



APPENDIX

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Social impact assessment

Social Impact Assessment

Birriwa Solar and Battery Project

Prepared for ACEN Australia

July 2022

Social Impact Assessment

Birriwa Solar and Battery Project

ACEN Australia

J210553 Birriwa Solar and Battery Project - SIA

July 2022

Version	Date	Prepared by	Approved by	Comments
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V2	15 July 2022	Alicia Minogue	Bronwyn Pressland	
V3	25 July 2022	Alicia Minogue	Bronwyn Pressland	

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Executive Summary

ES1 Introduction

ACEN Australia Pty Ltd (ACEN), formerly known as UPC\AC Renewables Australia (UPC\AC), proposes to develop the Birriwa Solar and Battery Project; a large scale solar photovoltaic electricity generation facility along with battery storage and associated infrastructure (the project).

The solar component of the project will have an indicative capacity of around 600 megawatts (MW) and will include a centralised battery energy storage system (BESS) of up to 600 MW for 2 hours. The BESS will enable energy from solar to be stored and then released during times of demand.

The project will be developed within a study area of approximately 1,300 hectares and will connect to the proposed Central-West Orana Renewable Energy Zone Merotherie Hub.

The construction phase of the project would last for approximately two years utilising a workforce of up to 800 people. The operational phase would last for about 30 years utilising a workforce of approximately 20 people.

The project is in the localities of Birriwa and Merotherie, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW). The project is within the Central-West Orana (CWO) Renewable Energy Zone (REZ), and is within the Mid-Western Regional Council (MWRC) local government area (LGA), with parts of its access route within Warrumbungle Shire Council LGA.

The project is State significant development (SSD) pursuant to Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Therefore, a development application for the project is required to be submitted under Part 4, Division 4.1 of the *NSW Environmental Planning and Assessment Act 1979* (EP&A Act). This social impact assessment (SIA) report has been prepared to accompany a new SSD application and environmental impact statement (EIS) for the project.

ES2 Study methodology

This SIA methodology was developed in accordance with the NSW Department of Planning, Industry and Environment (DPIE) *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2021) (DPIE 2021a) and informed by best practice guidance and standards set out by the International Association for Impact Assessment (IAIA) and International Finance Corporation (IFC). The assessment of the social impacts considered a range of complex factors and often competing interests. The impact assessment is reflective of this and has:

- assessed some aspects of the proposed project as both negative and positive as they relate to different groups of people;
- included negative impacts on local communities while documenting the benefits to the broader region;
- considered the impacts on vulnerable groups and provided management strategies to ensure that any existing disadvantages are not exacerbated; and
- considered each community's access to critical resources, such as housing and health care, and how this affects their resilience.

Potential social impacts were assessed using a social risk framework (Appendix B) based on a combination of consequence and likelihood. The social risk assessment is informed by the data collected from the SIA field study, ACEN engagement activities, literature review, and social baseline study.

ES3 Existing environment

The project is within the Birriwa and Merotherie State Suburb classification (SSC) areas. While the development footprint is localised, direct and indirect impacts may be farther reaching. As such the project is considered to have two key areas of social influence: a local area and regional area.

The local area consists of the communities anticipated to experience the most direct social impacts of the project (ie impacts related to local social infrastructure and services, workforce, business and industry, housing and accommodation, and community health and wellbeing). The local area includes the main population centres of Dunedoo, Gulgong and Mudgee. Both Dunedoo and Gulgong provide local level services. Mudgee provides broader district services and is the seat of the MWRC.

The regional area consists of the geographic areas likely to experience few direct and more indirect social impacts of the project. These indirect impacts are associated with use of infrastructure, supply chains, roads, transportation of goods, materials and equipment, the movement of workers (some of which may have drive-in drive out arrangements) and cumulative impacts arising from other projects in the area. The Mid-Western Regional LGA and Warrumbungle LGA are identified as the regional area.

The project will be developed within a study area of approximately 1,300 hectares (ha) and is comprised of 18 freehold land parcels. The properties within the development footprint are currently primarily used for sheep and cattle grazing as well as low intensity dry land cropping. There are scattered rural residential properties within and surrounding the development footprint, including four associated residences within or in close proximity to the study area (A2, A4, A6 and A8). There are 21 non-associated residences within 2 km of the study area, many of them in the township of Birriwa, and another 22 non-associated residences between 2 km and 5 km from the study area (refer to Figure 2.1).

The local area faces a range of challenges such as decreasing housing affordability and rental accessibility, an ageing population, population decline (particularly in the communities of Dunedoo and Gulgong), outmigration of young people, and skill and labour shortages, which present a barrier to diversifying local economies. The local area (and regional area) has a high number of Indigenous residents. There are high rates of social capital and cohesion amongst communities, with residents expressing a strong connection to place. Communities in the local area value the rural amenity and lifestyle, access to services and employment, and the presence of strong connected communities where people can rely on one another.

In 2016, the top industry sectors with respect to employment share in the local area include mining, retail trade and health care and social assistance. The agricultural and mining industry sectors are the dominant employment sectors in the regional area. Tourism is also an important and growing industry sector in the Mid-Western Regional LGA. Unemployment levels across the local area and regional area are relatively low but fluctuate in parallel with changes in the mining industry sector. There is currently a low unemployment rate across the local area; however, youth unemployment rates in Dunedoo and Gulgong are high.

ES4 Assessment of impacts

A summary of the key potential social impacts and benefits identified are provided in Table ES1. The full assessment of potential impacts and benefits is provided in Section 7.

Table ES1 Key potential social impacts and benefits

Impact/challenge	Mitigated impact
<p>Accessibility related to capacity and availability of short-stay accommodation</p>	<p>Medium</p>
<p>Ready access to short-term accommodation is critical for the successful operation of many industry sectors ie mining and tourism. It is evident from SIA consultation that the industry sectors of tourism, mining, construction and energy currently place significant and fluctuating demands on short-term accommodation within the local and regional area. Despite the staging of workforce numbers, the project will generate a greater demand for short-term accommodation than can reasonably be met by the supply in the local and regional area. Unmitigated this will have implications for visitors to the region accessing affordable short-term accommodation, vulnerable groups seeking access to emergency accommodation, and the capacity of local short-term accommodation providers to service their existing business. A planned approach to securing workforce accommodation will assist in minimising impacts on short-term accommodation in the regional area. ACEN will prepare a construction workforce and accommodation strategy (CWAS) for the project. The CWAS will clearly describe how the construction workforce will be accommodated and the actions ACEN has taken or plans to take to minimise pressure on the existing capacity of short-term accommodation in the local area. ACEN will continue to advocate with industry bodies such as EnergyCo for a strategic approach to understanding and managing cumulative workforce accommodation impacts from CWO REZ development.</p>	
<p>Personal disadvantage related to access to affordable accommodation</p>	<p>Medium</p>
<p>Access to affordable housing is a key issue in the local and regional area, with direct and indirect impacts likely if the project leads to a shortage in housing availability, or a decrease in affordability. This is particularly relevant to local towns such as Gulgong, and Dunedoo where there are more limited alternatives available should a person or family find themselves priced out of the housing market. The project workforce accommodation demands has the potential to lead to the displacement of low-income households, and changes in rental affordability in local communities. Unmitigated, this would exacerbate existing housing market issues in the local and regional areas, especially for residents who may not be able to afford increased rent payments. This is a particular concern for vulnerable populations who would be unable to find alternative housing. The CWAS will seek to mitigate negative impacts and facilitate:</p> <ul style="list-style-type: none"> • the prioritisation of alternative forms of workforce accommodation during the construction phase of the project; • an increase in the extent of the geographic area for local hires and workforce accommodation; and • enhanced local workforce participation. <p>ACEN will also progress industry engagement (ie with EnergyCo) in relation to the management of cumulative workforce accommodation issues.</p>	
<p>Way of life impacts related to social amenity (construction)</p>	<p>Medium</p>
<p>Stakeholders expressed concerns regarding potential decline in social amenity due to the impact of construction activities such as noise from traffic movements, noise and vibration from construction activities and intrusion of security lighting. One participant expressed how they value the “rural feel” of their community, with multiple people identifying the “quiet and peaceful” nature of the community as a strong attribute. Some participants raised concerns that noise from construction activities would detract from the existing rural amenity and may become a nuisance. The project has the potential to change the social amenity in the local area due to the combined effect of construction noise and vibration, earthworks and site lighting. The primary mitigation for social amenity impacts is ACEN’s complaints and grievance procedure (which includes a dedicated project phone number and project email), which provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback. The complaints and grievances mechanism will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN response.</p>	
<p>Community impacts related to social cohesion</p>	<p>Medium</p>
<p>During consultation, stakeholders described communities of the local area as community-orientated and close-knit. A local resident described the area to have a ‘strong rural community history’ with generational families. Participants in consultation also highlighted recent population decline across the rural communities of Dunedoo and Gulgong and expressed concern regarding the potential implications of population decline for service provision and community cohesion. The project has potential to result in changes to the character and cohesion of communities in the local area due to the influx of a temporary workforce (anticipated at up to 800 workers) and the potential inequitable distribution of project benefits which may give rise to conflict between residents. ACEN intends to appoint a locally based resource prior to the construction of their approved Stubbo Solar and Battery Project to coordinate community and workforce engagement across all ACEN projects in the regional area. Construction workforce behaviour will also be managed through the preparation and implementation of a construction workforce management plan.</p>	

Table ES1 Key potential social impacts and benefits

Impact/challenge	Mitigated impact
<p>Surroundings impacts related to changes in the visual landscape (near neighbours)</p>	<p>Medium</p>
<p>Changes to the visual landscape can invoke strong emotions in people who have an attachment to a particular vista and can affect how people experience their rural surroundings. Literature review demonstrates that visual impacts are typically raised by near neighbours on comparable solar projects across NSW. ACEN has been engaging with near neighbours since 2018 with the consultation effort being ramped up considerably in anticipation of the EIS since mid 2021. During this time the project design and development footprint has progressively evolved to minimise or avoid visual impacts, where possible. These refinements have been instrumental in reducing potential visual impacts for near neighbours, particularly the closest neighbours. In particular, a 300 m buffer area from R5 has been included in the project design, where no project infrastructure (including solar panels) will be installed. Additionally, Lot 12 (directly east of R5) will not have PV arrays installed on it. The planting of tree screens has also been proposed to reduce the visual impacts on other near neighbours as follows; screen planting 800 m long along the development footprint boundary at the north-west corner of the study area adjacent to Birriwa Bus Route North, R1 and R1a; tree screen planting along the north side of Birriwa Bus Route South extending approximately 1 km west from R5; and approximately 600 m of tree screen planting along the development footprint boundary at R3. Proposed tree screening is shown on Figure 3.1.</p> <p>ACEN representatives have provided explanations to landholders and interested persons of how the landscape will need to be changed and why the change is necessary.</p>	
<p>Public safety related to increased traffic on the local road network (construction)</p>	<p>Medium</p>
<p>A section of the Central West Cycle Trail (CWC Trail) between Gulgong and Dunedoo passes proximate to the project. The CWC Trail Inc. expressed concern in relation to the potential increase in traffic on the local and regional road network and implications for the safety of road users (pedestrian, cyclists, school bus users and other vehicles). Other stakeholders also raised concern regarding the existing condition of the local road network and the potential of the project to exacerbate the existing poor road conditions. ACEN initially considered three options for access to the site; however the current, and preferred, option was chosen following feedback from the CWC Trail Inc. and Mid-Western Regional Council and Warrumbungle Shire Council, as well as consideration of a number of other issues. To reduce the risk for users of the CWC Trail the following measures will also be considered:</p> <ul style="list-style-type: none"> • in consultation with CWC Trail Inc. prepare a signage plan highlighting the CWC Trail within and at the vicinity of the project; • ensure the CWC Trail is highlighted in the site induction and Driver Code of Conduct to increase construction workforce awareness of cyclists’ presence in the area; and • site specific circumstances ie peak construction activities, a traffic controller may be required to manage the vehicular traffic and cyclists which is subject to site supervisor’s safety assessment and discretion. <p>To reduce the volume of construction traffic on the local road network ACEN is investigating the provision of a bus service to and from the project for construction workers residing in Mudgee and Gulgong, ACEN has also committed to enforcing carpooling policies amongst the local workforce for travel to and from the project. A Construction Traffic Management Plan (CTMP) will be prepared for the project in consultation with key stakeholders including CWC Trail Inc, and school bus service operators.</p>	
<p>Benefit</p>	<p>Enhanced benefit</p>
<p>Livelihood related to impacts to other industry sectors (agriculture)</p>	<p>Medium</p>
<p>During consultation stakeholders spoke about the potential impacts of the project on other key industry sectors such as the agricultural industry. Concerns included potential impacts on local and regional agricultural productivity, potential reduction in the diversity and supply frequency of specialised agricultural services, and interruptions to livestock grazing regimes. Frequent communication and provision of information regarding the predicted construction impacts will be undertaken prior to project construction to prepare landholders for impacts that cannot be fully mitigated and to provide an opportunity for landholder feedback and engagement. The establishment of a complaints and grievance management procedure will support effective communication and build trust. ACEN will develop gate and property access procedures in consultation with landholders to reduce the potential impacts to livestock from construction traffic. Driver and construction personnel will undergo inductions and training regarding transport and construction operations in and around the study area and interactions with farming activities. ACEN is also committed to exploring opportunities for co-location of sheep grazing and the project. This would in turn have benefits for the local and regional agricultural industry with minimal adverse impact on agricultural production.</p>	

