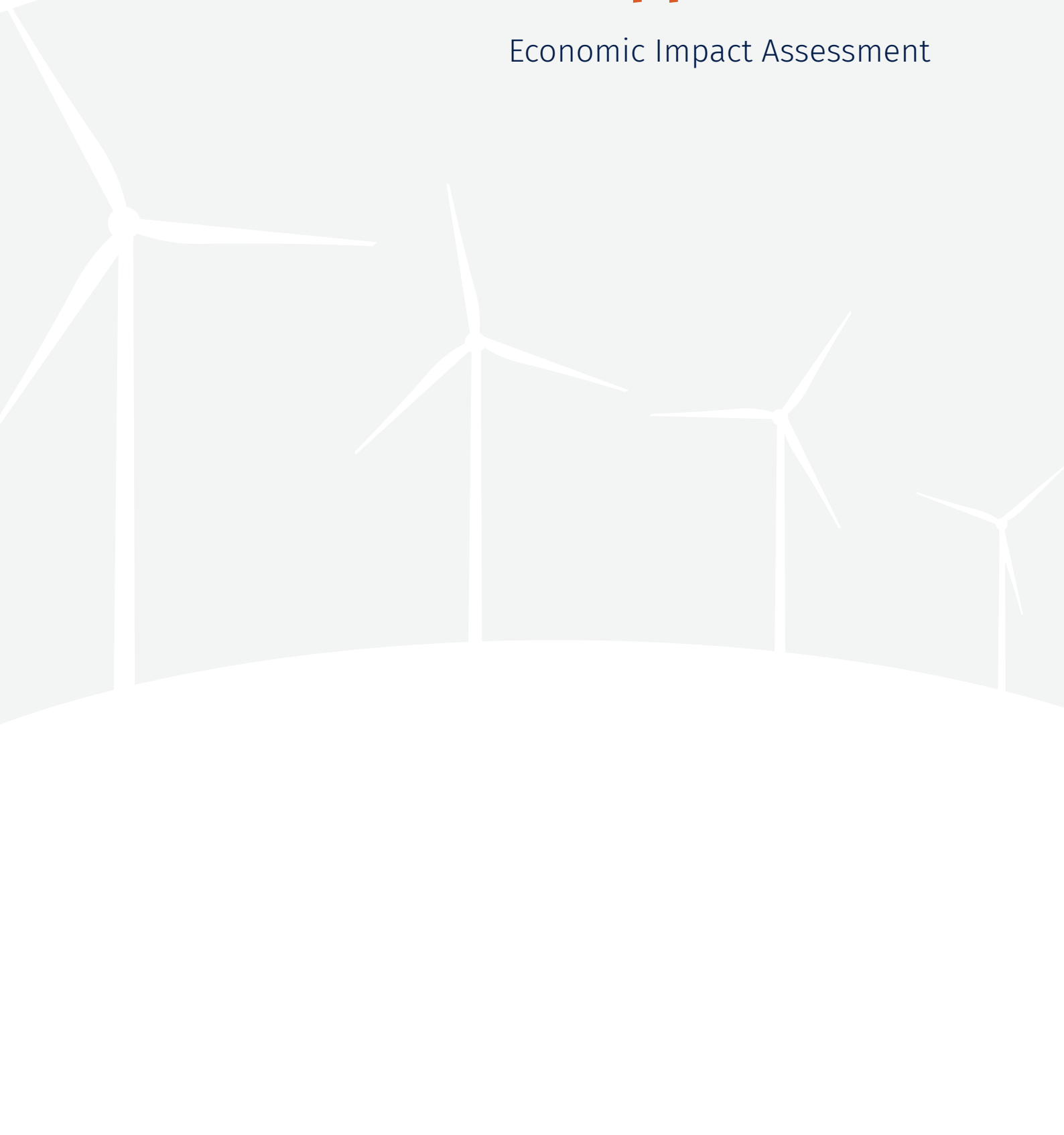


Appendix 19

Economic Impact Assessment



Authorship

Report stage	Authors	Date	Review	Date
Draft report	Alex Wilson	22 September 2021	John Noronha	23 September 2021
Updated Draft	Alex Wilson	21 December 2021	John Noronha	21 December 2021
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Disclaimer

Every effort has been made to ensure the accuracy of the material and the integrity of the analysis presented in this report. However, Ethos Urban Pty Ltd accepts no liability for any actions taken on the basis of report contents.

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Executive Summary

Neoen (the Proponent) has commissioned Ethos Urban to prepare an Economic Impact Assessment (EIA) for the proposed Thunderbolt Energy Hub Wind Farm Stage 1 (the Project). The Project will be situated on approximately 5,918 ha of land (the Project Area) involving two private host landholders and associated disturbance area of approximately 215 ha. The Project will have an installed capacity of approximately 192 MW.

The Project Area is located approximately 47 km north-east of Tamworth around the Kentucky area, within the New England Renewable Energy Zone (NE REZ). The Project Area sits within the Tamworth and Uralla Local Government Areas (LGAs).

Subject to planning approval, grid connection and financing, construction of the Project is anticipated to start in 2024, with the facility expected to be fully operational by 2026. The construction phase of the Project is expected to be undertaken over a 18-24 month period.

This EIA report supports the Project's Environmental Impact Statement (EIS) and responds to the Secretary's Environmental Assessment Requirements (SEARs) for economic matters.

The Study Area for this EIA comprises the following LGAs:

- Armidale Regional Area Council
- Tamworth Regional Area Council
- Uralla Regional Area Council
- Walcha Regional Area Council

During construction the Project will directly employ 190 Full Time Equivalent (FTE) workers of which 135 FTE workers will be sourced from within the Study Area. During operation the Project will directly employ 9 FTE workers, of which 5 FTE workers are expected to be from the Study Area.

The key findings of this EIA are summarised as follows:

Regional Economic Context

- 1 The population of the Study Area totalled 101,300 persons as of June 2020. Over the period 2020-2036, annual population growth in the Study Area is forecast to be minimal at +0.5% pa, compared to the forecast New South Wales growth rate of 1.3% pa (Department of Environment and Planning NSW, State and Local Government Population Projections 2019). However, the Uralla and Walch LGAs are forecast to experience notable population decline over this period. In this regard, local investment projects (such as the proposed Project) can generate new employment opportunities for residents and diverse income streams for local farmers. These factors may contribute to retaining, and potentially expanding, population levels within these LGAs.
- 2 The Study Area had an unemployment rate of 5.1% in March 2021, compared to the NSW rate of 6.4%; with 2,630 jobseekers unemployed at that time. Construction of the Project; therefore, may provide new short-term employment opportunities for the Study Area's labour force participants (subject to suitable skills mix), with a small amount of ongoing employment also supported once the facility is operational.

- 3 The Study Area's occupational and business structures indicate a good base exists to service the needs of the Project, with approximately 13,850 workers and 1,930 businesses in the Study Area involved in construction-related activities.
- 4 The major regional cities/townships of Tamworth and Armidale have significant capacity to service many aspects of the Project, with smaller settlements such as Uralla, Bendemeer, Walcha, Kentucky, Moonbi and Kootingal, also likely to play a role in providing labour, accommodation and other general services to the Project.

Economic Impact Assessment

- 5 The Project will involve approximately \$373 million in investment during the construction phase and will support a total of 495 FTE positions (direct and indirect) over the 18-24 month construction period. Once operational, a total of 20 FTE jobs (direct and indirect) will be supported by the facility.
- 6 Employment generated for Study Area workers (direct and indirect) is estimated at approximately 210 FTE jobs during the construction phase and approximately 9 FTE jobs during the operational phase.
- 7 The Project will provide significant participation opportunities for businesses and workers located in the Study Area, having regard for the good match of skills and resources available. The Proponent intends to be proactive in the development stage in coordinating the Engineering, Procurement and Construction (EPC) contractors with local business and workers.
- 8 The 'external' Project labour requirement (i.e., non-local workers temporarily relocating to the Study Area) would be expected to generate an accommodation need for 85 FTE workers at the peak of the construction phase. This represents only 5% of total commercial accommodation rooms/cabins within a 60-minute drive of the Project Area, with further capacity available in caravan parks (powered sites), and private rentals (e.g., Airbnb). The Project will support increased/new revenues for accommodation providers and private homeowners over the construction phase, especially in off-peak seasons.
- 9 The 55 FTE construction workers relocating to the Study Area to work on the Project would be expected to inject approximately \$2.7 million in new spending into the economy over the construction phase, supporting approximately 18 FTE jobs in the service sector across the Study Area over this period.
- 10 Cumulative impacts are mainly associated with the construction phase of other significant development of major renewable energy projects in the NE REZ in the coming years (including the adjoining Thunderbolt Solar Farm and Wind Farm Stage 2 projects also to be developed by the Proponent) with uncertainty around the construction timing of most of these projects. Potential impacts include insufficient accommodation and workers to service the Project and concurrent demands. In this regard an Accommodation, Procurement and Employment Strategy (APAES) is recommended (detailed below).
- 11 Approximately 215 ha of existing agricultural land will be required to host the Project, which represents just 4% of the broader Project Area (5,918 ha). No loss of employment associated with the Project Area is anticipated, either directly (on-site) or through the supply chain, as existing agricultural activity can continue across the Project Area noting the compatibility of both land uses. The host landowners will benefit from the construction of 47 km of internal tracks across the Project Area.
- 12 Ongoing economic stimulus associated with the operation of the Project is estimated at approximately \$99.0 million over 30 years, (2021 dollars, CPI adjusted) associated with

landowner lease returns, Neighbourhood Sharing Program payments, operational wage stimulus, Community Benefit Fund payments and increased Council land tax returns from the Project Area.

- 13 The Project has the capacity to supply sufficient clean energy to power the equivalent of approximately 118,000 homes per annum, which represents approximately 2.7 times of the total annual residential requirements of the Study Area (43,300 dwellings).

Net Economic Benefit Assessment

A summary of net economic outcomes is included in Table A.

Table A: Thunderbolt Wind Farm (Stage 1) – Net Economic Benefit Assessment

Factor	Value
Negative Community Outcomes	
Temporary loss of agricultural land (30 years)	215 ha
Loss of employment (includes direct and indirect jobs)	0 jobs
Positive Community Outcomes	
Construction Phase	
Capital investment	+\$373 million
Study Area investment (including wage stimulus)	+\$56.0 million (assumes 15% of total investment)
Construction employment (direct plus indirect jobs)	495 FTE direct and indirect jobs (over 18-24 months), including: <u>Study Area jobs</u> 135 FTE direct on-site 75 FTE indirect off-site Total: 210 FTE
Operational Phase	
Operational employment (direct and indirect jobs)	20 FTE direct and indirect total jobs (for 30 years), including: <u>Study Area jobs</u> 5 FTE direct on-site 4 FTE indirect off-site Total: 9 FTE
Operational Study Area Economic Stimulus (Total net local economic stimulus (host landowner returns, Neighbourhood Sharing Program payments, operational wage stimulus, Community Benefit Fund payments, increased Council land tax returns).	+\$99.0 million (over 30 years)
Total Study Area Economic Benefits (Construction and Operational Phases)	+\$155.0 million (Construction period PLUS 30 years operation)

- 14 In order to manage potential cumulative impacts and maximise benefits to the Study Area's economy and communities, the following mitigation measures are recommended:

Prior to commencing construction and responding to actual regional demands at that time, it is recommended the Proponent prepare an Accommodation, Procurement and Employment

Strategy (APAES) for the Project in consultation with relevant stakeholders. This APAES would include the following:

- An updated review of accommodation availability to ensure there is sufficient accommodation for the workforce associated with the construction phase of the Project and identification of any required management measures.
- Measures to address any specific cumulative impacts arising associated with concurrent State Significant Development projects under construction in the Study Area.