Table ES1 Key potential social impacts and benefits

Impact/challenge	Mitigated impact
Livelihood related to rural income diversification (associated and non-associated landholders)	Very high/medium (benefit)
Landholder agreements and the ACEN Neighbour Benefit Sharing Program will deliver livelihood benefits to associated and non-associated landholders. In addition, ACEN will continue to explore with landholder’s opportunities to support co-location of livestock grazing with the solar operation.	
Community benefit related to community investment	High (benefit)
Proponent community investment initiatives can lead to improved sustainability and enhanced resilience in host communities and improvements to other health and wellbeing outcomes. ACEN will adopt a shared value approach in their identification and commitment to community investment and involvement opportunities. At the time of EIS lodgement, ACEN’s contribution to the community involves the following programs: <ul style="list-style-type: none"> • Stubbo Project Social Investment Program (SIP); • Central West Orana solar projects community benefit sharing program (CBSP) which would see investment in a range of opportunities aligned with the needs of local communities, ACEN and the broader renewable energy sector; and • ACEN’s Neighbour Benefit Sharing Program (NBSP). Further, ACEN has committed to the development of a Local Participation Plan and Aboriginal Participation Plan that commits to procurement, employment and investment in job readiness targets for ACEN and its contracting partners	
Livelihood related to employment and training opportunities (youth)	High (benefit)
Participants in the SIA field study noted the potential local employment benefits of the project. The construction phase of the project will require a workforce of up to 800 personnel. Where possible, ACEN will encourage contractors to hire locally. There is also opportunity to sponsor tickets and licences required for employment in the construction industry, which would enable youth, particularly in the regional area, to gain meaningful employment as well as increase their ongoing employability.	
Livelihood related to the use of local goods and services	High (benefit)
Construction phase project procurement activities have the potential to deliver economic benefits to businesses within the local and regional area. Short-term accommodation providers in Dunedoo, Gulgong and Mudgee will benefit from the influx of non-local workers (estimated at 560 people). Local procurement may also enable flow-on economic impacts, which would be realised in the regional area, specifically Mid-Western Regional LGA where the majority of the workforce is anticipated to be located. To maximise local procurement benefits derived from the project ACEN will engage with the business community across Dunedoo, Gulgong and Mudgee to establish relationships and ensure distribution relevant information regarding project timing, procurement processes and the required goods and services. Wherever possible and practical, it is recommended that ACEN encourages their construction contractors to prioritise the use of local goods and services and encourage local spending.	

ES5 Evaluation of impacts

This SIA provides an assessment of potential social impacts and benefits associated with the project. It identifies the relevant social issues, potential social impacts and benefits, and associated mitigation and enhancement measures applicable to the design and operation of the project in accordance with the *SIA Guideline 2021* (DPIE 2021).

The SIA has assessed the potential social impacts (negative and positive) of the project for near neighbours, broader communities, vulnerable groups and a range of other stakeholders. Potential social impacts (negative and positive) will accrue to associated and non-associated landholders, with negative impacts primarily associated with the construction phase of the project. A number of refinements have been made to the project to reduce the scale of impact to landholders and have included:

- the project access route;
- BESS capacity, duration, design and location within the development footprint; and

- the development footprint including revisions to include setbacks from neighbouring dwellings.

Further information is provided in Section 2.5.4 of the EIS.

The outcomes of the SIA indicate that the social impacts to the local and regional areas are confined mainly to the construction phase of the project and relate principally to labour demand, and workforce accommodation arrangements. There are also cumulative dimensions to these issues.

Mitigation and management strategies have been proposed for each of the identified potential social impacts to minimise negative consequences and to maximise social benefits for the local community. Performance indicators will be developed for each management plan in consultation with stakeholders and will be monitored throughout the project life span.

An adaptive approach is proposed allowing ACEN to manage and respond to changing circumstances and new information over time through ongoing monitoring and periodic review of mitigation strategies allowing for modification if required and appropriate. This adaptive approach will ensure that the management of social impacts identified in the SIA will result in minimising negative social consequences and maximising social benefits for the local community.

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1 Introduction

1.1 Overview

ACEN Australia Pty Ltd (ACEN), formerly known as UPC\AC Renewables Australia (UPC\AC), proposes to develop the Birriwa Solar and Battery Project; a large scale solar photovoltaic (PV) electricity generation facility along with battery storage and associated infrastructure (the project). The solar component of the project will have an indicative capacity of around 600 megawatts (MW) and will include a centralised battery energy storage system (BESS) of up to 600 MW for 2 hours. The BESS will enable energy from solar to be stored and then released during times of demand.

The project is in the localities of Birriwa and Merotherie, approximately 15 kilometres (km) south-west of the township of Dunedoo, in the Central West of New South Wales (NSW) (Figure 1.1). The project is the Central-West Orana (CWO) Renewable Energy Zone (REZ), and is within the Mid-Western Regional Council local government area (LGA), with parts of its access route within Warrumbungle Shire Council LGA.

The project is State significant development (SSD) pursuant to Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Therefore, a development application for the project is required to be submitted under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This social impact assessment (SIA) report forms part of the Environmental Impact Statement (EIS).

1.2 Assessment approach and requirements

This SIA report documents the assessment methods and results; the initiatives built into the project design to avoid and minimise associated impacts to the local community; and the mitigation and management measures proposed to address any residual impacts not able to be avoided.

The specific objectives of this assessment are to:

- describe the existing social conditions and demographic profile;
- identify and assess the extent and nature of potential social risks;
- evaluate the significance of the social impacts, positive and negative arising from the project;
- provide mitigation measures to reduce the negative social impacts and enhancement measures for significant positive impacts; and
- develop a monitoring and management framework.

This SIA has been prepared in accordance with the requirements of the NSW Department of Planning and Environment (DPE) which were set out in the Planning Secretary's Environmental Assessment Requirements (SEARs) for the project, issued on 5 November 2021. The SEARs identify matters which must be addressed in the EIS and essentially form its terms of reference. Table 1.1 lists individual requirements relevant to this SIA and where they are addressed in this report.

Table 1.1 Social impact assessment related SEARs

Requirement	Section addressed
Socio-Economic – the EIS must include an assessment of the social and economic impacts in accordance with <i>Social Impact Assessment Guideline</i> (DPIE, July 2021) 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 production on the site and region.	Sections 6, 7 and 8

The SIA has also been prepared in accordance with:

- the *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2021) (DPIE 2021a); and
- the *Technical Supplement: Social Impact Assessment Guideline for State significant Projects* (SIA Technical Supplement 2021) (DPIE 2021b).

A number of technical terms have been utilised throughout this report for the discussion of social impacts. These are explained in the definitions and abbreviations.

The SIA review questions as outlined in the SIA Guideline 2021 (DPIE 2021a) and corresponding responses are presented in Table D.1

This SIA has been informed by best practice guidance and standards set out by the International Association for Impact Assessment (IAIA) and International Finance Corporation (IFC).

1.2.1 Authorship and SIA declarations

The authorship and SIA Declarations for this report are provided in the following sections.

i Authorship

This report has been prepared by a suitably qualified and experienced lead author and co-author and reviewed and approved by a suitably qualified and experienced co-author. All contributors hold appropriate qualifications and have the relevant experience to carry out the SIA for this project.

Bronwyn Pressland (lead author)

- Social Impact Assessment in the Extractives – Critical Perspectives, University of Queensland
- Master of Environmental Management, Griffith University
- Bachelor of Built Environment – Urban and Regional Planning, Queensland University of Technology

Bronwyn is a Social Scientist/Social Planner with more than 20 years’ experience in social research, social impact assessment, community and stakeholder engagement, and working with clients within the energy sector, mining and extractive industry sectors across Australia and overseas. Bronwyn has significant experience working with Indigenous Australian communities, groups and organisations in remote locations across Australia. Bronwyn is adept at baseline studies, risk assessments, social data collection, data analysis, and community and stakeholder engagement. Bronwyn has worked extensively throughout Queensland and New South Wales, and also in the Northern Territory.

Alicia Minogue (co-author)

- Social Science, Human Geography, University of Wollongong

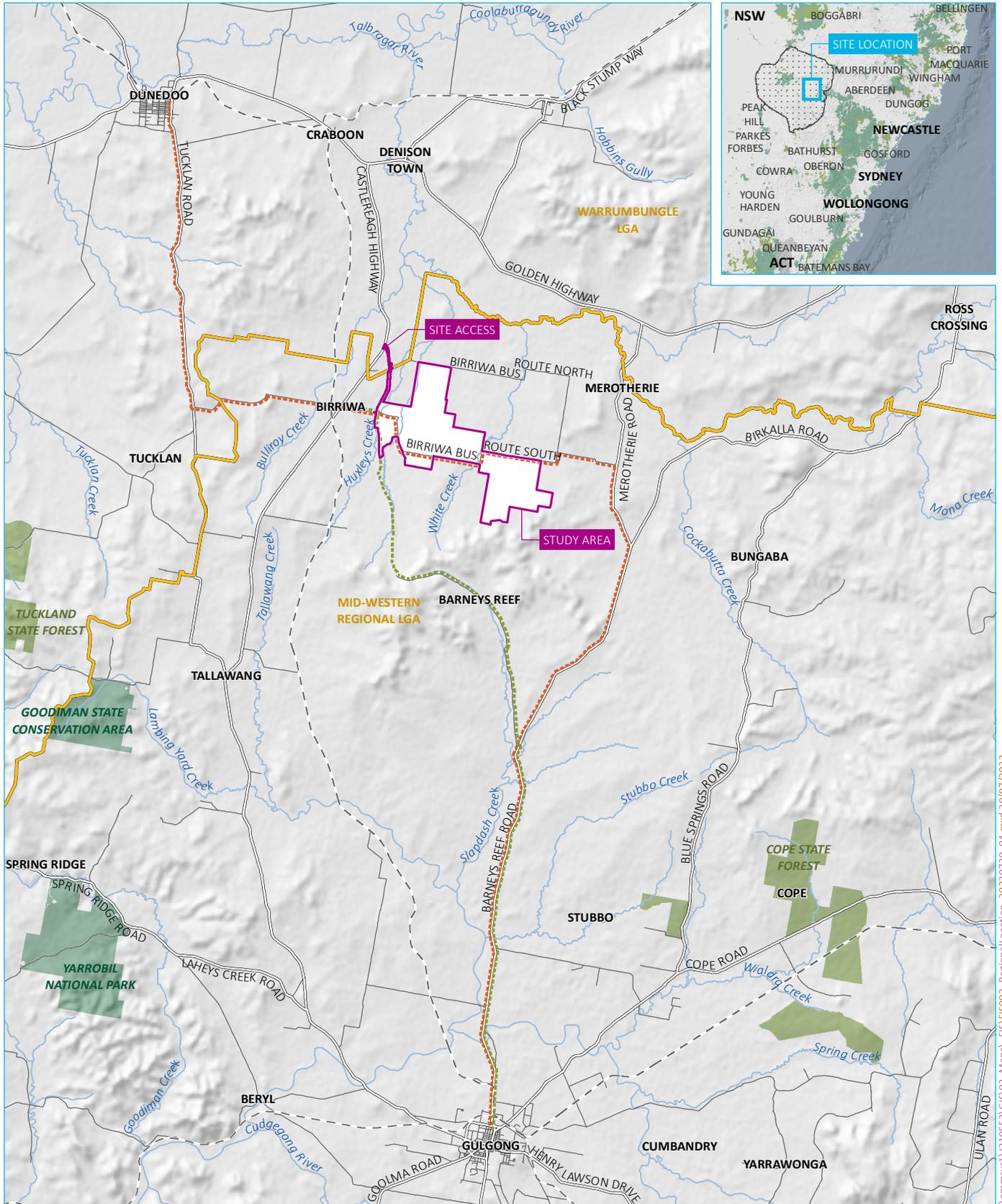
Alicia is a social planner with experience in social research, social impact assessments and community and stakeholder engagement. Alicia has conducted a range of social planning and impact assessment projects included baseline studies, risk assessments, social data collection, data analysis and community and stakeholder engagement workshops and information sessions. Alicia has worked with clients across a range of sectors including mining and extractives, renewable energy, critical infrastructure and social infrastructure across New South Wales.