In order to ensure the broader community benefit from the construction and operation of the Project, Neoen has committed to develop and implement a Community Benefit Programs (CBP). The CBP will include the following:

- Provision of annual payments to non-host properties neighbouring the wind farm benefitting landowners with land adjacent to the project boundary, whom are not directly associated with the project infrastructure.
- A Community Benefit Fund (CBF) providing annual finance for local community projects through a competitive grants process. Appropriate guidelines and management structures to administer the CBF will be developed prior to its operation.

Introduction

Background

Neoen (the Proponent) has commissioned Ethos Urban to prepare an Economic Impact Assessment (EIA) for the proposed Thunderbolt Energy Hub Stage 1 (the Project). The Project will be situated on 5,918 ha of land (the Project Area) which involves two private host landholders. The Project will have an installed capacity of approximately 192 MW.

The Project Area is located approximately 40 km north-east of Tamworth in the Kentucky area, within the New England Renewable Energy Zone (NE REZ). The Project Area sits within the Tamworth and Uralla Local Government Area (LGA).

Subject to planning approval, grid connection and financing, construction of the Project is anticipated to start in 2024, with the facility expected to be fully operational by 2026. The construction phase of the Project is expected to be undertaken over a 18-24 month period.

The Proponent is seeking State Significant Development (SSD) consent under Division 4.7 of Part 4 of the Environmental Planning & Assessment Act 1979 (EP&A Act) for the Project. This EIA report supports the Project's Environmental Impact Statement (EIS) and responds to the Secretary's Environmental Assessment Requirements (SEARs) for social and economic impacts, which are:

“the EIS must include an assessment of the social and economic impacts and benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services, assessment of impact on agricultural resources and agricultural production on the site and region”

Methodology

The following methodology has been applied to this EIA:

- Identification of a relevant Study Area for the assessment which reflects likely labour force, accommodation, and supply chain linkages available to support the Project. The Study Area is defined in terms of host and surrounding LGA boundaries.
- Review of federal and state policies relevant to investment in the renewable energy sector, including the Paris Climate Accord, NSW Wind Energy Guidelines and the New England Renewable Energy Zone (NE REZ).
- Baseline analysis of population, labour markets, occupational structure and business structure for the Study Area and NSW, with reference to latest available data relating to ABS Estimated Resident Population, Department of Environment and Planning NSW, 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 Study Area to participate and service the Project. This information has been compiled through a desktop review of townships and accommodation data (accommodation provider websites, Airbnb and Vacation rental by owner (Vrbo) databases, website searches and discussions with the Proponent)

- Assessment of Project investment, with investment figures provided by the Proponent and share of investment retained in the 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 numbers have been provided by the Proponent based on estimated Project labour requirements. Ratios of direct Study Area (local) and non-Study Area (imported) employment and share of indirect employment supported in the Study Area are based on benchmarking analysis of similar sized completed renewable energy facilities located in regional areas.
- 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.
- Assessment of cumulative impacts relating to the potential concurrent construction of major infrastructure projects in the Study Area/within 100km of the Project Area. Importantly the introduction of the NE REZ is likely to generate significant demand for new projects over the coming years. This includes assessing potential impacts on accommodation and labour and providing measures to manage identified cumulative impacts.
- Estimates of economic stimulus impacts (construction and operation phases) including Project wages and spending, landowner rental incomes, neighbour benefit payments, uplift in Council rates revenues, and Proponent's Community Fund payments. Construction stimulus is expressed in 2021 dollars (and calculated over 24 months), while operational stimulus is calculated over 30 years using 2021 dollars but indexed to 2.5% CPI annually.
- Description of proposed mitigation measures relating to accommodation, workforce and procurement and community benefit sharing.

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

The following key data sources have been used in compiling this EIA:

- ABS Average Weekly Earnings, May 2021
- ABS Counts of Australian Businesses, June 2020
- ABS Census of Population and Housing, 2016
- ABS Household Expenditure Survey, 2015-16
- ABS Regional Internal Migration Estimates (Provisional), March 2021
- ABS Regional Population Growth, Australia
- Australian Government Abare, Australian Accommodation Monitor 2018/19 and 2020/21.
- Australian National Accounts: Input-Output Tables, 1998-99
- Airbnb and Vrbo databases, September 2021
- Department of Employment – Small Area Labour Markets, March Quarter 2021
- Department of Environment and Planning NSW, State and Local Government Population Projections 2019
- Tamworth Regional Council, Annual Operational Plan 2021-22 – Revenue Policy
- Umwelt, Thunderbolt Energy Hub Wind Farm Scoping Report, November 2020
- Umwelt, Thunderbolt Energy Hub Draft Environmental Impact Statement, October 2021
- Uralla Shire Council Combined Delivery Program 2017-2022 and Operational Plan 2021-2022
- www.energy.nsw.gov.au/renewables/renewable-energy-zones
- www.auhotels.com
- www.thunderboltenergyhub.com.au
- www.tripadvisor.com
- [www.valuergeneral.nsw.gov.au/data/assets/pdf_file/0003/200010/Valuation of land used as a wind farm policy.pdf](http://www.valuergeneral.nsw.gov.au/data/assets/pdf_file/0003/200010/Valuation_of_land_used_as_a_wind_farm_policy.pdf)

1 Project Context

1.1 Site Location

The Project Area is well-connected to a number of major regional centres and towns located within approximately a 60 minute drive.

These settlements are listed below (in order of population size):

- **Tamworth**, significant regional city located approximately a 60-minute drive to the south-west of the Project Area.
- **Armidale**, major regional city located approximately a 30-minute drive to the north-east of the Project Area.
- **Uralla**, small township located approximately a 10 to 15-minute drive to the north-east of the Project Area.
- **Walcha**, small township located approximately a 25-minute drive to the south-east of the Project Area.
- **Kootingal**, small township located approximately a 40-minute drive to the south-west of the Project Area.
- **Bendemeer**, small township located approximately a 30-minute drive to the south-west of the Project Area.
- **Moonbi**, small settlement located approximately a 40-minute drive to the south-west of the Project Area.
- **Kentucky**, small settlement which generally reflects the project location.
- **Kentucky South**, small settlement located approximately a 5-minute drive to the south-east of the Project Area.

To differing extents, these regional centres, townships and settlements have the potential to play important roles in supporting the requirements of the Project.

The Project Area, which comprises two private landholdings, is currently used for agricultural purposes (cattle and sheep grazing). The land is zoned Rural Use 1 Zone (Primary Production) under the Tamworth Regional Local Environmental Plan 2010 and the Uralla Local Environmental Plan 2012.

As noted, the Project will require planning approval by the NSW State Government as a State Significant Development (SSD).

1.2 Project Description

Stage 1 of the Project is proposed to include the following key components:

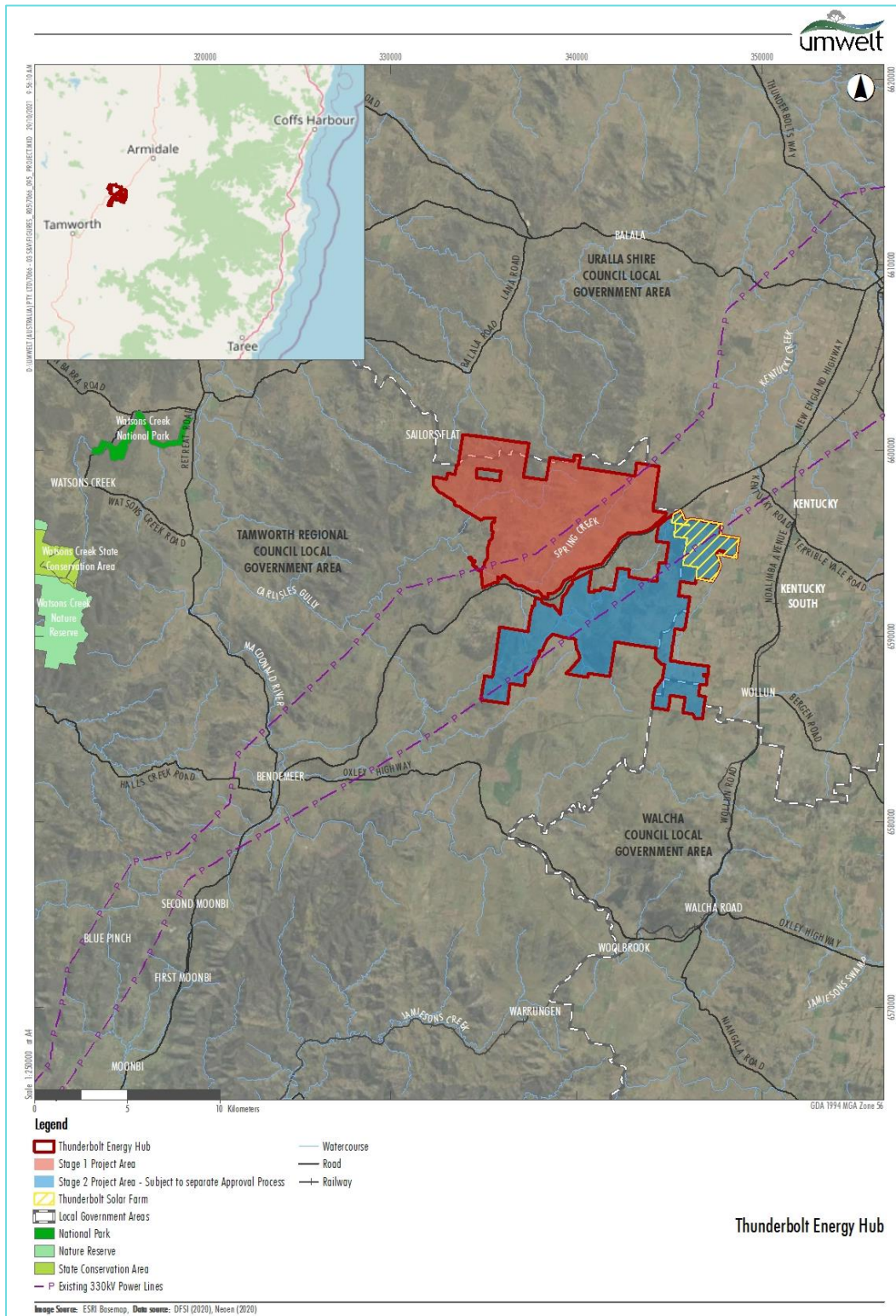
Table 1.1: Thunderbolt Energy Hub Wind Farm – Overview of Key Project Components

Key Components	Approximate Dimensions/Detail	Quantity
WTGs		
Tip Height	Maximum of 260 m	Up to 32
Tower (hub) height	Maximum of 170 m	
Blade Length	Maximum of 90 m	
Electrical Reticulation		
Transmission Line	33kV electrical cabling (underground and/or overhead)	NA
	330kV overhead transmission line connecting the switching station and substation	NA
Substation	Approx. 1 ha	1
Switching Station	Approx. 2.6 ha	1
Internal Access Roads	Road surface width ranging 6-9m (providing for delivery of WTG components and access during operations)	Approx. 50km
Meteorological Monitoring Mast	Height 170m	Up to 6 to be installed during operations in proximity to turbines
		1 temporary mast currently installed (80m) to be removed prior to construction phase
Operations and Maintenance Buildings	Approx. 1 ha	1 - includes storage shed and parking
Access to Project Area	Construction of new intersection on New England Highway for direct access to Project Area	1
Operations Workforce		9 personnel
Temporary Construction Facilities		
Construction Compound and Laydown Areas	Main compound approx. 2.4 ha	1 x Main Compound
	Satellite Compounds approx. 0.3 ha	3 x Satellite Compounds
Mobile Concrete Batch Plant	Approx. 2ha per batching plant	2 co-located plants – 3 possible assessed locations
Construction Workforce		190 personnel (average)

Source: Neoen

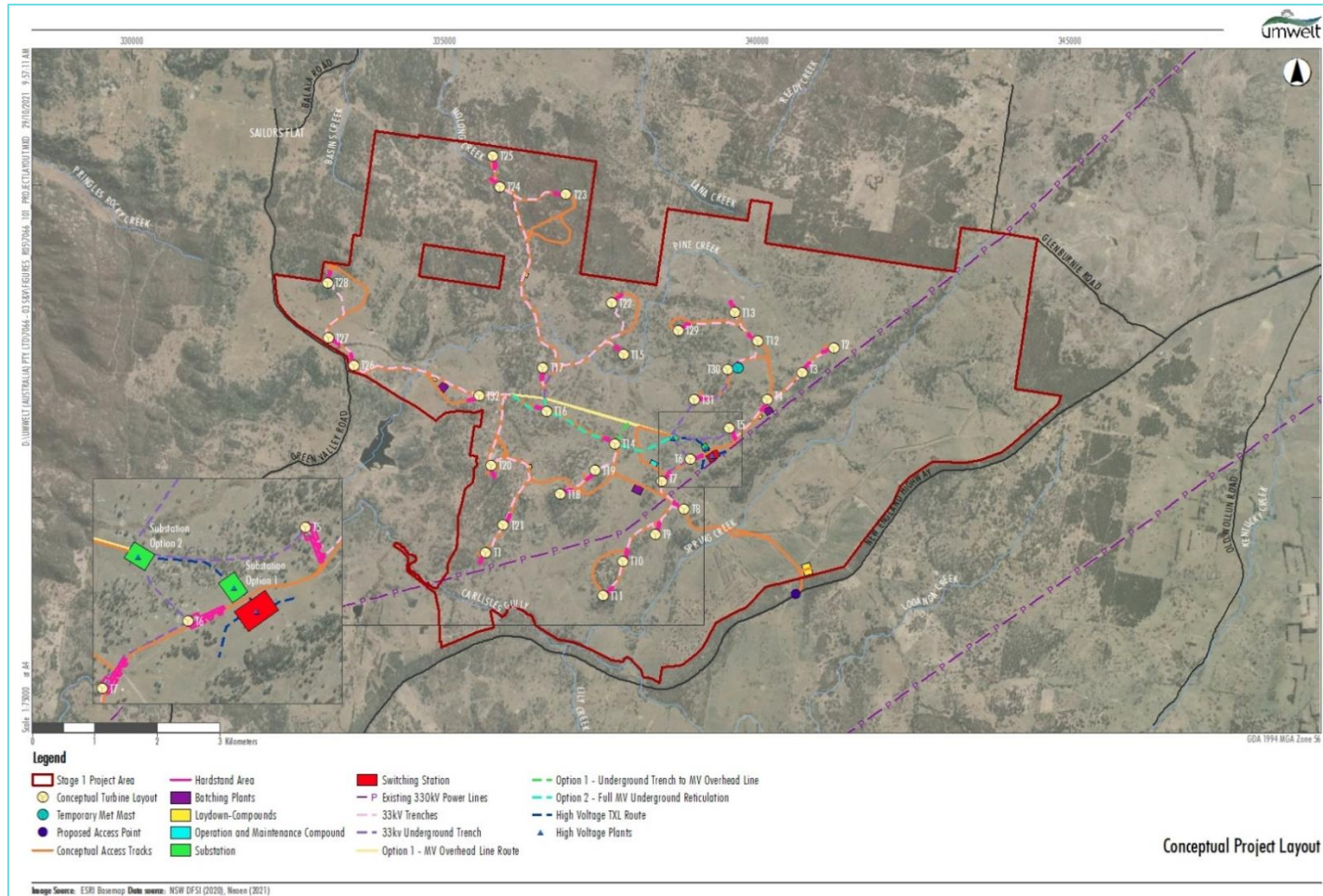
Figures 1.1 and 1.2 outline the Project location and proposed site layout.

Figure 1.1: Thunderbolt Energy Hub Stage 1 – Location Map



Source: Umwelt

Figure 1.2: Thunderbolt Energy Hub Stage 1 – Proposed Site Layout



Source: Umwelt

Ethos Urban Pty Ltd

1.3 Policy Context

International agreements and government policy settings are important factors in influencing demand and investment in the renewable energy sector, as noted below.

Paris Climate Accord

The Paris Accord is a comprehensive international climate agreement to which Australia is a party. The Accord provides a framework for participating nations to set themselves nationally determined contributions (NDCs) beginning in 2020, with review at five-year intervals. The agreement sets out a global consensus to limit temperature increases to below two degrees Celsius when compared to pre-industrial levels; an additional goal is to maintain this increase at less than one and a half degrees Celsius. 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 current targets are to achieve a reduction of emissions by 5% from 2000 levels by 2020, and by 26-28% below 2005 levels by 2030.

NSW Wind Energy Guideline 2016

The NSW Wind Energy Guideline (the Guideline) provides the community, industry and regulators with guidance on the planning framework for the assessment of large-scale wind energy development proposals that are State significant development (SSD). This Guideline identifies the key planning considerations relevant to wind energy development in NSW. It will assist stakeholders in the design and siting of SSD wind energy projects. It will also guide the assessment and evaluation, determination of wind energy development proposals, and, where approved, their construction and operation.

The Guideline notes (p3):

"The NSW Government supports the development of a sustainable wind energy industry in NSW. This State has valuable wind resources by international standards with many of the best areas located near existing electricity transmission infrastructure. Wind energy projects harness the state's abundant natural resources to generate clean energy, while at the same time supporting jobs and investment, particularly in regional areas".

"The NSW Government through its climate change policy has an aspirational long term objective of achieving net zero emissions by 2050. It recognises the importance of reducing greenhouse gas emissions in energy generation, and the opportunities which the renewable energy industry offers for the State. There is a significant opportunity for NSW to invest in wind energy, as one of the most commercially ready and cost-effective renewable energy technologies currently available for use on a large scale. This opportunity needs to be managed to ensure that the potential impacts of wind energy projects are accurately identified and any adverse outcomes are minimised".

NSW Renewable Energy Zones

The NSW Government's Electricity Strategy and Electricity Infrastructure Roadmap set out a plan to deliver the state's first 5 Renewable Energy Zones (REZs) in the Central-West Orana, New England, South-West, Hunter-Central Coast and Illawarra regions. This builds on the NSW Transmission Infrastructure Strategy and supports the implementation of the Australian Energy Market Operator's Integrated System Plan.

These REZs will play a vital role in delivering affordable, reliable energy generation to help replace the State's existing power stations as they come to their scheduled end of operational life.

The Central-West Orana, New England and South-West REZs aim to unlock a significant pipeline of large-scale renewable energy and storage projects.

REZs combine renewable energy generation such as wind and solar, storage such as batteries, and high-voltage poles and wires to deliver energy to the homes, businesses and industries to meet user demand.

REZs capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses through connecting multiple generators and storage in the same location.

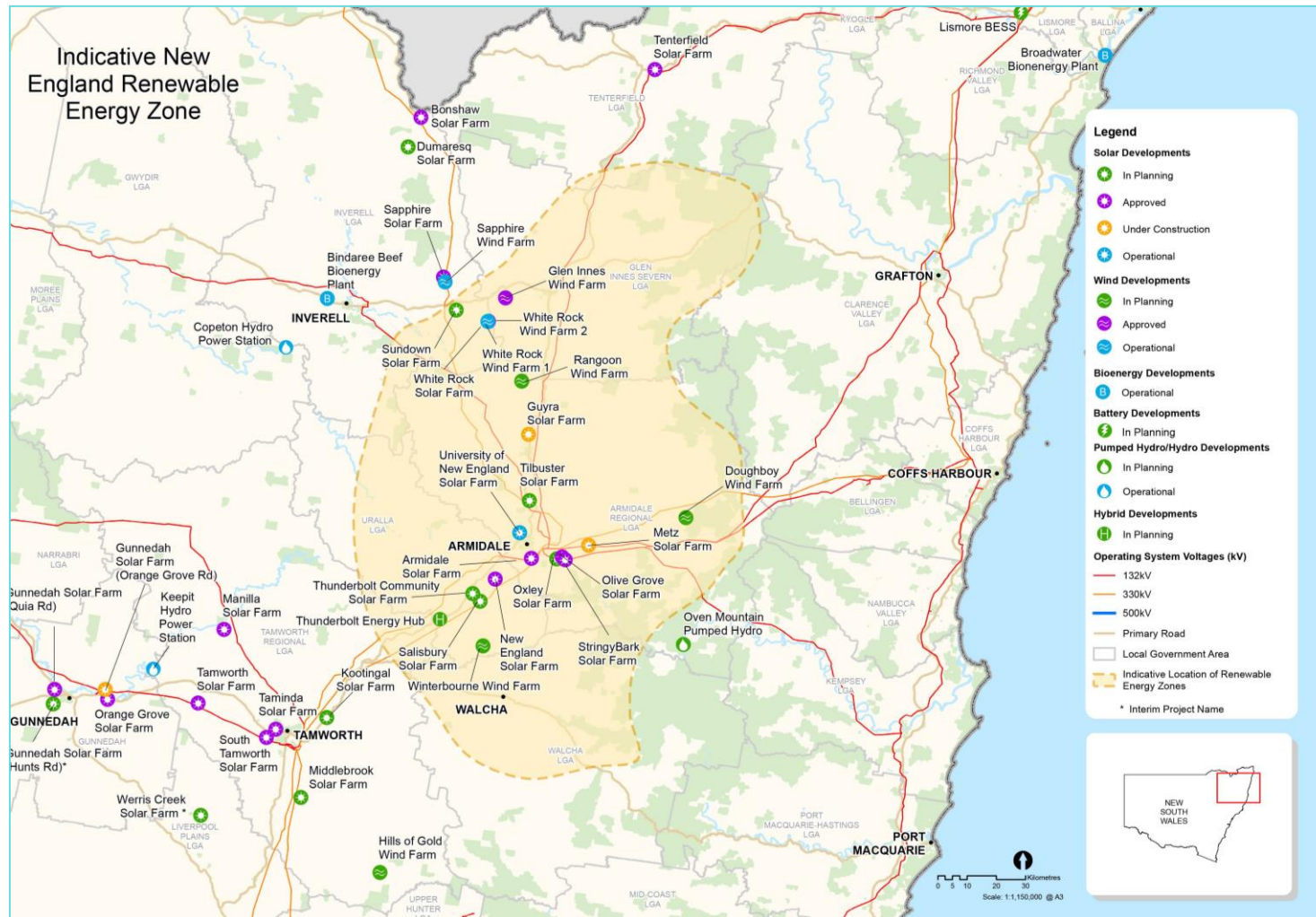
The NSW Government is in the early stages of planning a REZ in the New England region around Armidale on the lands of the Biripi, Dainggatti, Nganyaywana, Ngarabal, and Gumbainggir people. This REZ will deliver up to 8,000 MW of new transmission capacity. (source: <https://www.energy.nsw.gov.au/renewables/renewable-energy-zones#-new-england-renewable-energy-zone>).

New England has some of the best natural energy resources in Australia. The region is also close to the existing high voltage power lines that connect the NSW east coast and Queensland. This provides opportunities to increase NSW's own energy resilience and to export excess energy to Queensland. The NSW Government has committed to invest \$78.9 million to support the development of the New England REZ.

In June 2021, the NSW Government ran an open registration of interest (ROI) process to seek information from proponents of existing and proposed generation, storage and network infrastructure projects in the New England region. The results from this ROI process will assist in guiding the REZ technical design, planning, and staging of infrastructure development – which is likely to take a number of years.