The curriculum vitae for each author is provided in Appendix C.

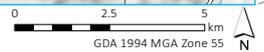
ii SIA Declarations

The authors declare that this SIA report:

- was completed on 25 July 2022;
- has been prepared in accordance with the relevant provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act);
- has been prepared in accordance with the SIA Guideline 2021;
- contains all reasonably available project information relevant to the SIA; and
- as far as EMM Consulting Pty Limited (EMM) is aware, contains information that is neither false nor misleading.



Source: EMM (2022); DFSI (2017); DPIE (2022); GA (2011); ASGC (2006); ACEN (2022)



KEY

- Study area
- Existing environment
- Rail line
- == Major road
- Minor road
- Named watercourse
- Local government area
- Central West Orana Renewable Energy Zone (see inset)
- NPWS reserve
- State forest
- Central West Cycle (CWC) Trail
- CWC main route - Gulgong to Dunedoo
- CWC alternate route - Slap Dash Creek side trail

Regional context

Birriwa Solar and Battery Project
Social Impact Assessment
Figure 1.1



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2 Project description and setting

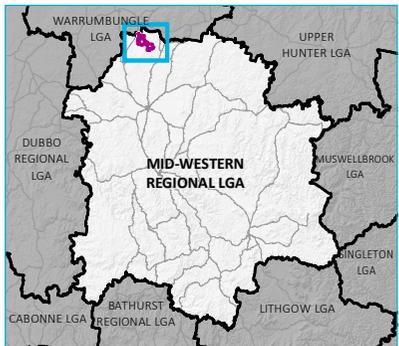
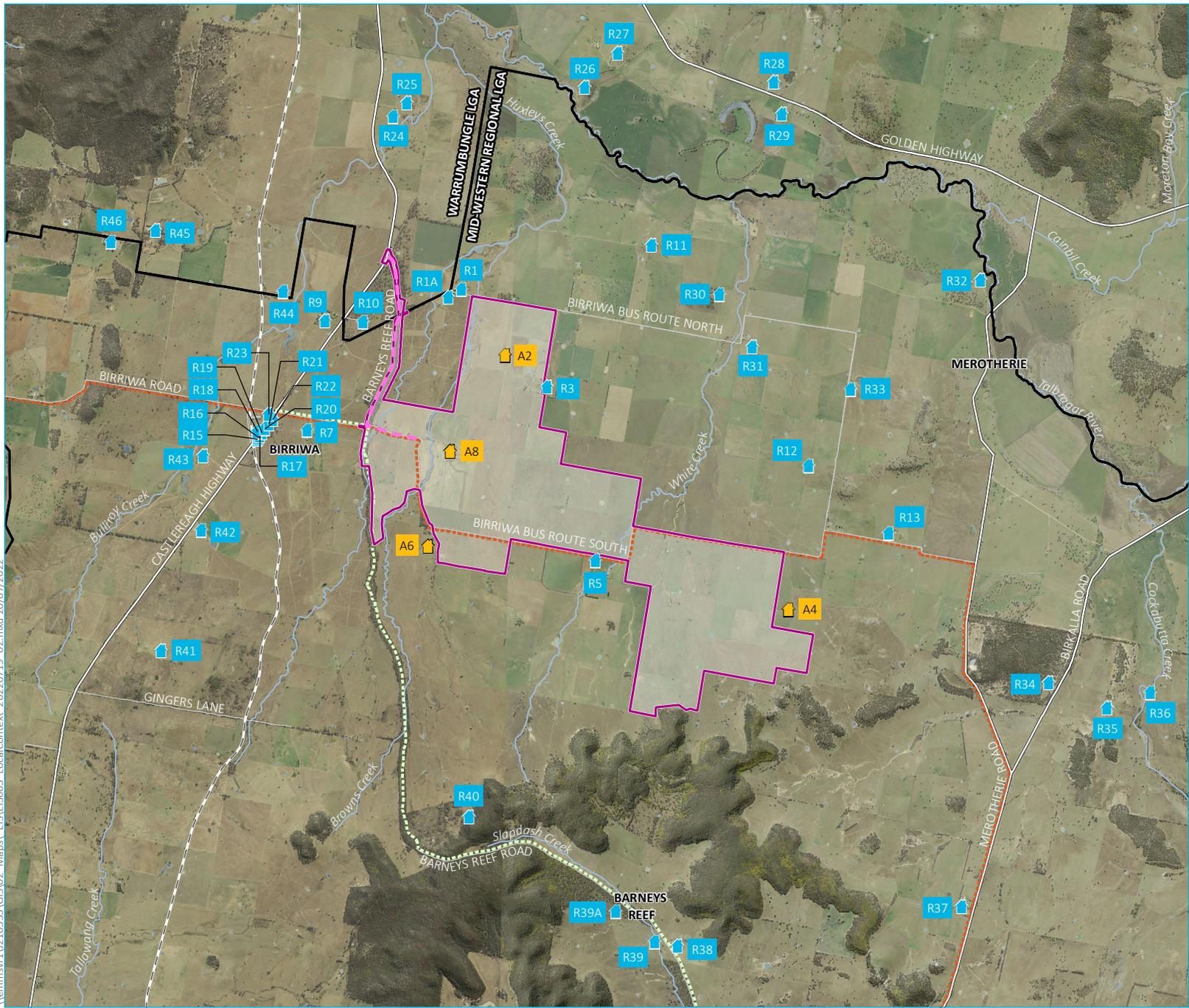
2.1 The study area

The project will be developed within a study area of approximately 1,300 hectares (ha) and is comprised of 18 freehold land parcels (Figure 2.1). The study area is the area of assessment for baseline surveys and studies conducted for the EIS. The study area comprises the maximum area considered for the project based on the extent of land where ACEN hold landholder agreements and the area of potential impact for road upgrades. The SIA has considered a broader area for identification of social baseline conditions and potential social impacts and benefits, referred to as the area of social influence and discussed in detail in Sections 3.2 and Section 3.3.

The properties within the development footprint are currently primarily used for sheep and cattle grazing as well as low intensity dry land cropping. There are scattered rural residential properties within and surrounding the development footprint, including four associated residences within or in close proximity to the study area (A2, A4, A6 and A8). There are 21 non-associated residences within 2 km of the study area, many of them in the township of Birriwa, and another 22 non-associated residences between 2 km and 5 km from the study area (refer to Figure 2.1).

The development footprint is the land within the development footprint that will be used for the operation of the project, which excludes certain areas of environmental value or social considerations (Figure 2.1). The development footprint has been refined through an iterative design process throughout the preparation of the EIS and has been informed by the outcomes of community and stakeholder engagement and environmental, social and economic assessments.

The project will be accessed via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South (Figure 2.1). From the project access point, private internal roads will be used to traverse the development footprint. The different areas of the development footprint can be accessed via public road crossings located along Birriwa Bus Route South. A section of Birriwa Bus Route South, Barneys Reef Road and its intersection with the Castlereagh Highway (road upgrade corridor) will require upgrades to provide safe access to the development footprint during construction of the project.



- KEY**
- Study area
 - Road upgrade corridor
 - Dwelling associated with the project
 - Dwelling not associated with the project
- Existing environment
- Rail line
 - Major road
 - Minor road
 - Named watercourse
 - Waterbody
 - Local government area
 - Central West Cycle (CWC) Trail
 - CWC main route - Gulgong to Dunedoo
 - CWC alternate route - Slap Dash Creek side trail

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Source: EMM (2022); DFSI (2017, 2022); GA (2011); ACEN (2022)



Local context

Birriwa Solar and Battery Project
Social Impact Assessment
Figure 2.1



2.2 Project overview

2.2.1 Key project components

A full project description is provided in Chapter 3 of the EIS. In summary, the project will comprise the following key components:

- a network of approximately 1 million solar panels and associated mounting infrastructure;
- a BESS with a capacity of up to 600 MW and a storage duration of up to 2 hours;
- an onsite substation with a connection voltage of up to 500/330 kilovolt (kV);
- electrical collection and conversion systems, including inverter and transformer units, switchyard and control room;
- underground and aboveground cables;
- an operational infrastructure area, including demountable offices, amenities and equipment sheds;
- parking and internal access roads;
- temporary construction compound (during construction and decommissioning only); and
- upgrade of the site access route from the Castlereagh Highway into the development footprint (Barneys Reef Road and part of Birriwa Bus Route South).

In relation to the capacity of the BESS, it is noted that while approval is sought for up to 600 MW capacity and 2 hour duration system, the project design initially included a BESS with a 1,000 MW capacity for one hour duration. The proposed capacity of the BESS is an input into the assumptions relating to the required construction workforce, and therefore associated traffic movements during construction of the project. This SIA assessed the social impact (including workforce numbers and traffic movements) associated with a 1,000 MW BESS capacity, and therefore presents a conservative assessment of predicted impacts.

The impact footprint (comprising the development footprint and road upgrade corridor) is shown on Figure 2.2.

During the preparation of the EIS, a number of alternative arrangements have also been considered through the project refinement process for a number of project elements including the placement of internal access roads, and the proposed location of the substation and BESS infrastructure. ACEN has adopted a flexible approach to the design for this infrastructure to ensure that the final location can respond to identified social and environmental impacts and constraints.

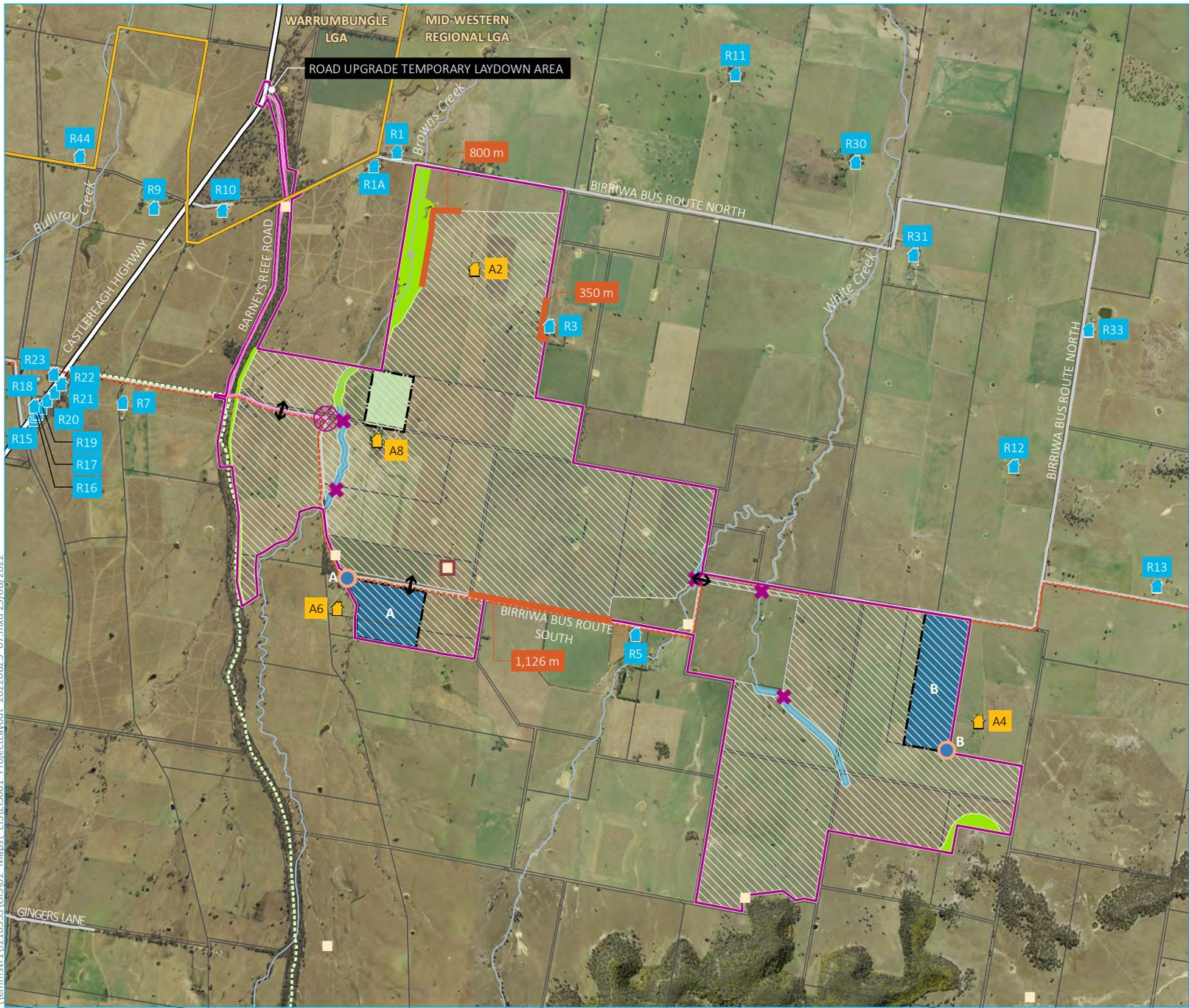
The project will connect to the proposed CWO REZ Merotherie Energy Hub being developed by NSW EnergyCo. Details of the connection to the proposed Energy Hub are still being discussed with EnergyCo and are described further in Chapter 1 of the EIS.

2.2.2 Project schedule

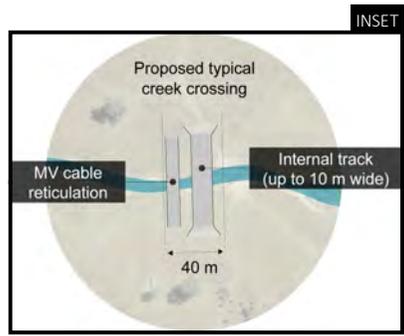
The construction phase of the project is expected to take up to 28 months from the commencement of site establishment works, including completion of the substation and BESS. Construction activities will be undertaken Monday to Friday 7.00 am to 6.00 pm and Saturday 8.00 am to 6.00 pm. No work will be undertaken on Sundays or public holidays. Out of hours work and extended construction hours may be required on limited occasions such as for special deliveries to minimise road traffic disruption, or in the case of emergencies. Based on the outcomes of the noise assessment, if works are undertaken on Saturday afternoon (between 1.00 pm and 6.00 pm), the following will be implemented:

- a construction exclusion zone of 650 metres will be established from non-associated residences during site establishment works; and
- a construction exclusion zone of 300 metres will be established from non-associated residences during infrastructure delivery and installation.

The operational life of the project is expected to be 30 years. The project will be decommissioned at the completion of operations.



- KEY**
- Study area
 - Impact footprint
 - Development footprint
 - Road upgrade corridor
 - Restricted development area
 - Potential public road crossing location
 - Project layout
 - ✖ Potential creek crossing point (refer to inset below for indicative design)
 - Proposed access point to the project
 - Connection point (option A or B)
 - Proposed operational infrastructure area including substation, operational facility and BESS (option A or B)
 - Temporary construction compound
 - Landscape screen planting
 - Existing environment
 - ↑ Dwelling not associated with the project
 - ↑ Dwelling associated with the project
 - Aboriginal heritage site (to be salvaged)
 - Aboriginal heritage site (to be avoided)
 - Vegetation to be retained
 - Major road
 - Minor road
 - Watercourse
 - Cadastral boundary
 - Local government area boundary
 - Central West Cycle (CWC) Trail
 - CWC main route - Gulgong to Dunedoo
 - CWC alternate route - Slap Dash Creek side trail



Project overview

Birriwa Solar and Battery Project
Social Impact Assessment
Figure 2.2



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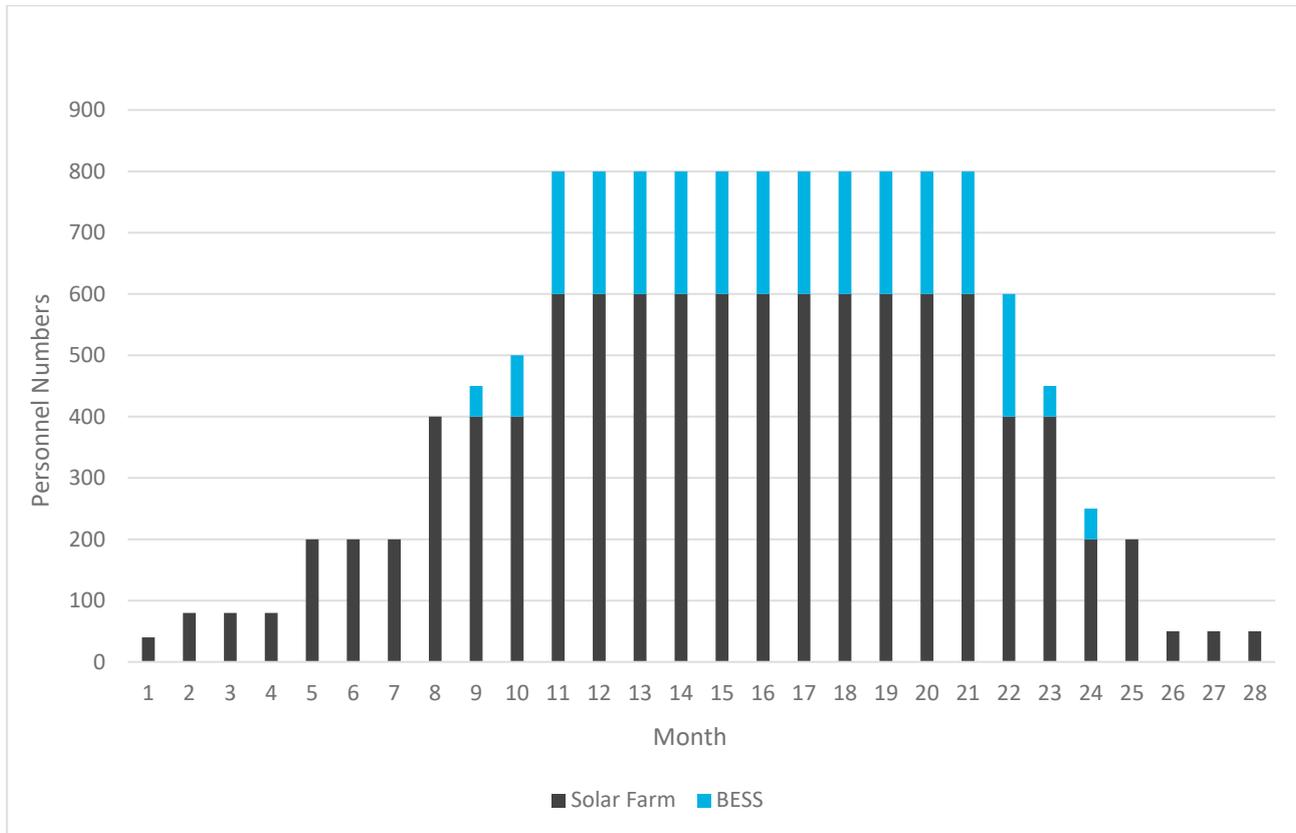
Source: EMM (2022); DFSI (2017, 2022); GA (2011); ACEN (2022)



2.2.3 Workforce

i Workforce demand

The construction phase of the project will utilise an estimated peak workforce of 800 people (Figure 2.3). The operational phase will utilise a workforce of about 20 people.



Source: ACEN provided data

Figure 2.3 Construction phase workforce

Table 2.1 presents the skill requirements for the peak project construction workforce of 800 workers, which includes the workforce associated with the construction of the BESS.

Table 2.1 Construction workforce skill

Skill level	Number of personnel	Proportion of total workforce (%)
Unskilled	200	25%
Certificate level specialised training (ie machine operator, mechanical moulder)	360	45%
Professionally qualified (University or TAFE qualification)	240	30%
Total	800	100%

Source: ACEN provided data

ii Workforce sourcing assumptions

The acceptable daily commute distance from a worker's usual place of residence to the study area has been defined as approximately one hour and reflects the requirements of ACEN corporate health and safety standards. A local hire (LH) is defined as a person who resides within an approximate one-hour commute of the study area. This generally aligns with the defined local area (Section 3.2). A non-local hire (NLH) is any person who resides permanently outside a one-hour commute of the study area.

Table 2.2 presents the workforce sourcing assumptions for the construction phase of the project. These assumptions have been informed through:

- analysis of the employment trends of previous and similar projects within and outside the regional area, eg ACEN New England Solar Project;
- information gathered through SIA consultation regarding experienced impacts of renewable energy projects in the regional area;
- analysis of local and regional labour market dynamics and available skill sets (Section 5.4 and Appendix A); and
- information gathered during in-depth interviews with employment agencies regarding labour market conditions in the local and regional area (Section 6.2 and Section 6.3).

An estimated 30% (240 workers) of the peak construction workforce is anticipated to be LHs and an estimated 70% (560 workers) NLHs. The majority of LHs are anticipated to be unskilled workers given the current labour market conditions (Section 5.3). ACEN will seek to recruit 30% of the construction workforce from within the regional area (defined in Section 3.2 as the combined area of Mid-Western Regional LGA and Warrumbungle LGA).

Table 2.2 Peak workforce sourcing assumptions

Geographic area	Proportion of total workforce	Number of workers
Mid-Western Regional LGA	20%	160
Warrumbungle LGA	10%	80
Dubbo Regional LGA	25%	200
Other areas of NSW	35%	280
Outside of NSW	10%	80
Total Workforce	100%	800

Source: ACEN provided data

ACEN will seek to recruit the operations phase workforce from within the regional area.

2.2.4 Workforce accommodation

All construction phase LHs will be accommodated in their existing accommodation within the regional area. All NLHs associated with the construction phase will be accommodated in the regional area whilst on block shift roster, and in a combination of existing:

- short-term accommodation in the regional area ie hotels, motels, Airbnb properties; and
- private rental accommodation.

It is also expected that construction workers from other areas of NSW and outside of NSW will be residing in temporary accommodation in Mudgee and Gulgong, or any other town in the region. Existing or proposed accommodation villages, such as Ulan Village Green at Ulan or the Valley of the Winds Wind project workers facility (if approved) may be used if capacity is available at the time of construction of the project.

The operational workforce will be accommodated in private housing within the local area.

2.3 Workforce transport and logistics

A combination of private vehicle and project provided minibuses will be used for the transportation of the construction workforce to and from the study area. Project provided minibuses will be used to transport workers based in Gulgong and Mudgee to and from the development footprint. ACEN will assess the option of providing a bus service between Dubbo and the project based on final construction workforce sourcing. It is anticipated that only unskilled workers and support staff will utilise the provided bus service. This is because many of the skilled roles will require these workers to transport equipment and tools to the study area. Carpooling will be encouraged.