Figure 1.3 shows the location of the Indicative New England Renewable Energy Zone (NE REZ) which includes the Thunderbolt Energy Hub in which the Project Area is located.

Figure 1.3: Indicative New England Renewable Energy Zone



Source: www.energy.nsw.gov.au/renewables/renewable-energy-zones

1.4 Study Area

The Study Area (the Study Area) for the Project has been defined in terms of the following Local Government Areas (LGAs):

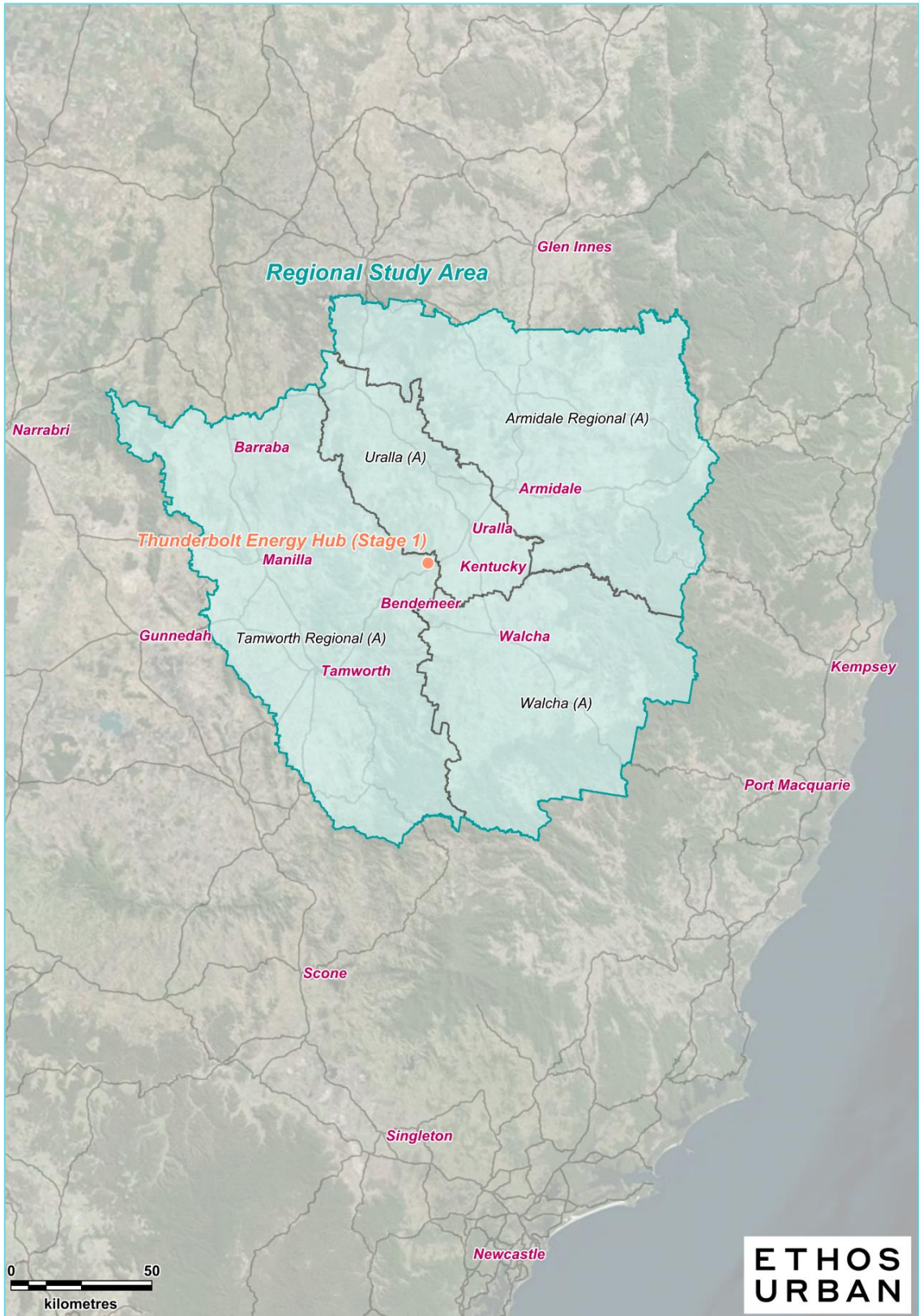
- Armidale Regional Area Council
- Tamworth Regional Area Council
- Uralla Regional Area Council
- Walcha Regional Area Council

The main regional cities/townships/settlements in the Study Area are all located within a one-hour drive from the Project Area.

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

The Study Area and Project location are shown in Figure 1.4.

Figure 1.4: Thunderbolt Energy Hub – Study Area



Source: Ethos Urban using Mapinfo, StreetPro, BingMaps

1.5 Summary

- 1 The Proponent is proposing the construction of the approximately 192 MW wind farm representing the first stage of the Thunderbolt Energy Hub. The facility will be located approximately 40km north-east of Tamworth.
- 2 The Project lies within of Tamworth and Uralla LGAs and the New England Renewable Energy Zone. The Project Area is well connected by road to the regional centres of Tamworth and Armidale.
- 3 The Project will be located across two land holdings totalling approximately 5,918 ha of agricultural land, which is currently used for cattle and sheep grazing. The associated disturbance area will be approximately 215 ha.
- 4 Subject to State planning approval, grid connection approval and financing; it is anticipated construction of the Project could start in 2024, with the facility operational by 2026 (allowing for a construction period of up to 24 months).
- 5 Federal (Paris Climate Accord) and State policies and initiatives provide support for the renewable energy sector in the short-to medium-term. The NSW Renewable Energy Zones will provide greater investment certainty for the renewable energy industry and for developers seeking to construct utility-scale projects in these resource rich areas.
- 6 This EIA responds to the Project's SEARs (economic) and will provide an understanding of potential economic benefits arising for the local and regional economies and communities through the construction and operational stages of the Project, as well as any negative economic impacts associated with the Project.

2 Baseline Regional Economic Profile

2.1 Population

The population of the Study Area totalled 101,300 persons as of June 2020 (ABS Estimated Resident Population, 2021), including 62,550 persons located in the Tamworth Regional area.

Population estimates, which are shown in Table 2.1, are based on official population growth rate projections prepared by New South Wales government and the most recent ABS estimated resident population figures for 2020.

Over the period 2020-2036, annual population growth in the Study Area is expected to be moderate at +0.5% pa (or +580 persons per annum over 16 years) compared to the New South Wales growth rate of 1.3% p.a. This level of growth is comparatively weak and driven principally by the Armidale and Tamworth Regional LGAs with an average population growth rate (+0.9% and +0.5% respectively) over the period. The Uralla and Walcha LGAs are projected to experience a decline in population over the period, with annual average declines of -0.5% and -0.7% respectively. This highlights the need for local investment projects which provide new employment opportunities for residents and those relocating to the area, as well as alternative income streams for local farmers. Both these factors can contribute to retaining, and potentially expanding, population within the Study Area, including in settlements close to the Project Area.

As noted, the Project will provide new income to the host landowners (farm operators), while the construction and operational phases of the Project will provide an economic stimulus (additional jobs, project contracts, new spending etc) to local and regional economies, as well as support the emergence of the region's renewable energy sector.¹

Table 2.1: Population Projections – Study Area, 2021-2036 (No. of Persons)

LGA/Area	2020 ¹	2036 ²	Average Annual Growth 2021 to 2036	
			no.	%
Regional Study Area				
Armidale Regional (A)	29,700	34,520	+301	+0.9%
Tamworth Regional (A)	62,550	67,760	+326	+0.5%
Uralla (A)	5,940	5,510	-27	-0.5%
Walcha (A)	3,110	2,790	-20	-0.7%
Total Study Area	101,300	110,580	+580	+0.5%
New South Wales	8,167,530	9,980,490	+113,310	+1.3%

Sources: ¹ ABS, 3218.0 Regional Population Growth, Australia; ² Department of Planning and Environment – NSW State and Local Government Population Projections 2019

Notes: Figure rounded

2.2 Labour Force

As of March 2021 (latest available), the Study Area had an unemployment rate of 5.1%, which is significantly lower than the rate for New South Wales (6.4%). The Study Area at that time had approximately 2,630 job seekers who were unemployed. This information is sourced from the Australian Government's Department of Employment – *Small Area Labour Markets* data. The Project is likely to require 285 FTE workers at the Project's construction peak, with potentially 70% of these workers (200 FTE workers) predicted to be sourced from within the Study Area – with the remaining 85 FTE workers (or 30% of the workforce) relocating from outside the Study Area. These 200 FTE Project jobs may provide new opportunities for some unemployed Study Area job seekers (subject to

appropriate skills match). Project workforce requirements are discussed in further detail in section 3.2.

In the context of the Study Area's large labour market comprising 51,755 persons as shown in Table 2.2, the construction phase of the Project alone is unlikely to cause labour supply issues, rather provide new short-term and some longer-term opportunities for labour force participants. However, cumulative impacts associated with workforce demands from infrastructure projects proposed for the Study Area also need to be considered (refer to section 3.3).

Table 2.2: Resident Labour Force Statistics – Study Area, March 2021 (No. of Persons)

LGA/Area	Labour Force	Unemployed	Employed	Unemployment Rate
Regional Study Area				
Armidale Regional (A)	15,098	808	14,290	5.4%
Tamworth Regional (A)	31,829	1,643	30,186	5.2%
Uralla (A)	3,151	121	3,030	3.8%
Walcha (A)	1,677	56	1,621	3.3%
Total Study Area	51,755	2,628	49,127	5.1%
New South Wales	4,301,600	273,800	4,027,800	6.4%

Source: Australian Government Department of Education, Skills and Employment, *Small Area Labour Markets*, March Quarter 2021

Note: Figure rounded

2.3 Occupational Structure

The skills base of the Study Area is reflected in its occupational structure, as indicated in Table 2.3. ABS Census data for 2016 shows 32.9% of employed residents in the Study Area were, at that time, occupied in activities generally associated with the types of skills required for the construction of a wind farm (e.g., technicians and trades workers, machinery operators and drivers, and labourers).

The Study Area's representation in these occupations is well above State average 27.9%, indicating a generally suitable occupational base for the proposed Project is present in the region. In total, approximately 13,850 workers in the Study Area are occupied in construction-related activities, highlighting the strong local and regional worker base available to support the Project.

Table 2.3: Study Area Workers – Occupational Structure, 2016

Occupation	Study Area		New South Wales	
	No.	Share	No.	Share
Managers	6,210	14.8%	456,090	13.6%
Professionals	8,000	19.0%	798,130	23.8%
<i>Technicians and Trades Workers</i>	<i>5,630</i>	<i>13.4%</i>	<i>429,240</i>	<i>12.8%</i>
Community and Personal Service Workers	4,540	10.8%	350,260	10.4%
Clerical and Administrative Workers	5,090	12.1%	467,980	14.0%
Sales Workers	4,040	9.6%	311,410	9.3%
<i>Machinery Operators and Drivers</i>	<i>2,490</i>	<i>5.9%</i>	<i>206,840</i>	<i>6.2%</i>
<i>Labourers</i>	<i>5,730</i>	<i>13.6%</i>	<i>297,890</i>	<i>8.9%</i>
Inadequately described	340	0.8%	36,180	1.1%
Total	42,070	100.0%	3,354,010	100.0%

Source: ABS, Census of Population and Housing, 2016, Table Builder – Usual Place of Residence

Note: Figure rounded

2.4 Business Structure

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

ABS Business Counts data for June 2020 (latest available) shows the Study Area includes 1,360 construction businesses and a further 570 businesses associated with transport, postal and warehousing service, with these two sectors contributing 1,930 businesses or 19.7% of all businesses located in the Study Area.