The operations phase workforce will commute in private vehicles on a daily basis from their place of residence to the project.

3 Methodology

3.1 Scope of assessment

The scope of this SIA has been developed in accordance with the:

- SEARs issued by DPE;
- social characteristics and community values of local area and regional area; and
- SIA Guideline 2021 (DPIE 2021a).

The assessment of social impacts was conducted using the SIA Guideline 2021 (DPE 2021a) definition of social impacts which refers to potential changes to people's:

- way of life: how people live, work, play and interact;
- community: its composition, cohesion, character, how it operates and sense of place;
- accessibility: how infrastructure provided by public, private or not for profit organisations, including services and facilities is accessed and used;
- culture: shared beliefs, customs, values and stories, and connection to Country, land, places, waterways and buildings, both Aboriginal and non-Aboriginal;
- health and wellbeing: physical and mental health;
- surroundings: access to and use of ecosystem, public safety and security, access to and use of natural and built environment, aesthetic value and/or amenity;
- livelihoods: how people sustain themselves through employment or business, their capacity to do so and whether disadvantage is experienced; and
- decision-making systems: extent community can have a say in decisions that affect their lives, access to complaint, remedy and grievance mechanisms (DPIE 2021a).

This SIA has been informed by best practice guidance and standards set out by the International Association for Impact Assessment (IAIA) and International Finance Corporation (IFC).

3.2 Area of social influence

This SIA addresses the social impacts and benefits of the project to the local area, the region, and to NSW. It considers whether the project will increase the demand for community infrastructure and services.

The 'area of social influence' has been defined in accordance with the SIA Guideline (DPIE 2021a) and is described in Section 5. Defining the area of social influence was informed by the following factors:

- construction and operational phase workforce size;
- the movement of workers;
- supply chains;
- transport of goods, materials and equipment;

- proposed workforce accommodation arrangements;
- proposed workforce sourcing arrangements;
- the scale and nature of the project and associated activities;
- potentially affected built or natural features located identified as having social value or importance;
- the history and background of the project and how nearby local communities have experienced similar projects in the region; and
- the location of other reasonably foreseeable developments ie other renewable energy projects.

3.3 Potentially affected communities

Key considerations for identifying potentially affected communities are the risk of social impacts (negative and positive) as a consequence of the project. Factors considered in defining the SIA scope included:

- proximity of properties and communities to the project and its access routes;
- the role, culture and identity of communities in the region;
- availability, and capacity of, housing and other social infrastructure to attract and support potential growth;
- native title rights and other interests held by Aboriginal and/or Torres Strait Islander groups;
- location of businesses who could supply the project;
- vulnerabilities that increase risk, and/or magnitude of potential impacts from the project on communities or groups;
- availability of skilled workforce and experienced personnel, or ability of residents to gain the skills required for the renewable energy industry;
- communities and vulnerable groups potentially affected by other projects within the region; and
- likelihood of social impacts and opportunities for each of the localities assessed.

3.4 Methodological approach

The phases of the SIA methodology are described in Figure 3.1. This report comprises Phase 2 which will be placed on public exhibition where submissions are received during Phase 3.

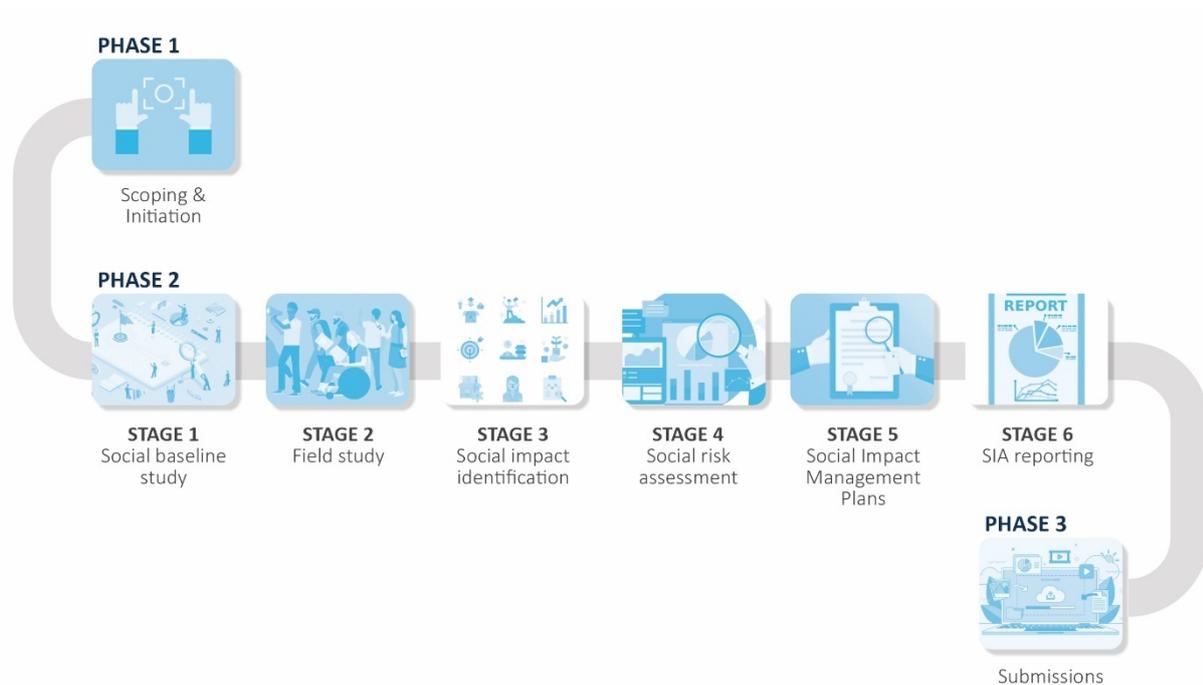


Figure 3.1 Phases of the SIA methodology

i Phase 1

a Scoping and initiation

A scoping report for the project was prepared by EMM on behalf of UPC Renewables Australia Pty Ltd (now ACEN) and submitted to DPE on 12 October 2021. The report committed ACEN to facilitate the preparation of the SIA in accordance with the SIA Guideline 2021 (DPIE 2021a).

ii Phase 2

a Stage 1 – Social baseline study

Understanding the existing social environment and identifying trends relevant to potential social impacts was the first step in the preparation of the SIA. A social baseline study was prepared using existing demographic, health, housing, and socio-economic data from the Australian Bureau of Statistics (ABS), government agencies, and local government; published literature and social research; government policies and plans; and documents relating to similar resource projects. A wide range of social indicators were reviewed and assessed for relevance to the project. The selection of social baseline indicators was informed by the social impact categories defined in the 2021 SIA Guideline, the outcomes of initial scoping and background literature review.

The social baseline study:

- provides a community profile, including a socio-economic profile of the area of social influence;
- provides an analysis of the social infrastructure and capacity within the area of social influence; and
- reviews relevant government strategic policies and plans.

The social baseline study provides the benchmark against which potential social impacts are identified and assessed and informs subsequent stages. The social baseline study is presented in Appendix A, with key social indicators reported in Section 5 of this report.

b Stage 2 – SIA Field Study

Key consultation and engagement objectives set out in the SIA Guideline 2021 (DPIE 2021a) include:

- ensure potentially affected people are identified and have enough understanding of the proposed project, how it may affect them, the environmental impact assessment process, and how they can participate in it;
- collect qualitative and quantitative data, evidence and insights in ways that maximise diversity and representativeness of views;
- understand the interest people have in the project and how potential impacts may be experienced from their perspectives;
- consider the views of people in a meaningful way, and use these insights to inform project planning and design, mitigation and enhancement measures, and monitoring and management frameworks;
- provide opportunities for people to collaborate on project design matters and provide input into the identification and consideration of preferred solutions;
- confirm data, assumptions, findings, and recommendations;
- ensure people know how their input and views have been taken into account, and to help illustrate what actions or mitigating measures will be put into place to address concerns; and
- respect people’s privacy, allowing them to communicate their views anonymously if they desire (DPIE 2020, p. 27).

Due to the COVID-19 pandemic, social distancing requirements were enforced during all SIA field study activities and engagement activities. The specific methods and outcomes of the community engagement and SIA field studies are presented in Section 6 of this report and Chapter 5 of the EIS.

The field study component of the SIA used social research methods, which included in-depth interviews, service provider interviews and surveys of real estate agents and short-term accommodation providers, to collect qualitative and quantitative data to meet the above objectives and to:

- validate baseline data and assumptions;
- identify/test impacts that may be experienced by nearby neighbours and the broader community;
- confirm identified potential impacts and determine potential management strategies; and
- provide communities with opportunities to express their concerns.

ACEN will continue to ensure there are opportunities for community members to comment on the project as it progresses through the approvals process.

c Stage 3 – Social impact identification

With a clear understanding of the scope of the project, social baseline, and input from the field study, suitably qualified social scientists (see Appendix C) identified the project’s potential social impacts. This analysis informed the socio-economic risk assessment (Stage 4).

The identification of the project's potential social impacts and benefits was completed through several different complementary approaches, helping to triangulate the findings and confirm their accuracy. These approaches included:

- Consideration of environmental constraints – review of previously identified environmental impacts created by other similar projects in the local area as well as available literature to identify potential impacts.
- Consideration of field findings – findings from SIA field studies contributed to the identification of potential impacts and benefits from the project. Field studies were also used to identify opportunities.
- Consideration of technical reports – findings from other technical disciplines that contributed to the EIS were reviewed and potential social impacts identified.
- Consideration of cumulative impacts – review of documentation from other existing projects in the area of social influence.
- Consideration of local plans and policies – findings from the review aided to contextualise and understand the local priorities as well as to identify local values.

Given the location of the project in the Central West Orana REZ, there are a number of renewable energy projects currently being planned, recently approved, under construction or recently operating. The SIA includes a review of a select number of comparable projects in the region to identify how communities have experienced these developments and to inform an understanding of the likely cumulative impacts.

d Stage 4 – Social risk assessment

The social risk assessment stage assessed each of the social impacts identified to predict the nature and scale of potential social impacts for the life of the project and post closure. A social risk approach was adopted to assess the consequence and likelihood of potential positive and negative social impacts with and without mitigation. The social risk assessment matrix, including the assessment framework, used for the assessment is provided in Section 7.

The following data and information have been used to identify the potential social impacts and their associated risks:

- data collected as part of the social baseline analysis including the findings from SIA field study and EIS engagement activities;
- academic research;
- relevant previously conducted SIAs; and
- relevant government and agency reports.

e Stage 5 – Social impact management plans

A mitigation and management framework was prepared with consideration of all potential social impacts and benefits to allow for the identification of:

- required impact mitigation measures;
- enhancement measures to maximise the potential benefits; and
- partnership opportunities.

Findings from Stages 1–5 were used to distil and analyse recommendations for the SIA report. This stage used a multidisciplinary approach lead by EMM’s social scientists supported by environmental advisers.

f Stage 6 – SIA reporting

Development of this SIA technical report and internal peer review were conducted by EMM’s social scientists and environmental scientists.

iii Phase 3

a Submissions

This is a future phase, which occurs in parallel with the public exhibition of the EIS (Chapter 5 of the EIS).

3.5 Limitations, confidence and assumptions

This SIA has been based on available information at the time of writing. The following limitations and assumptions are noted.

i Limitations of secondary data sources

As a key source of quantitative data, ABS data contribute to developing an understanding of the socioeconomic conditions within the area of social influence, and how these conditions have change over time. Data was interpreted with caution due to comparability issues across census years, confidentiality in small population areas, and data quality. Census data for a number of social indicators were not available for small communities in the local area such as Birriwa and Merotherie. As such, existing social conditions in these communities was considered to be analogous to the larger communities (ie Gulgong and Dunedoo). The ABS (2017) does report that the key indicators for the 2016 Census of Population and Housing is of high quality, with high response rates (95.1%) and low levels of net under coverage (1.0%).

The most recent census data available are from the 2016 ABS Census. 2021 ABS Census data was not available at the time of writing. Where more updated data were not available, this report endeavours to capture using historical data or proxy measures to identify trends. Information drawn from the 2016 ABS Census of Population and Housing is understood to potentially be dated and not reflective of current community social and economic conditions. Changes in the local, regional and national economy arising from the COVID-19 pandemic are not captured in the 2016 census data.

More up-to-date labour market data has been drawn from the National Skills Commission, and recent housing market intel has been sourced from a combination of one-line resources (ie [realestate.com.au](https://www.realestate.com.au) and [sqmresearch.com.au](https://www.sqmresearch.com.au)) and qualitative information drawn from the SIA field study program. Due to the difficulties experienced securing participation in the SIA field study program (refer below) quantitative and qualitative information describing some key baseline indicators (ie income and housing affordability) was unavailable.

Other literature, while relevant to examining topics in greater detail, and often in the context of the NSW Central West, may not be solely specific to the local area context. Where possible, key trends or findings from literature review were confirmed through the SIA field study program and through triangulation of multiple sources.

ii Limitations of primary data

The data collected through the SIA field study program may not be representative of the perspectives of all community members in the local area. Associated and non-associated landholder participants in the SIA field study program were primarily selected based on proximity to the study area and confidence in willingness to participate. A range of factors affected landholder participation including prevalent weather conditions at the time (ie flooding) and corresponding need to prioritise agricultural management activities. Data presented from the SIA field study program is based on the interviewed community member's knowledge and experience and on their willingness to participate and share data openly.

There are multiple major projects in all phases of development (ie pre-approvals, approvals and construction) occurring in the local area and regional area. Many of these projects have overlapping stakeholders, and in particular overlapping associated and non-associated landholders. The participant response rate to the SIA field study program together with feedback from participants indicates considerable consultation fatigue in the local area and regional area. In response to the prevalent consultation fatigue EMM has reviewed the findings of social baseline studies and stakeholder interview programs from recently approved renewable energy projects and projects currently in the approvals process located within the regional area to identify potential issues, concerns, impacts and opportunities and baseline conditions. The SIA field study program sought to validate this information where possible and the information has been drawn on in the consideration of potential social impacts and opportunities.

The data collected through a combination of the SIA field study program and literature reviews resulted in a moderate level of confidence in the identification and assessment of social impacts being an accurate representation of the concerns and issues of the local and regional area.

This SIA was informed by:

- publicly available data and information;
- nine associated and non-associated landholder in-depth interviews;
- sixteen service provider and key stakeholder in-depth interviews;
- issues identified during EIS engagement activities undertaken by ACEN; and
- the professional judgement of EMM social scientists.

The extent, likelihood and magnitude of social impacts and benefits identified in this social assessment draw on valid evidence and hence should not preclude further inquiry regarding social impacts or consideration of supplementary evidence as it comes to hand over time.

4 Political and planning context

This section provides a summary of the relevant plans and strategies across the Mid-Western Regional LGA and the Warrumbungle LGA that inform the social risk assessment and mitigation and management strategies. A comprehensive description is presented in Section 8.

4.1 Commonwealth

Relevant federal legislation includes:

- The *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act), administered by the Department of Climate Change, Energy, the Environment and Water, that seeks to protect and conserve matters of national environmental significance. A biodiversity development assessment report (BDAR) was prepared for the project and found that the project is not considered likely to significantly impact matters of national environmental significance. However, referral of the project to the Commonwealth Minister for the Environment and Water is to be undertaken post-EIS submission.
- The *Renewable Energy (Electricity) Act 2000*, administered by the Department of Industry, Science, Energy and Resources.

4.2 State

The project is classified as a State significant development (SSD) in accordance with the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *State Environmental Planning Policy (Planning Systems) 2021*. The EP&A Act and its subordinate legislation and policies sets out the environmental planning and assessment process for projects classified as SSD. The NSW DPE is responsible for administering the EP&A Act and its subordinate legislation and policies.

4.2.1 State strategies and plans

i A 20-Year Economic Vision for Regional NSW

A *20-Year Economic Vision for Regional NSW* (NSW Economic Vision) (NSW Government 2021a) is the NSW Government's plan to drive sustainable, long-term economic growth in regional NSW. The NSW Economic Vision, previously released in 2018, sets out the Government's priorities and plans to achieve long-term social and economic success for regional communities across the state.

The Mid-Western Regional LGA is identified in the NSW Economic Vision as a regional economic growth centre and is located within the Mid-Western function economic region (FER). The future focus for identified growth centres includes opportunities to improve connectivity, ensure water and energy security, and support both engine and emerging industries with the right regulatory settings, research and development and investment attraction (NSW Government 2021).

The Warrumbungle LGA is identified in the NSW Economic Vision as a remote regional economy and is located within the Castlereagh FER. The future focus for identified remote regions includes a strong focus on building community resilience, research and investment in key enablers such as infrastructure and technology to drive opportunities for emerging industries, based on local endowments, to create more sustainable economies.

ii Building Momentum: State Infrastructure Strategy, 2018–2038

The *State Infrastructure Strategy 2018–2038* (State Infrastructure Strategy) (Infrastructure NSW 2018) sets out Infrastructure NSW’s independent advice on the current state of NSW infrastructure, and the infrastructure needs and priorities over the next 20 years. It looks beyond current projects and identifies policies and strategies needed to provide infrastructure to meet the needs of a growing population and economy.

The State Infrastructure Strategy identifies energy as a key industry sector. The strategic objective for the energy sector is to encourage private sector investment to deliver secure, reliable, affordable, low emission energy supply.

iii Central-West Orana Renewable Energy Zone

The Central-West Orana (CWO) Renewable Energy Zone (REZ) was declared on 5 November 2021. The Central West region of NSW was selected by the NSW Government for the development of the CWO REZ due to the region’s significant potential for renewable energy infrastructure and regional development (NSW Government 2022a). The declaration is the first step in formalising the REZ under the *Electricity Infrastructure Investment Act 2020*. It sets out the intended network capacity (size), geographical area (location) and infrastructure that will make up the REZ. The project is located wholly within the boundary of the CWO REZ (Figure 2.2). The project aligns with the NSW and Commonwealth Government’s objectives for energy security and reliability and emissions reductions and will contribute to the continued growth of renewable energy generation and storage capacity in the CWO REZ.

iv Central West and Orana Regional Plan 2036

The Central West and Orana Regional Plan 2036 (the Regional Plan) (DPIE 2017) guides land use planning priorities and decision making in the Central-West and Orana Region for the next two decades. The Regional Plan applies to 19 local government areas including the Mid-Western Region, Warrumbungle and Dubbo Region. The Regional Plan is currently undergoing its first five-year review to reset its priorities and extend its reach to 2041. The Regional Plan acknowledges that recent landmark renewable projects distinguish the region as a leader in renewable energy development. The project’s contribution to achieving the overall goals of the Regional Plan is discussed in Appendix A.

v Central West and Orana Regional Draft Plan 2041

The Draft *Central West and Orana Regional Plan 2041* (draft Regional Plan) (DPIE 2021d) outlines the goals and actions for the Central West and Orana Region to achieve a sustainable future. It applies to 19 local government areas including the LGAs of Mid-Western Region and Warrumbungle. When finalised the draft Regional Plan will replace the Regional Plan described above. The release of the final Regional Plan is anticipated later in 2022.

The contribution of the project to achieving the overall vision of the draft Regional Plan is discussed in Appendix A. Appendix A also presents the priorities identified for the LGAs of Mid-Western Regional and Warrumbungle in the draft Regional Plan.

vi Renewable energy and agriculture

On 8 March 2022, the Minister for Energy and the Minister for Agriculture and Western NSW announced a taskforce to review the framework for managing issues and opportunities from the forecast growth in the renewable energy and the agricultural sectors in NSW (the Review). The task force is to review the legal and policy framework for managing issues and opportunities that arise from the forecasted growth in the renewable energy and agricultural sectors in NSW over the next 20 years. Established in recognition of the importance of both sectors, the task force will consider the adequacy of the framework associated with the development of renewable energy projects in NSW (focusing on wind and solar projects) (DPI 2022; NSW Government 2022b).

4.2.2 State guidelines

i SIA Guideline 2021

The SIA Guideline (DPIE 2021a) provides direction on assessing impacts arising from SSD projects in the context of the environmental impact assessment process under the EP&A Act. In this guideline, SIA is the process of identifying, predicting, evaluating and developing responses to the social impacts of a proposed State significant development project which requires proportionate and tailored assessment to suit each project's context and the nature and scale of its potential impacts and benefits. The SIA Guideline requires that all State significant projects have a clear and consistent approach to assessing social impacts. The *SIA Technical Supplement 2021* accompanies the SIA Guideline to provide specific methods and techniques for the identification and assessment of social impacts and benefits (DPIE 2021b).

ii Undertaking Engagement Guidelines for State Significant Projects

The *Undertaking Engagement Guidelines for State Significant Projects 2021* (engagement guideline) (DPIE 2021c) describes the requirements for effective engagement on State significant projects in NSW. The engagement guideline outlines requirements for proponents to engage with the community, councils and government agencies at each phase of the environmental assessment. The engagement guideline also outlines the actions that DPE will take and identifies opportunities for community participation during each phase. It emphasises early planning and engagement, effective engagement, proportionate engagement, innovation, and transparency. The primary audience of this guideline is proponents and their teams, who are responsible for engaging with the community and other stakeholders during each phase of the environmental assessment. The engagement guideline also provides the community and other stakeholders with a better understanding of how, when and on what they can provide feedback, and how it will be addressed by proponents and decision-makers.

iii Draft Large-Scale Solar Energy Guideline

The *Draft Large-Scale Solar Energy Guideline* (NSW Government 2021b) (draft NSW Solar Guidelines) provides guidance on the planning framework for the assessment and determination of large-scale solar energy projects under the EP&A Act. The draft guideline identifies the key planning considerations relevant to solar energy development in NSW and provides policy and technical guidance on key issues including visual impacts, land use conflicts and benefit sharing. This includes guidance on how issues can be avoided, managed and mitigated to optimise the environmental, social and economic outcomes of a solar energy project.

4.2.3 Local planning context

The project is predominately located within the Mid-Western Regional LGA; however, the project effects (direct and indirect) are anticipated to extend to the Warrumbungle LGA. A summary of the governance structure in each LGA is presented in (Appendix A).

The Mid-Western Regional Council (MWRC) and the Warrumbungle Shire Council (WSC) have local plans and strategic plans that articulate their vision for the future of their communities. Key plans are summarised Table 4.1 and Table 4.2 with additional information presented in Appendix A.