This data, which is included in Table 2.4, indicates a strong presence in the Study Area of the types of firms that are likely to be well-placed to service aspects of the Project. This opportunity is explored in more detail in the following Chapter.

Table 2.4: Business Structure – Study Area, 2020

Sector	Non employing	1-19 Employees	20-199 Employees	200+ Employees	Total Businesses	
	no.	no.	no.	no.	no.	%
Agriculture, Forestry and Fishing	2,280	720	20	0	3,020	30.8%
Mining	10	10	0	0	20	0.2%
Manufacturing	150	140	10	0	300	3.1%
Electricity, Gas, Water and Waste Services	10	20	0	0	30	0.3%
Construction	740	610	10	0	1,360	13.9%
Wholesale Trade	100	110	10	0	220	2.2%
Retail Trade	180	270	10	0	460	4.7%
Accommodation and Food Services	80	240	40	3	363	3.7%
Transport, Postal and Warehousing	380	180	10	0	570	5.8%
Information Media and Telecommunications	20	10	0	0	30	0.3%
Financial and Insurance Services	520	90	0	0	610	6.2%
Rental, Hiring and Real Estate Services	690	110	0	0	800	8.2%
Professional, Scientific and Technical Services	360	280	10	0	650	6.6%
Administrative and Support Services	110	140	10	0	260	2.6%
Public Administration and Safety	0	20	0	0	20	0.2%
Education and Training	50	40	10	0	100	1.0%
Health Care and Social Assistance	260	220	10	0	490	5.0%
Arts and Recreation Services	60	30	0	0	90	0.9%
Other Services	180	220	10	0	410	4.2%
Currently Unknown	10	0	0	0	10	0.1%
Total	6,190	3,460	160	3	9,813	100.0%

Source: ABS, Counts of Australian Businesses, including Entries and Exits, June 2016 to June 2020

2.5 Township Services Capacity

Accommodation

An audit has been undertaken of commercial and private accommodation located within the Study Area's major townships. These townships generally represent a maximum drivetime of 60-minutes from the Project Area.

The Study Area has a good supply and mix of accommodation including motels, hotels, guest houses, caravan/holiday parks (including cabins). Most accommodation options are located in Tamworth and Armidale (refer to Table 2.5); however, there are also options in townships located in proximity to the Project Area including Uralla and Kootingal.

The following accommodation was available in the Study Area as of September 2021:

- 1,804 hotel, motel and serviced apartment rooms
- 112 cabins (located in caravan/holiday parks)

Table 2.5: Commercial Accommodation in the Study Area, September 2021

Surrounding township	Establishments	Rooms	Cabins	Total
Uralla	6	45	6	51
Tamworth	37	975	36	1,011
Bendemeer	2	na	na	na
Armidale	27	751	64	815
Walcha	1	10	0	10
Kootingal	3	23	6	29
Total	76	1,804	112	1,916

Source: Ethos Urban; Trip Advisor; Hotels.com; . na: not available

Room Occupancy Rates

While official room occupancy rates are unavailable at a local level, the Australian Government's Tourism Research Australia Accommodation Monitor 2020/21 shows the New England North West Tourism Region, in which the Study Area is located, had an annual room occupancy rate of 54.7% which is significantly above the NSW occupancy rate of 47.4%. The Accommodation Monitor 2020/21 specifically measures the impact on COVID-19 on accommodation operators.

A comparison against the pre-COVID 2018/19 Accommodation Monitor shows the New England North West Tourism Region's annual room occupancy rate has decreased by -1.0% (from 55.7%) since 2018/2019; in contrast Sydney's annual room occupancy rate has more than halved from 83.4% to just 41.3% over this period.

When benchmarked across other NSW regional tourism regions, the New England North West Tourism Region's room occupancy rates for 2020/21 were below the regional average of 59.0%, (which is down slightly from the pre-COVID 2018/19 rate of 60.6%).

This official government information indicates reasonable capacity exists in commercial establishments across the Study Area to cater for Project workers who require this type of accommodation. Room occupancy rates are likely to be much lower during the off-peak holiday seasons, freeing up additional capacity during these times.

Australian Accommodation Monitor results for 2018/19 and 2021/21 are summarised in Table 2.6.

Table 2.6: NSW Commercial Room Accommodation Occupancy Rates by Tourism Region, 2018/19 and 2020/21

Tourism Region	Pre-COVID Room Occupancy Rate 2018/19	COVID Room Occupancy Rate 2020/21	Change
Sydney	83.4%	41.3%	-42.1%
Blue Mountains	61.3%	56.1%	-5.2%
Capital Country	54.7%	53.3%	-1.4%
Central Coast	66.1%	62.2%	-3.9%
Central NSW	63.4%	66.9%	+3.5%
Hunter	67.2%	63.8%	-3.4%
New England North West	55.7%	54.7%	-1.0%
North Coast NSW	65.7%	67.6%	1.9%
Outback NSW	np	np	np
Riverina	68.1%	61.6%	-6.5%
Snowy Mountains	41.1%	52.6%	+11.5%
South Coast	66.1%	59.1%	-7.0%
The Murray	57.5%	51.3%	-6.2%
New South Wales	78.0%	47.4%	-30.6%

Source: Australian Government Abare, Australian Accommodation Monitor 2018/19 and 2020/21.

Private Accommodation

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

Data sourced from www.airdna.co, and included in Table 2.7, shows approximately 340 active short-term rentals are currently advertised in the Study Area on Airbnb and Vrbo (September 2021). These active rentals have an average of 2.2 bedrooms per rental. Therefore, in the order 810 rooms could be available in the Study Area through the short-term rental market.

As Table 2.8 shows, 11.0% of Study Area dwellings (4,730 dwellings) were unoccupied at the 2016 Census, which is slightly higher than the average for NSW (9.9%). Armidale and Walcha LGAs have a significant share of unoccupied dwellings 12.5% and 16.3% or 1,590 and 260 dwellings respectively. Shared private housing accommodation is generally a popular option for project workers employed on major infrastructure projects, with some of the Study Area's unoccupied dwellings therefore having the potential to enter the housing market to support the construction phase of the Project.

Table 2.7: Short Term Accommodation in the Study Area, September 2021

Municipality/ Area	Total Active Rentals	Av. Rooms	Estimated Total Rooms
Armidale Regional (A)	126	2.3	290
Tamworth Regional (A)	188	2.5	470
Uralla (A)	25	1.9	48
Walcha (A)	na	na	na
Total	339	2.2	807

Source: Ethos Urban; AirDNA; na: not available

Table 2.8: Unoccupied Dwellings – Study Area, 2016

Municipality/ Area	No. Occupied Private Dwellings	No. Unoccupied Private Dwellings	Total No. Private Dwellings	Share of Unoccupied Private Dwellings
Armidale Regional (A)	11,080	1,590	12,670	12.5%
Tamworth Regional (A)	2,440	300	2,740	10.9%
Uralla (A)	23,460	2,580	26,040	9.9%
Walcha (A)	1,340	260	1,600	16.3%
Total Study Area	38,320	4,730	43,050	11.0%
New South Wales	2,604,320	284,740	2,889,060	9.9%

Source: ABS, Census of Population and Housing, 2016

Note: Figures rounded

Township Services

In addition to accommodation, workers locating temporarily to the Study Area will require a wide range of other convenience services, and the Project will also need to source trade, equipment hire, vehicle mechanical services, and other services from businesses located in the immediate region.

The following sections provide an overview of services located in the regional centres and main townships in the Study Area, which are listed in order of driving distance from the Project Area.

Kentucky

Located about 10 kilometres west of the Project Area, Kentucky is a small rural township of approximately 160 persons (ABS Census, 2016), mainly consisting of farming properties and associated agricultural activities. Kentucky's limited services include the Kentucky general store and café and the Kentucky Public School. For residents living in Kentucky, the closest township with medical services and higher order retail offerings is Uralla (10 to 15 minute drive) or Armidale (30-minute drive).

Uralla

Uralla, a township of 2,420 persons (ABS Census 2016) is located in Uralla Regional Council Area and is situated approximately 18km to the north-east (or a 10 to 15-minute drive time) of the Project Area. Situated on the New England Highway, Uralla is a medium sized regional township well known for being the main stopping point between Tamworth and Armidale, whilst roughly the halfway point between Sydney and Brisbane.

The township offers a modest range of facilities and services, including:

- Commercial accommodation – 6 establishments (refer to section 2.5).
- Uralla Hardware and Little Birdy (hardware supplier).
- Automotive Mechanics (Breedon David Automotive Repairs, Thunderbolt Automotive and Motor Mates).
- Industry – (Neal Howard's Electrical Service, Heritage Concrete Pty Ltd, Wal Schalk Earthmoving and Uralla Metal).
- Supermarkets – Foodworks.
- Cafes, bakeries, restaurants, take-away and fast food (Subway).

- NAB and Regional Australia Bank branches.
- Fuel supplies (Puma and Mobil).
- Postal Services.
- Entertainment (parks, hotels, clubs, sports and recreational activities – swimming pool, bowls club etc).
- Uralla Medical Centre – Providing local medical services.
- Education – Two primary schools and the Uralla Central School (K-12).

Bendemeer

Bendemeer is situated along the Macdonald River, sitting between Tamworth and Armidale and bypassed by the New England Highway. With a small population of approximately 490 persons (2016 ABS Census), Bendemeer is roughly located 40 km south-west of the Project Area or a 30-minute drive.

Bendemeer offers a small variety of businesses, including:

- Accommodation – Two commercial accommodation options (refer to section 2.5).
- Food and Drink – the Bendemeer Hotel.
- Other services – the tourist park acts as the local general store with fuel, Australia Post facilities and refreshments available.
- Bendemeer Public School (Primary School).

Kootingal

Kootingal is located Tamworth Regional Council Area approximately 60 km south-west of the Project Area, or a 40-minute drive time. The township has a residential community of approximately 1,670 persons (ABS Census, 2016), and contains the following limited range of services:

- Small-scale commercial accommodation (see section 2.5).
- Kootingal True Value Hardware for local trade and construction supplies.
- Supermarket – IGA.
- Small variety of cafés and restaurants.
- Recreational Facilities –Bowls club, swimming pool and recreation reserve.
- Petrol Station – BP.
- Small-scale medical facilities with a local GP, pharmacy and pathology.
- Two educational facilities – Kootingal Public School and Tintinhull Public School.

Armidale

Armidale has a population of 20,385 persons and is located 40km north-east of the Project Area, or a 30-minute drive time. The township is well known for the University of New England that occupies a

campus on the north-west fringe of the township and is a key employer for the region. Armidale's services include:

- Commercial accommodation – 27 establishments (refer to section 2.5)
- Supermarkets and bottle shops – Woolworths, Coles, ALDI, as well as a Dan Murphy's, Liquorland, BWS, Bottlemart, Cellarbrations and others.
- Construction and transport services including Hubbard Hire, Lift n Shift, Ducats Earth Moving, Spicer Earth Moving, Kelly's Transport, Tamax Transport, Armidale Freight Services, New England Freighters, G and G Transport, Boral Concrete, Metaland, other associated services.
- Trade supplies – Bunnings, Mitre-10, Home Timber and Hardware, Armidale Building Supplies, Richardsons Hardware and Agriculture Supplies, Reece Plumbing and others.
- Mechanical services and supplies – Repco, Supercheap Auto, Mycar Tyre and Auto, Armidale Auto and Tyre Centre, David Carey auto repairs, William's Automotive Service and Repair Centre, 2V Diesel, Bob Greenes Auto Repairs, David Glock Automotive and numerous others.
- Numerous entertainment options and facilities (Racecourse, cinema, showgrounds, parks, hotels, clubs, sports and recreational activities).
- Cafes, bakeries, restaurants, take-away and fast food.
- Commercial and financial institutions – banks, solicitors, conveyancing etc.
- Wide range of medical and emergency services including Armidale Private Hospital, Armidale Rural Referral Hospital with emergency department, UNE Medical Centre, Armidale Medical Centre along with police stations, a fire brigade, multiple GP and specialist clinics, etc.
- Large range of educational facilities from early learning centres, preschools, and public and private schools. The University of New England's main campus is located on the north-western fringe and offers a wide range of national recognised qualifications to students while also drawing a significant number of visitors to the town during the teaching trimesters.
- Armidale Airport provides daily services to and from Brisbane and Sydney operated by Qantas Link and REX.