Table 4.1 Mid-Western Regional LGA planning context

Plan/strategy	Summary	Responsibility	Timeframe
<i>Our Place 2040 Mid-Western Regional Local Strategic Planning Statement (Strategic Planning Statement) (MWRC 2020)</i>	<p>The Strategic Planning Statement sets out the 20 year vision for land use planning in the Mid-Western Regional LGA.</p> <p>Planning Priority 7 of the Strategic Planning Statement is to “support the attraction of a diverse range of business and industries”. The following land use action supports this planning priority “consider renewable energy development in appropriate areas that avoids impacts on the scenic rural landscape and preserves valuable agricultural land”.</p>	MWRC	2022–2040
<i>Mid-Western Region Community Plan (MWRC 2017)</i>	<p>The <i>Mid-Western Region Towards 2030 Community Plan 2017–2021</i> encourages active communication between the MWRC and the community through engagement and participation in planning processes.</p> <p>The plan represents an opportunity to create and foster community-based goals, values and aspirations– to drive a sustainable community that reconciles the economic, social, environmental and civic leadership priorities for the region.</p> <p>The plan provides direction for the use of MWRC funds and in particular funding received through Voluntary Planning Agreements (VPAs).</p> <p>A new community plan is currently in the community engagement phase.</p>	MWRC	2017–2021
<i>Mid-Western Regional Local Environmental Plan 2012 (LEP) (NSW Government, 2021)</i>	<p>The LEP describes the applicable zoning and land use planning regulations, and development standards.</p>	MWRC	2012–present
<i>Regional Economic Development Strategy 2018–2022 (REDS) (MWRC, 2018)</i>	<p>The REDS identifies economic development opportunities that capitalise on the LGAs endowments and industry specialisations. Key opportunities include:</p> <ul style="list-style-type: none"> • Develop a mature and diversified tourism sector. • Capitalise on existing viticulture strengths. • Grow industry clusters around mining, manufacturing and agriculture. • Support the attraction and retention of an increased number of diverse businesses and industries while developing a strong entrepreneurial reputation. • Promote the region to target businesses that complement key local industries. • Develop an emerging retiree/aged care sector. 	MWRC	2018–2022

Table 4.2 Warrumbungle LGA planning context

Plan/Strategy	Summary	Responsibility	Timeframe
<i>Community Strategic Plan (WSC 2012)</i>	The community strategic plan for the Warrumbungle Shire was released in 2012, and the outcomes and priorities were reviewed in 2017. The community strategic plan identifies the main priorities and aspirations for the Warrumbungle LGA and establishes objectives and strategies to achieve those objectives that address social, environmental, economic and civic leadership issues as identified by the community.	WSC	2017–2032
<i>Draft Community Strategic Plan 2022/2037 (WSC 2022)</i>	The Warrumbungle Shire Council has recently released a draft community strategic plan for the period 2022–2037. The community vision articulated in the draft community strategic plan is <i>“a peaceful and sustainable way of life built by a strong community”</i> . The draft community strategic plan outlines objectives and actions under the four themes of: <ul style="list-style-type: none"> • Caring for the environment. • Civic leadership. • Strengthening the local economy. • Supporting community life. 	WSC	2022–2037
<i>Warrumbungle LEP 2013 (NSW Government 2013)</i>	The LEP describes the applicable zoning and land use planning regulations, and development standards.	WSC	2013–present

5 Social baseline

This section provides a summary of the existing social conditions in the social area of influence for the project with reference to specific and relevant social indicators that align to the following key themes:

- population and demography;
- educational attainment and qualifications;
- labour market and income;
- housing and short-term accommodation;
- vulnerabilities and vulnerable groups;
- social infrastructure and services; and
- road infrastructure and transport.

A full description of all indicators considered in the analysis of existing social conditions is provided in Appendix A.

5.1 SIA study area

The project is within the Birriwa and Merotherie State Suburb classification (SSC) areas, is 15 km south-west of the township of Dunedoo and within the Mid-Western Regional LGA with part of the access route within the Warrumbungle Shire LGA. While the development footprint is localised, direct and indirect impacts may be farther reaching. As such, the project impacts and opportunities have been considered at two spatial scales (or areas of social influence): a local area and a regional area.

The local area consists of the communities anticipated to experience the most direct social impacts of the project (ie impacts related to local social infrastructure and services, workforce, business and industry, housing and accommodation, and community health and wellbeing).

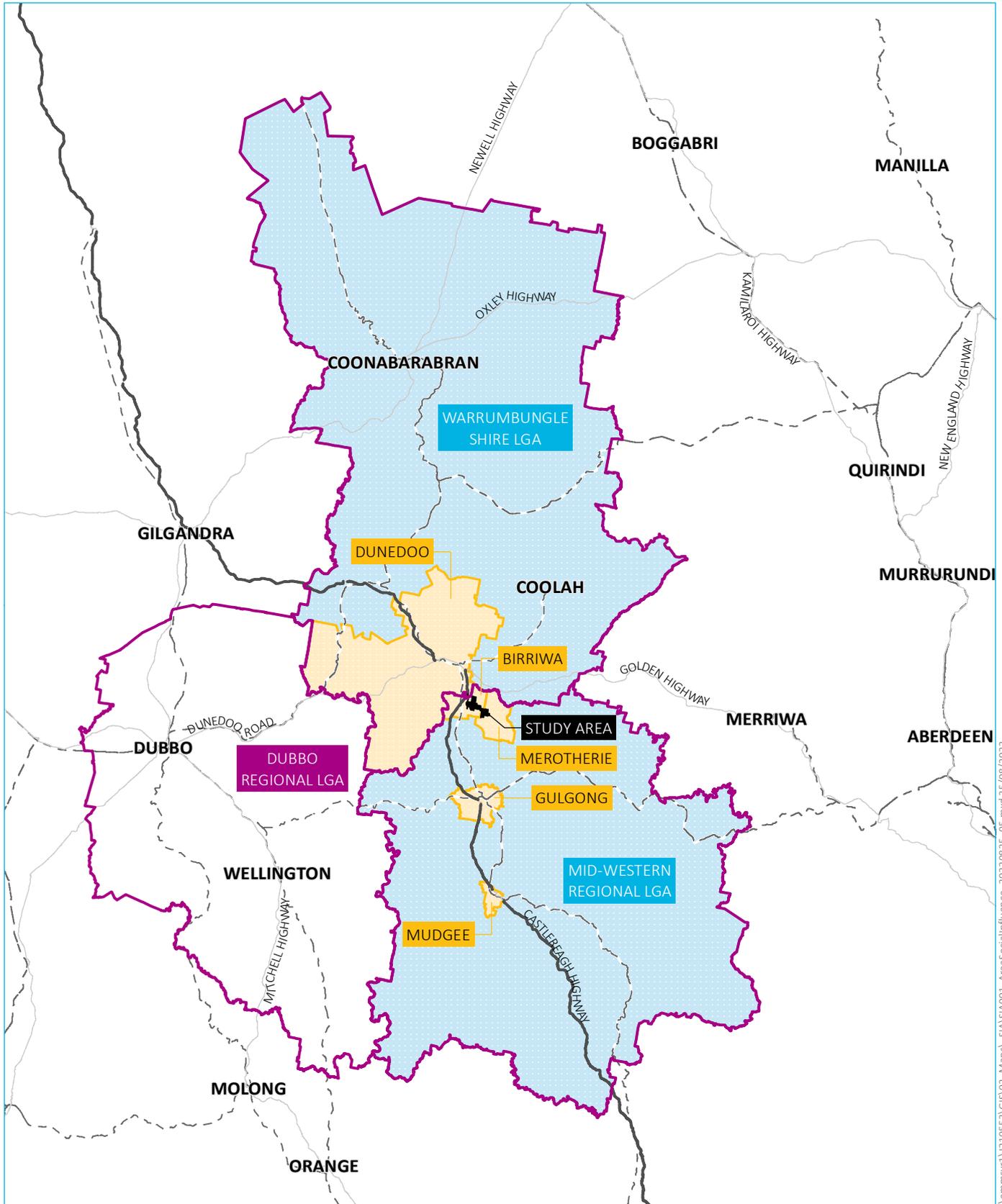
The regional area consists of the geographic areas likely to experience few direct and more indirect social impacts of the project. These indirect impacts are associated with use of infrastructure, supply chains, roads, transportation of goods, materials and equipment, the movement of workers (some of which may have drive-in drive out arrangements) and cumulative impacts arising from other projects in the area. The Mid Western Regional LGA and Warrumbungle LGA are identified as the regional area.

The area of reference includes the Dubbo Regional LGA due to the potential for project workers to be sourced from and accommodated in this LGA.

The communities have been mapped to the ABS categories used for data collection (Table 5.1) and the local and regional area of social influence (here-in referred to as local area, regional area or in some instances the area of reference), illustrated in Figure 5.1.

Table 5.1 SIA study area

Study area	Geographic area	2016 ABS data category	Referred to in report as:
Local study area	Birriwa suburb	Birriwa SSC	Local area
	Merotherie suburb	Merotherie SSC	
	Gulgong suburb	Gulgong SSC	
	Dunedoo suburb	Dunedoo SSC	
	Mudgee suburb	Mudgee SSC	
Regional study area	Mid-Western Regional LGA	Mid-Western Regional LGA	Regional area
	Warrumbungle LGA	Warrumbungle LGA	
Area of Reference	Mid-Western Regional LGA	Mid-Western Regional LGA	Area of reference
	Warrumbungle LGA	Warrumbungle LGA	
	Dubbo Regional LGA (formerly known as Western Plains Regional LGA)	Western Plains Regional LGA	
State of New South Wales	State of New South Wales	New South Wales STE	NSW



Source: EMM (2022); ACEN (2022); ABS (2017); DFSI (2017); GA (2011); ASGC (2006)



- KEY**
- Study area
 - Area of reference
 - Regional area
 - Local area
 - Rail line
 - Castlereagh Highway
 - Major road

- INSET KEY**
- NPWS reserve
 - State forest

SIA social locality

Birriwa Solar and Battery Project
Social Impact Assessment
Figure 5.1



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5.2 Population and demography

According to the 2016 Census of Population and Housing, the local area has a total population of 14,738 people. Most of these people reside in Mudgee (10,923 or 74.1%), with a smaller portion residing in Gulgong (2,521 or 17.1%) and Dunedoo (1,221 or 8.3%). The population of the local area represents 44.0% of the regional area population (33,460).

Analysis of population trend data (ie 2006 to 2016) for the local area and regional area shows an increase in population in the ten years to 2016 (ie 10.9% and 8.3% respectively). The population growth rate in the ten years to 2016 in both the local area and the regional area was lower than NSW (ie 14.2%). The majority of population increase in the local area during this period occurred in Mudgee, with the greatest population change occurring between the years 2011 and 2016 in parallel with sustained growth in the surrounding coal mining industry. The smaller communities of Gulgong and Dunedoo experienced population decline between the years 2006 and 2016, a trend that is generally consistent with other small rural communities across Australia.

Projected population data for the area is only available for the LGA level. Population projections published by DPIE (2019) suggest that the population of the regional area is estimated to increase by 149 people from 34,108 in 2016 to 34,257 in 2041, representing a total increase of 0.4% and an average annual increase of less than 0.1%.

Within the regional area, population projections for the LGAs indicate that the:

- population of Mid-Western Regional LGA is estimated to increase by 2,378 people from 24,546 in 2016 to 26,924 in 2041, representing a total increase of 9.7% and an average annual increase of 0.4%; and
- population of Warrumbungle LGA is estimated to decrease by 2,229 people from 9,562 in 2016 to 7,333 in 2041, representing a total decrease of 23.3% and an average annual decrease of 0.9%.

Projected annual average population growth rates in the LGAs of Mid-Western Regional and Warrumbungle LGA are well below the projected annual average population growth rate for NSW (1.5%).

In the local area, the largest age groups are persons aged 5–14 years (13.7%), 25–34 years (12.9%) and 45–54 years (12.5%). The proportion of persons aged between 45–65 years in the local area (23.5%) is lower than the regional area (27.8%) but similar to NSW (25.0%). This is also reflected in the median ages across the local area and regional area: 54 years in Birriwa, 49 years in Dunedoo, 41 years in Gulgong, 47 years in Merotherie, and 37 years in Mudgee compared to 38 years in NSW. The proportion of population aged 15–24 in the local area (10.7%) is higher than the regional area (9.8%) but lower than NSW (12.5%). This may be indicative of the rural character of the region, with fewer tertiary education and job opportunities for young people.

5.3 Educational attainment and qualifications

Educational attainment (ie the highest level of schooling completed) in the local area is similar to the regional area and the area of reference; however, all three areas of interest experience lower levels of educational attainment compared to NSW. The local area has a slightly higher proportion of persons who have completed Year 12 or equivalent (39.9%) compared to the regional area (37.9%) but a lower proportion than the area of reference (41.5%) and NSW (59.1%). Within the local area Mudgee has the highest proportion of persons who have completed Year 12 or equivalent (41.9%). In general, people who have completed Year 12 are more likely to continue with further education or training and have a more successful transition into the workforce (ABS 2011).

Non-school qualifications in the local area, regional area and area of reference are lower than NSW for all types of qualifications, except diplomas and certificates. Within the local and regional areas, certificates comprise the largest proportion of non-school qualifications held by people over 15 years (43.8% and 41.1% respectively). The proportion of persons with a certificate qualification in the local area is significantly higher compared to NSW (29.7%). This reflects a combination of factors including limited access to further education institutions and the dominant regional employment sectors (ie agriculture, mining and health care and social assistance) which in turn inform the dominant occupation types (ie technicians and trades workers and machinery operators and drivers). These occupations typically do not require tertiary level education.