Walcha

Walcha is located centrally in the Walcha Shire Council Area and is located 30 km south-east of the Project Area, or a 25-minute drive time. The township approximately includes approximately 1,450 persons (ABS Census 2016), and contains a small range of retail and commercial offerings, with the following services available:

- Small-scale commercial accommodation (see section 2.5).
- Trade and construction supplies – Home Timber and Hardware, Stihl and Hoy's Concrete.
- Supermarkets – Foodworks and IGA.
- Small variety of cafés and restaurants.
- Recreational facilities – Golf Course, racecourse, swimming pool, bowls and recreation club and sports club.
- Financial services – Commonwealth Bank branch, insurance and finance brokers.

- Petrol stations – Caltex, BP and Mobil.
- Walcha Multipurpose Medical Centre.
- Two educational facilities – St Patrick’s Primary School and Walcha Central School.

Moonbi

Moonbi is situated along the New England Highway with a small population of approximately 360 persons (ABS Census 2016). Moonbi is located approximately 60 km south-west of the Project Area (or a 40 minute drive time). The township is known for being the home of the Big Chook representing the townships position in the poultry industry with the many large poultry farms in and surrounding the town.

Moonbi offers a small variety of businesses, including:

- Moonbi Liquor and Grocery Store.
- Retail services – Capital Caravans, The Jugiong Wine Cellar and Curators Collective.
- Moonbi Service Station (Caltex).
- Australia Post.
- Dunns Mechanical and Recovery Services.

Tamworth

Tamworth has a population of approximately 33,885 persons (2016 ABS Census) and is a key regional service centre for the North-West Region and the Tamworth City Council Area. Tamworth is located approximately 80 km to the south-west (or a 60-minute drive time) from the Project Area. Despite the relative distance and travel time from the Project Area, Tamworth will likely be a key service centre providing labour, industry services, accommodation, health /emergency services to the Project.

The level of services/facilities available in Tamworth are consistent with services commonly provided by major regional service centres. These services include:

- A wide range of commercial accommodations options (hotels, motels, caravan parks etc), as outlined in section 2.5.
- Construction and transport services including Coates Hire, Kennards Hire, SafetyQuip, Bearcon Supplies, Coastal Hire, Hopkins Transport, Careys Freight Lines, Gavin Sutton Transport, RJN Transport, Tamax Transport, General Freight Express, Parry Logistics, Country Coast Transport and Mainfreight and other associated services.
- Trade supplies – Bunnings, Mitre-10, Tradelink, Reece Plumbing, Lawrence and Hanson, Gasweld Tools, Blackwoods, Tamworth Building Supplies, Graeme H Hayes, Bearcon Supplies Metaland, Metalcorp, Total Tools and others.
- Mechanical services and supplies – Inland Trucks and Machinery, John’s Auto Service, Clarkes Mechanical, Mycar Tyre and Auto, Chester’s Mobile Mechanics, Les’s Car and Truck Repairs and numerous others.
- Supermarkets and bottle shops –two Woolworths, three Coles, ALDI, two IGAs supermarkets as well as a Dan Murphy’s, BWS, Bottle-O, Cellarbrations and others.

- Fast food outlets, cafes, bakeries, restaurants and take-away.
- Shopping centres – Tamworth Shopping World, Atrium Shopping Centre, Tamworth Square, Centrepont, Northgate Shopping Centre, Southgate Shopping Centre. These shopping centres include major retail players such as Kmart, Big W and INTERSPORT.
- Wide range of commercial and financial institutions – banks, solicitors, conveyancing etc.
- Wide range of entertainment options and recreational facilities (parks, clubs, sports and cinema etc).
- Large range of educational facilities from early learning centres, preschools, and public and private schools. Additionally, Tamworth contains campuses for the University of Newcastle and the University of New England, along with a TAFE NSW campus.
- Tamworth has a significant range of medical and emergency services which reflects the regional importance of the town, the main services provided include – Tamworth Hospital with an emergency department, Tamara Private Hospital, Tamworth Community Health Service, along with police stations, a fire brigade, multiple GP and specialist clinics, etc.
- Tamworth Airport operates as a regional airport with flights in and out of the airport operated by Qantas Link and REX with charter flights also accommodated.

2.6 Conclusions

The key findings of this Baseline Regional Economic Profile are as follows:

- 1 The population of the Study Area totalled 101,300 persons as of June 2020. Over the period 2020-2036, annual population growth in the Study Area is forecast to be minimal at +0.5% pa, compared to the forecast New South Wales growth rate of 1.3% pa. However, the Uralla and Walch LGAs are forecast to experience notable population decline over this period. In this regard, local investment projects (such as the proposed Project) can generate new employment opportunities for residents and diversify income streams for local farmers. These factors may contribute to retaining, and potentially expanding, population levels within these LGAs.
- 2 The Study Area had an unemployment rate of 5.1% in March 2021, compared to the NSW rate of 6.4%; with 2,630 jobseekers unemployed at that time. Construction of the Project; therefore, may provide new short-term employment opportunities for the Study Area's labour force participants (subject to suitable skills mix), with a small amount of ongoing employment also supported once the facility is operational.
- 3 The Study Area's occupational and business structures indicate a good base exists to service the needs of the Project, with approximately 13,850 workers and 1,930 businesses in the Study Area involved in construction-related activities.
- 4 The major regional cities/townships of Tamworth and Armidale and have the significant capacity to service many aspects of the Project, with smaller settlements such as Uralla Bendemeer, Walcha, Kentucky, Moonbi and Kootingal, also likely to play a role in providing labour, accommodation and other general services to the Project.

3 Economic Impact Assessment

3.1 Project Investment

The total construction cost for the Project is estimated to be approximately \$373 million, according to information provided by the Proponent. Major investment costs are associated with the purchase of wind turbines and towers, with significant investment also required for civil, electrical and grid connection works. Additional investment will be required relating to project management, planning and approvals, financing, insurance and other project costs.

A review of confidential information from constructed renewable energy projects in comparable regional locations in Australia (based on unpublished Engineering, Procurement and Construction (EPC) data) shows approximately 15% to construction investment is retained within the host Study Area. Applying this ratio to the construction phase of the Project indicates approximately \$56.0 million in wages, contracts and other service provision will flow to the Study Area's economy over 24 months.

3.2 Project Employment

Construction Phase

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).

Direct Construction Employment

Data provided by the Proponent indicates 190 Full Time Equivalent (FTE) jobs will be generated over the construction phase, which is expected to be 18-24 months. That is, on average 190 FTE jobs will be sustained for each of the 18-24 months of construction activities. However, actual on-site workforce numbers will vary from month to month depending on the intensity of construction at the time. At the Project's peak the Proponent estimates 285 FTE positions will be supported on the site (an uplift of 50% on average site worker numbers).

Based on available EPC data from constructed regional-based utility-scale wind farm projects, the likely composition of the construction workforce is as follows:

- 70% of jobs sourced from within the Study Area
- 30% of jobs sourced from outside the Study Area

This recognises the presence of strong workforce and supply chain linkages in the Study Area, especially in Tamworth and Armidale. Table 3.1 provides an estimate of likely local and non-local workforce for different stages of the construction of the Project:

Table 3.1: On-Site Construction Workforce Composition

	Local Workers FTE	Non-Local Workers FTE	Total Workers FTE
Daily Average (over 24 months)	135	55	190
Project Peak (likely to be several months)	200	85	285

Source: Neoen; Ethos Urban

Note: Figures rounded

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

- Labour Supply
- Training
- Civil engineering
- Electrical engineering
- Structural concrete foundations
- Earthworks
- Roads and access tracks
- Fencing
- Landscaping
- Vehicle and equipment hire
- Trade services
- Security
- Office cleaning
- Waste disposal
- Building maintenance
- Foundation laying
- Electrical transformer installation
- Crane works
- Cabling
- Temporary site facilities (power, water, telecommunications)
- Transport of components/workers.

As indicated in Chapter 2, the business structure of the Study Area indicates that a good mix of these types of services is available in the Study Area, especially in Tamworth and Armidale. It is reasonable to expect, therefore, that businesses located in the Study Area will be well-positioned to provide services and secure contracts during the construction phase of the Project.

Indirect Construction Employment

In addition to direct employment, significant employment will be generated indirectly 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 305 FTE indirect jobs over the construction period.

Indirect or flow-on jobs (which captures industry and consumption effects) include those supported locally and in the wider economy (including in other states), as the economic effects of the capital

investment flow through the economy. Indirect employment creation in local and regional economies would include jobs supported through transportation, trade supplies, fuel supplies, mechanical services, accommodation, catering, retail services, food and drink etc. For the purposes of this assessment, it is assumed 25% of indirect jobs or 75 FTE jobs are supported in the Study Area.

This assumption is made with reference to findings from completed renewable energy projects in regional areas (see above) and recognises the relative proximity of the Project Area to major supply chains and service sectors located in Tamworth and Armidale.

Total Construction Employment

In summary, approximately 495 FTE jobs (190 FTE direct jobs and 305 FTE indirect jobs) are expected to be generated by the Project during the 18-24-month construction phase.

The amount of direct Study Area employment (i.e., on-site) required for the Project (on average over 24 months) is estimated to be approximately 135 FTE jobs (or 70% of the construction workforce), with a further 75 FTE jobs supported indirectly in the Study Area (i.e., off-site).

This number of Study Area jobs (210 FTE workers) represents only 1.5% of the Study Area's labour force occupied in construction-related activities (13,850 workers) – noting also that some jobs will be associated with the services sector – and this should not present a constraint to labour supply for the Project subject to cumulative impacts (refer to section 3.3).

Operational Phase

Direct Operational Employment

The Proponent indicates that approximately 5 FTE jobs will be supported locally (on-site) on an ongoing basis through the operation and maintenance of the facility.

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 15 FTE permanent jobs (rounded) would be generated in the wider State and national economies, with some of these jobs supported in the Study Area through operational supply chains and consumption impacts.

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

For the purposes of this assessment, it is assumed that 25% of indirect operational jobs are created in the Study Area (refer to previous assumption). This equates to approximately 4 ongoing FTE local positions (rounded).

Total Operational Employment

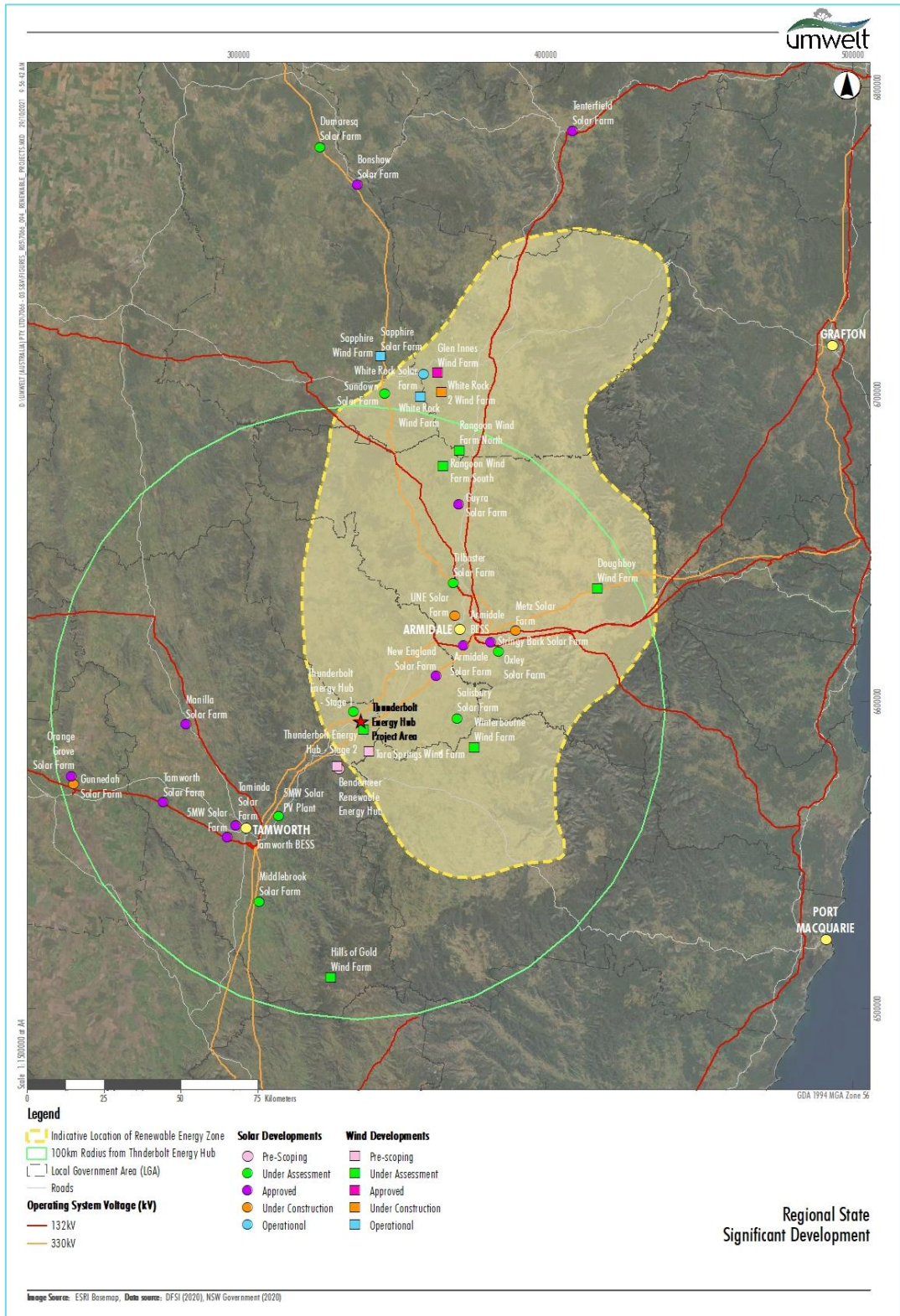
The operational phase of the Project will support 20 FTE positions directly and indirectly, including 9 FTE jobs (5 FTE direct and 4 FTE indirect) in the Study Area.

3.3 Cumulative Effects Assessment

The Project may need to compete for labour, accommodation, and other resources with major infrastructure projects (principally renewable energy projects) being developed concurrently in the

Study Area / NE REZ. Potential and proposed State Significant Development (SSD) projects located within 100 km of the Project Area are shown in Figure 3.2 and detailed in Table 3.2.:

Figure 3.1: Proposed State Significant Development Projects, within 100 km of the Project Area



Source: Umwelt, Thunderbolt Energy Hub Draft Environmental Impact Statement October 2021

Table 3.2: Proposed State Significant Development Projects, within 100 km of the Project Area

Project	Development Type	Development Stage
Gunnedah Solar Farm (58 km west of Tamworth – outside REZ)	Solar	Under Construction
Metz Solar Farm (58 km northeast of Project Area)	Solar	Under Construction
UNE Solar Farm (46 km northeast of the Project Area)	Solar	Under Construction
Sapphire Solar Farm (92.5 km north of Armidale – outside REZ)	Solar	Approved – construction expected to commence 2022
Orange Grove Solar Farm (60km west of Tamworth – outside REZ)	Solar	Approved (2019) Medium project 110 MW No construction timeframe available
Stringy Bark Solar Farm (50km northeast of Project Area)	Solar	Approved (2019) Very small project 29 MW No construction timeframe available
Taminda Solar Farm (4.3 km north of Tamworth – outside REZ)	Solar	Approved (2019) Very small project 9 MW No construction timeframe available
Tamworth Solar Farm (28 km west of Tamworth)	Solar	Approved (2020) Small project 65 MW No construction timeframe available
New England Solar Farm (28 km northeast of Project Area)	Solar	Approved (2020) Major project 720 MW Stage 1 (400MW) under construction
Guyra Solar Farm (76 km northeast of Project Area)	Solar	Approved (2021) Very small project 4.6 MW, expected to be completed by 2023.
Manilla Solar Farm (40km north of Tamworth – outside REZ)	Solar	Approved (2019) Very small project 5 MW No construction timeframe available
Hills of Gold Wind Farm (57 km southeast of Tamworth – outside REZ)	Wind	Under Assessment Major project 410 MW EIS Exhibited No construction timeframe available
Doughboy Wind Farm (88.5km northeast of Project Area)	Wind	Under Assessment Prepare EIS Major project 300 MW No construction timeframe available
Rangoon Wind Farm (North and South) (93.9 km North of Project Area)	Wind	Under Assessment Prepare EIS Medium project 130 MW No construction timeframe available
Winterbourne Wind Farm (38km east of Project Area)	Wind	Under Assessment Prepare EIS Major project 700 MW No construction timeframe available
Oxley Solar Farm (50km northeast of Project Area)	Solar	Under Assessment EIS Exhibited

Project	Development Type	Development Stage
		Major project 225 MW No construction timeframe available
Tilbuster Solar Farm (55km northeast of the Project Area)	Solar	Under Assessment EIS Exhibited Medium project 152 MW No construction timeframe available
Middlebrook Solar Farm (25 km south of Tamworth – outside REZ)	Solar	Under Assessment Prepare EIS Major project 500 MW No construction timeframe available
Salisbury Solar Farm (32 km northeast of Project Area)	Solar	Under Assessment Prepare EIS Major Project 700 MW No construction timeframe available
Thunderbolt Energy Hub – Solar Farm (adjacent to the Project Area)	Solar	Under Assessment Prepare EIS No construction timeframe available
Tamworth Battery Energy Storage System (8 km south of Tamworth)	Other	Under Assessment Prepare EIS Major project 200 MW Completion expected by 2023
Armidale Battery Energy Storage System (45.54km Northeast of Project Area)	Other	Under Assessment Prepare EIS Major project 150 MW Completion expected by 2023
Thunderbolt Energy Hub – Stage 2 (immediately south of the Project Area)	Wind	In Planning No construction timeframe available
Bendemeer Renewable Energy Hub (30 km southwest of Project Area)	Wind and Solar	In Planning Major project 680 MW No construction timeframe available
Tara Springs Wind Farm (9.9km south of Project Area)	Wind	In Planning Size unknown No construction timeframe available

Source: Umwelt, Thunderbolt Energy Hub Draft Environmental Impact Statement October 2021

In relation to these projects, the following is noted:

- A number of projects are likely to be completed prior to the construction phase of the Project commencing (proposed for 2024), as they have already been approved. These projects include Gunnedah Solar Farm, Metz Solar Farm, Sapphire Solar Farm, UNE Solar Farm, New England Solar Farm Stage 1, Tamworth BESS and Armidale BESS.
- Several projects are either community or small-scale projects requiring limited resourcing: These projects include: Stringy Bark Solar Farm, Taminda Solar Farm, Guyra Solar Farm, and Manilla Solar Farm. Additionally, some of these projects will also be completed prior to 2024 e.g., Guyra Solar Farm.
- The development status of remaining projects is either 'in planning' or 'under assessment' through the State Government's EIS process. It is recognised that most of these proposals are associated with SSDs and will require major resourcing in the construction phase. Until

development consent is granted, it is difficult to predict construction timing of these projects, noting the following general factors associated with moving from planning approval to construction for major renewable energy projects:

- Some projects may need to be on sold to a developer for construction to progress
- Grid connection will need to be secured, noting potential transmission constraints associated with multiple new large-scale projects trying to access the grid simultaneously
- Power purchasing agreements may need to be secured to provide investment surety prior to construction progressing
- External project financing may need to be secured to underpin construction
- Some developers with large portfolios may prioritise construction of projects in other locations for financial or strategic reasons
- Some developments may not proceed past planning approval stage for a variety of reasons, including challenging market and investment conditions, competitive factors or reduced policy support.

Regional economic capacity also needs to be considered when addressing potential cumulative impacts:

- The Study Area has significant capacity in terms of construction-related workers (13,850 workers) and construction-related businesses (1,930 businesses), including some located in the immediate region to service multiple concurrent infrastructure projects.
- The Study Area currently contains significant accommodation (1,890 rooms and cabins)
- The Study Area currently contains 2,630 unemployed labour force participants, some of whom could work on these infrastructure projects (subject to suitable skills mix).
- The ongoing transformation of the region over the coming years into a key national renewable energy hub will provide significant upskilling and training opportunities for local workers building specialist workforce capacity capable of servicing the expanding sector.
- Improved investment certainty, stimulated by the NE REZ, will provide confidence to industry and business suppliers to the renewable sector that a sustainable pipeline of major projects exists allowing them to invest and expand operations to meet increasing demand for their services. Increased demand certainty may also entice new entrants into the sector, further increasing industry and business capacity.

Notwithstanding the above commentary, and the high likelihood that cumulative impacts will be manageable, it would be prudent to assume some cumulative impacts associated with the construction of the Project are likely to occur and appropriate/proportionate mitigation measures should be implemented even recognising the timing uncertainty of many projects. These mitigation measures should include workforce, procurement and accommodation strategies. These strategies should be developed in the lead up to the construction phase of the Project and should reflect and respond to actual regional demand conditions at that time, especially in relation to concurrent projects principally being serviced out of Tamworth and Armidale.

Refer to Chapter 4 for more detail on proposed mitigation measures.

3.4 Industry 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.

As identified above, the Study Area comprises approximately 1,930 construction-related firms and many other businesses associated involved in activities likely to be required for the Project, including electrical engineers, trade suppliers, auto mechanics, real estate services etc.

Historically, the Proponent has always prioritised local economies in the construction of projects by giving local companies and workers the ability to express their interest in a project during the development phase. The Proponent then supports local businesses and workers in discussions with the appointed EPC contractor(s) including hosting events such as local contractor information sessions.

By actively putting EPC contractors and local suppliers in contact with one another, the Proponent has consistently found that local engagement and subsequent local procurement levels are high.

The Proponent intends to use a similar approach in order to maximise local inputs for the Project.

3.5 Housing and Commercial Accommodation Sector Impacts

As noted above (refer to Table 3.1) approximately 85 non-local FTE staff may need to be accommodated in the Study Area at the Project's peak (which may last for several months) with an average of 55 FTE staff accommodated throughout construction. These staff will include general managers, project managers and supervising engineers. Contract lengths will vary. This highlights the need for range of accommodation types including higher-end options for professional staff on longer contracts, to convenient low-cost options for those on short-term contracts.

As highlighted in Chapter 2, the Study Area has a capacity of approximately 1,890 rooms and cabins in commercial accommodation in locations within a 60-minute drive time from the Project Area – with an annual vacancy rate of approximately 45% for the broader New England North West Tourism Region. Assuming each non-local worker require individual accommodation (85 rooms), only 5% of this accommodation stock would be required at peak times to service the Project. However, this requirement is likely to be lower as some workers may choose to be accommodated in caravan/holiday parks (powered sites), B&Bs, shared private rentals (340 active properties/810 rooms listed on Airbnb and Vrbo) or stay with family or friends (where possible) rather than in commercial accommodation. Additionally, some workers may share motel rooms/cabins etc to reduce personal costs.

This data indicates that the Study Area has reasonable capacity to accommodate the number of non-local workers expected at the peak of the Project, with the influx of these workers supporting higher occupancy rates and revenues for local accommodation operators and private property owners, particularly during off-peak periods.

However, given the number of renewable energy infrastructure project approved or proposed in the Study Area (and broader region) over the coming years, underpinned by the NE REZ, and uncertainty over the construction timing of these projects; it would be prudent for the Proponent to consider appropriate management measures to minimise any negative impacts on the housing and commercial accommodation sectors.

Additionally, it is noted that commercial accommodation and housing market conditions are ever changing, and the current COVID-19 pandemic is a good example of this. The COVID-19 environment has led to an upsurge in migration from metropolitan to regional NSW areas; associated with workers relocating to second homes/holiday homes and other households seeking a permanent move to the regions for lifestyle reasons. ABS Regional Internal Migration Estimates show in the 12

months to March 2021 (predating the latest lockdown) approximately 25,000 people moved from Greater Sydney to regional NSW, with the biggest movement associated with people aged between 45 and 64, including many with families. Consequences of such migration patterns include upward pressure on regional property process and rentals and a reduction in housing availability and affordability, especially at lower price points.

3.6 Local Wage Spending Stimulus

As noted earlier, approximately 30% of the 190 direct FTE construction jobs (55 FTE positions) are expected to be sourced from outside the Study Area, particularly specialist and management positions.

This level of employment would equate to \$9.7 million in wages (2020 dollars) on the basis that each non-local worker is employed for 24 months and earns the average construction wage of \$88,000 pa (source: ABS, *Average Weekly Earnings 6302.0*, May 2021).

A considerable portion of these wages would be spent in the Study Area, where these workers will be based. An estimated \$5.4 million in wages (2021 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 75% 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 Study Area. 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, restaurants etc.
- Recreation spending associated with day trips and excursions, gaming (lottery, sports betting, etc), purchases in pubs and clubs (although noting that expenditure 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 36 FTE jobs in the services sector (based on 1 FTE job allocated for every \$150,000 of induced spending), supporting jobs in the Study Area associated with retail, accommodation, trade supplies, cafes and restaurants etc. These jobs are included in the 'indirect employment' estimates outlined in Section 3.2 above.

3.7 Agricultural Impacts

Negative agricultural impacts associated with the Project are likely to be minimal, for the following reasons:

- The Project is compatible with agricultural land uses and will not preclude the site from continued agricultural land use
- Only 215 ha of agricultural land will be required to host Project infrastructure (e.g., turbines, substations, internal roads, office/maintenance facilities) This amount of land represents just 4% of the broader landholdings (5,918 ha) owned by the host landowners.
- The Project Area is principally used for sheep and cattle grazing, and these activities can continue as normal within the Project Area (minus the 215 ha required for permanent infrastructure) once operational. Only minor disruption to agricultural activities is likely to occur

during the construction phase due to the managed construction of turbines and other Project infrastructure which will be closely coordinated with the host landowners. No disruption to neighbouring (non-host) agricultural activities is anticipated.

- An Aviation Assessment is currently being undertaken for the Project. Preliminary advice indicates there are unlikely to be any adverse impacts on agricultural aviation activities in the area.
- Emergency Services – access to the Project Area (particularly Rural Fire Services) will not be restricted by the Project. Additionally, any emergency services required by land use (agricultural or energy generation) will be improved by the new access tracks.

Positive agricultural impacts associated with the Project include:

- Construction of 47 km of new internal tracks across the Project Area, which will improve access for landowners to stock and farming infrastructure, and for emergency services in the event that such access is required on the site.
- Guaranteed 30-year future proofed income for host landowners (indexed to the CPI), which provides more diversified income streams for farming families allowing for more certainty and flexibility in planning long-term farming operations, including succession planning.

It should also be recognised the Project Area can be rehabilitated to reflect its original condition at the end of the wind farm's operational phase through decommissioning of the Project.

3.8 Ongoing Economic Stimulus

Landowner Leases

As noted, landowners involved in the Project will receive annual lease payments to host wind farm infrastructure. These payments are confidential between the proponent and landowners.

As noted, leasing landowners will continue to undertake agricultural activities on their land unaffected by the Project (excluding the 215 ha used for Project infrastructure); therefore, it can be expected that a portion of lease revenues will be reinvested back into the local economy through ongoing farming activities as well as business, household and individual consumption in the Study Area.

Neighbourhood Benefit Sharing Program

The Proponent's Neighbour Benefit Sharing Program provides neighbours within 3.5km with an annual payment throughout the operations phase of the Project (up to 30 years). The Program is based on the number of turbines within certain distances of neighbour's dwellings. The nearer the turbines are to a dwelling, and the more there are, the higher the annual payment.

The final amount will be based on final design following micro-siting, should the Project be approved, during the detailed design and construction phases. The annual payments will begin once the Project starts operating.

The Proponent calculates the value of these payments could be \$170,000 (2021 dollars) in Year 1 of operations. Note, this should be considered a high-level estimate only at this stage and will be determined based on the final design following detailed design and micro-siting.

Community Benefit Fund

The Community Benefit Fund would provide \$100,000 (2021 dollars) annually for local community projects through a competitive annual grants process. The fund would start once the wind farm is operational with allocations linked to CPI annually.

Returns to Council

The NSW Valuer General's Policy No. 12 (*valuation of land used as a wind farm*) states that the value of land under lease for the purpose of a wind farm has an increased value compared to similar land without a wind farm lease – this has implications for taxes and Council rates.

This increased land value is likely to result in a net increase in annual financial returns to Council from the Project Area. Generally, it is the Proponent, rather than the landowner, who is responsible for these increased annual payments.

The amount payable will be subject to discussions between the Proponent and Council. However, based on the Valuer General's guidelines and current Tamworth LGA and Uralla LGA 2021/22 rate in the dollar farmland payment values; Ethos Urban estimates the 'net' uplift in revenue to Council from the operational phase of the Project could be in the order of \$350,000 (2021 dollars) in Year 1 of operations. Note, this figure should be considered an estimate only with further discussions between Council and the Proponent required to determine land valuation and other relevant matters.

Local Wage Stimulus

The Project will support 9 FTE jobs in the Study Area (direct and indirect). These 9 FTE jobs will provide an estimated stimulus within the Study Area of approximately \$430,00 in Year 1 of operations (2021 dollars). This figure assumes there will be no loss in direct or indirect agricultural jobs associated with the use of part of the land to host the wind farm (i.e., existing agricultural activities will continue around the wind farm infrastructure). Refer to section 3.6 for wage stimulus methodology.

Total Operational Stimulus

The combined economic stimulus to the Study Area from host landowner returns, neighbouring property returns, operational wage stimulus, and community and Council returns is estimated at approximately \$85.1 million over 30 years (includes adjustment for CPI @ 2.5% pa).

3.9 National Grid Supply Benefits

With an installed capacity of approximately 192 MW, the Project has the potential to provide sufficient renewable energy to support the annual electricity needs of the equivalent of approximately 118,000 NSW households, according to information provided by the Proponent.

In a regional context, the Study Area currently contains approximately 43,000 dwellings (ABS Census 2016); therefore, the Project has the potential to provide the equivalent of approximately 2.7 times the annual residential electricity requirements of the Study Area, highlighting the importance of the facility from a clean electrical generation perspective.

3.10 Environmental Benefits

The operation of the Project will help reduce greenhouse gas emissions and move towards cleaner electricity generation, in line with Federal and State policy. The Proponent estimates 480,000 tonnes pa in reduced CO₂ emissions will result from the operation of the Project compared to coal fired power generation.

3.11 Conclusions

- 1 The Project will involve approximately \$373 million in investment during the construction phase and will support a total of 495 FTE positions (direct and indirect) over the 18-24 month construction period. Once operational, a total of 20 FTE jobs (direct and indirect) will be supported by the facility.
- 2 Employment generated for Study Area workers (direct and indirect) is estimated at approximately 210 FTE jobs during the construction phase and approximately 9 FTE jobs during the operational phase.
- 3 The Project will provide significant participation opportunities for businesses and workers located in the Study Area, having regard for the good match of skills and resources available. The Proponent intends to be proactive in the development stage in coordinating the Engineering, Procurement and Construction (EPC) contactors with local business and workers.
- 4 The 'external' Project labour requirement (i.e., non-local workers temporarily relocating to the Study Area) would be expected to generate an accommodation need for 85 FTE workers at the peak of the construction phase. This represents only 5% of total commercial accommodation rooms/cabins within a 60-minute drive of the Project Area, with further capacity available in caravan parks (powered sites), and private rentals (e.g., Airbnb). The Project will support increased/new revenues for accommodation providers and private homeowners over the construction phase, especially in off-peak seasons
- 5 The 55 FTE construction workers relocating to the Study Area to work on the Project would be expected to inject approximately \$2.7 million in new spending into the economy over the construction phase, supporting approximately 18 FTE jobs in the service sector across the Study Area over this period.
- 6 Cumulative impacts are mainly associated with significant development of major renewable energy projects in the NE REZ in the coming years (including the adjoining Thunderbolt Solar Farm and Wind Farm Stage 2 projects also to be developed by the Proponent) with uncertainty around the construction timing of most of these projects. Potential impacts include insufficient accommodation and workers to service the Project and concurrent demands. In this regard the Proponent proposes to develop appropriate mitigation measures (refer to Chapter 4).
- 7 Approximately 215 ha of existing agricultural land will be required to host the Project, which represents just 4% of the broader Project Area (5,918 ha). No loss of employment associated with the Project Area is anticipated, either directly (on-site) or through the supply chain, as existing agricultural activity can continue across the Project Area noting the compatibility of both land uses. The host landowners will benefit from the construction of 47 km of internal tracks across the Project Area.
- 8 Ongoing economic stimulus in the Study Area associated with the operation of the Project is estimated at approximately \$99.0 million over 30 years, (2021 dollars, CPI adjusted) associated with landowner lease returns, Neighbourhood Sharing Program payments, operational wage stimulus, Community Benefit Fund payments and increased Council land tax returns from the Project Area.
- 9 The Project has the capacity to supply sufficient clean energy to power the equivalent of approximately 118,000 homes per annum, which represents approximately 2.7 times of the total annual residential requirements of the Study Area (43,300 dwellings).

4 Mitigation Measures

4.1 Accommodation, Procurement and Employment Strategy

Prior to commencing construction and responding to actual regional demands at that time, the Proponent will prepare an Accommodation, Procurement and Employment Strategy (APAES) for the Project in consultation with relevant stakeholders.

This APAES might include the following:

- Measures to ensure there is sufficient accommodation for the workforce associated with the construction phase of the Project
- Measures to addresses any specific cumulative impacts arising associated with concurrent State Significant Development projects under construction in the Study Area.

4.2 Community Benefit Programs

In order to ensure the broader community benefit from the construction and operation of the Project, the Proponent has developed and will implement a Community Benefit Programs (CBP).

The CBP will include the following:

- Provision of annual payments to non-host properties neighbouring the wind farm benefitting landowners with land adjacent to the project boundary, whom are not directly associated with the project infrastructure.
- A Community Benefit Fund (CBF) providing annual finance for local community projects through a competitive grants process. Appropriate guidelines and management structures to administer the CBF will be developed prior to its operation.