5.4 Labour market and income

5.4.1 Labour force

In 2016 the estimated labour force in the local area was 5,985 people, and 13,024 in the regional area. In 2016 the labour force of the local area represented 45.9% of the regional area labour force. The Mid-Western Regional LGA had the largest share of labour in the regional area (ie 9,689 people or 74.4%). Mudgee had the largest share of labour in the local area (4,640 people or 85.6% of the local area labour force).

Between 2006 and 2016 labour force size increased by 9.2% (503 people) in the local area and 11.8% (1,140 people) in the regional area. Most of the labour force growth in the local area occurred in Mudgee. All of the labour force growth in the regional area occurred in Mid-Western Regional LGA, with the Warrumbungle LGA experiencing a decline in labour force (ie -10.6% or 402 people) between 2006 and 2016.

In the local area, between 2006 and 2016, the labour force of Mudgee increased by 25.8% (952 people) compared to labour force decline in Gulgong and Dunedoo (-19.2% or 223 people, and -35.8% or 226 people respectively). This decline can be attributed to the parallel decline in overall population (Section 5.2) and the presence of an aging population. Between 2006 and 2016 Mudgee's share of the Mid-Western Regional LGA labour force increased (ie from 43.1% in 2006 to 45.6% in 2011 and 47.9% in 2016).

Quarterly labour force data released by the National Skills Commission (NSC) shows the labour force of the regional area in December 2021 was 17,724 people (ie 13,497 in the Mid-Western Regional LGA and 4,227 in the Warrumbungle LGA), suggesting a 36.1% increase in the size of the regional labour force between the 2016 ABS Census and December 2021. Both LGAs experienced labour force growth between 2016 and 2021 (ie an increase of 39.3% or 3,808 people in Mid-Western Regional LGA and 26.7% or 892 people in the Warrumbungle LGA).

5.4.2 Unemployment

At the time the 2016 census unemployment rates across the area of social influence were similar to NSW. The unemployment rate in the local area (6.5%) was slightly lower than the unemployment rate in the regional area (6.9%) and slightly higher than the area of reference (6.2%) and NSW 6.3%. Within the local area unemployment rates in the larger communities of Gulgong (8.6%) and Dunedoo (8.6%) were higher than the NSW rate. In comparison, Mudgee had an unemployment rate of 5.8%, considerably lower than other communities and lower than NSW. In the regional area both the Mid-Western Regional LGA (6.5%) and the Warrumbungle LGA (7.9%) had higher unemployment rates than NSW. In contrast the Dubbo Regional LGA (5.9%) had an unemployment rate lower than NSW.

In the local area in 2016, males experienced lower rates of unemployment compared to females (6.3% compared to 7.0%). This is different to the regional area and NSW where males experienced higher rates of unemployment (7.2% compared to 6.6% and 6.3% compared to 6.2% respectively).

In 2016, the youth unemployment rate¹ in the local area (13.2%) was lower than the rate within the regional area (14.7%) and NSW (13.6%). Within the local area in 2016, Gulgong and Dunedoo demonstrated considerably higher levels of youth unemployment (19.9% and 17.9% respectively) compared to Mudgee (11.7%), the regional area (14.7%) and NSW (13.6%). Within the youth population, males experienced higher rates of unemployment than females in the local area (15.2% compared to 10.4%), the regional area (17.1% compared to 11.6%) and NSW (14.7% compared to 12.6%). In contrast, ABS labour force data (ABS 2022a) for the Central West region (in which the local area and regional area is located) shows a December 2021 youth unemployment rate of 4.5%, compared to the December rate of 11.8%. This suggests the current youth unemployment rate in the local and regional area is likely to be considerably lower than the reported rates in the 2016 ABS Census.

The NSC releases quarterly labour force data at the LGA level. Unemployment rates across the LGAs of the regional area for the December 2021 quarter (ie 2.4% or 319 people in Mid-Western Regional LGA and 4.8% or 201 people in Warrumbungle LGA) and the area of reference (ie 3.7% or 1,022 people in Dubbo Regional LGA) are similar to or lower than NSW (4.0%). These unemployment rates are also substantially lower than the 2016 ABS Census unemployment rates presented above. The total pool of unemployed labour in the regional area in December 2021 was 520 people, and 1,542 in the area of reference. Analysis of unemployment rates for the regional area and NSW for the period 2014–2021 shows a trend of decreasing unemployment rates across the reference period.

The low unemployment rate is also reflected in the number of job vacancies and the recent recruitment experiences of employers, measured through a combination of the NCS Recruitment Experiences and Outlook Survey (REOS) and qualitative information gathered through the SIA field study program (refer Appendix A below).

5.4.3 Labour force participation

In 2016, labour force participation in the local area was higher (55.8%) compared to the regional area (52.1%) and lower than NSW (59.2%). Consistent with state participation rates (63.8% for males and 54.7% for females), in the local area and regional area males experienced higher labour force participation rates than females (61.9% for males compared to 50.1% for females in the local area, and 64.4% for males and 47.8% for females in the regional area).

Data from the monthly ABS labour force survey (ABS 2022) indicates the NSW seasonally adjusted² labour force participation rate in April 2022 was 65.2%, down 0.2 points from March, but higher than the labour force participation rate recorded in the 2016 ABS Census. The December 2021 seasonally adjusted labour force participation rate in the Central West ER was 69.0%, the highest rate in the five years to December 2021. This suggests that current labour force participation rates in the local area and regional area are likely to be considerably higher than reported in the 2016 ABS Census. Some caution should be applied to the interpretation of regional data from the ABS labour force survey due to the sample size involved in the survey³.

¹ The youth unemployment rate is a measure of the number of unemployed youth (persons aged 15 to 24) expressed as a proportion of the youth labour force (the total number of employed and unemployed youth).

² Seasonal adjustment is a statistical technique that attempts to measure and remove the effects of systematic calendar related patterns (ie what happen at the same time each year) including seasonal variation to reveal how a series changes from period to period, so other influences on the series can be more clearly recognised. Seasonal adjustment does not aim to remove the short-term or irregular influences which may be present (ABS 2022)

³ The ABS Labour Force Survey covers about 0.32% of the Australian population aged 15 years or over. Its primary purpose is to provide labour force estimates for the nation and, secondarily, for each State and Territory. Due to the small sample size involved, regional data should therefore be interpreted with caution.

5.4.4 Industry of employment

In 2016 the mining industry sector had the largest employment share in the local area (16.3%), followed by the retail trade industry sector (11.2%) and the health care and social assistance industry sector (10.3%). In comparison the industry sectors with the largest employment share in the regional area in 2016 were mining (11.4%) agriculture, forestry and fishing (13.7%) and other services (13.7%).

More recent industry employment data is available from the NSC (2022d) for the Central West ER. In February 2022 in the Central West ER the public administration and safety sector had the largest share of employment (23.5%), followed by the health care and social assistance sector (14.0%) and the agriculture, forestry and fishing sector (12.0%). In the five years to February 2022 the following industry sectors experienced considerable employment growth: accommodation and food service industry sector, agriculture, forestry and fishing, education and training and the construction industry. A number of industry sectors experienced workforce contraction during the same period including mining, retail trade and the electricity, gas, water and waste services sector.

With respect to gender share by industry of employment, the top five industry sectors for female employment in the Central West ER in February 2022 were education and training (85%), health care and social assistance (81%), retail trade (62%), administrative and support services (59%) and accommodation and food services (57%). The top five industry sectors for male employment were electricity, gas, water and waste services (91%), construction (89%), mining (87%), transport postal and warehousing (73%) and information media and telecommunications (71%) (NSC 2022e).

The top three industries of employment for youth (aged 15–24) in the Central West ER in February 2022 were: retail trade (21.7%), accommodation and food services (20.0%) and construction (9.3%) (NSC 2022f). The top three industries of employment for mature age persons (aged 55+) were agriculture, forestry and fishing (19.3%), health care and social assistance (14.6%), education and training (10.0%).

5.4.5 Occupation

In the local area the top three occupations in 2016 were technicians and trades workers (17.5%), professionals (13.7%) and machinery operators and drivers (12.9%). This is consistent with the dominant industry of employment in the local area which in 2016 was the mining industry sector. With the exception of professionals, these occupations generally require TAFE education or certificate level qualifications, which comprise the largest proportion of qualifications in the local and regional areas, with almost half of technicians and trades workers holding a Certificate III or higher vocational qualification (NSC 2021). The dominant occupations in the regional area were managers (17.7%), professionals (14.1%) and technicians and trades workers (15.4%). The proportion of managers in the regional area likely reflects the prevalence of non-employing businesses and the large share of businesses registered in the agricultural, forestry and fishing sector in the regional area.

5.4.6 Income

There is significant variation in individual and household median weekly incomes across the local area and regional area. In 2016, with the exception of one community in the local area (ie Merotherie), all communities in the local area, and the LGAs of the regional area recorded median income levels below NSW. This reflects the relatively low SEIFA scores across some communities of the local and regional area (refer Appendix A below).

5.5 Housing and short-term accommodation

5.5.1 Rental market conditions

i Housing stress

Housing stress is considered to occur when households in the lower 40% of income distribution spend more than 30% of their income in housing costs (rents or mortgage repayments) (AHURI 2019). This can mean that local people who are not employed in high-paying jobs may be unable to afford local rents which can be pushed up by higher salaries.

Analysis of rental stress in the local area shows that a higher proportion of households in Mudgee (14.2%) and Gulgong (12.4%) experience rental stress when compared to Dunedoo (6.9%), the Mid Western Regional LGA (10.2%), Warrumbungle LGA (6.2%) and NSW (12.9%).

ii Rental property availability

A snapshot of rental property availability in the local area can be derived from analysis of data on [realestate.com.au](https://www.realestate.com.au). On 16 May 2022, there were 48 properties for rent in the local area (REA Group 2022). Most of these properties were located within the suburb of Mudgee (42 properties for rent). Property availability in selected suburbs within the local area, regional area and the area of reference is presented in Table 5.2.

Table 5.2 Private rental property availability 16 May 2022

Location	Residential property type	No. of residential properties available	Highest rent (\$p/w)	Lowest rent (\$p/w)
Mudgee (PC 2850)	All properties	41	1500	290
	Furnished properties ¹	1	1500	495
Gulgong (PC 2852)	All properties	3	570	570
	Furnished properties ¹	0	0	0
Dunedoo (PC 2844)	All properties	3	480	395
	Furnished properties ¹	0	0	0
Dubbo (PC 2830)	All properties	77	750	150
	Furnished properties ¹	0	560	150

Source: REA Group 2022

Notes: 1. Subset of all properties.

iii Residential vacancy rates

The residential vacancy rate trends for postcode 2844 Dunedoo, 2852 Gulgong and 2850 Mudgee is presented in Figure 5.2 for the period March 2019 to May 2022. The vacancy rate in the local area during this period was consistently below the 3.0% benchmark, indicating a tight rental market with an undersupply of rental housing during that time. Whilst the data shows considerable fluctuation in rental vacancy rates across the three communities, overall rental vacancy rates have steadily declined. In May 2022 there were three rental vacancies in Dunedoo, three in Gulgong, 42 in Mudgee and 77 in Dubbo. The findings of SIA interviews conducted with real estate agents in the local area confirmed the presence of a tight housing market and limited rental availability. SIA interview outcomes suggest the following factors are influencing current housing market conditions in Mudgee and Gulgong and to a lesser extent Dunedoo:

- reduction in available rental stock as properties are purchased as holiday homes or transferred into the short-term stay mark (ie Airbnb);
- demand generated by major projects occurring in or nearby the local area (ie the construction of Wellington Solar Farm and various inland rail projects); and
- an increase in-migration due to the COVID-19 pandemic and the corresponding increase in the attractiveness of regional NSW communities as permanent resident locations.

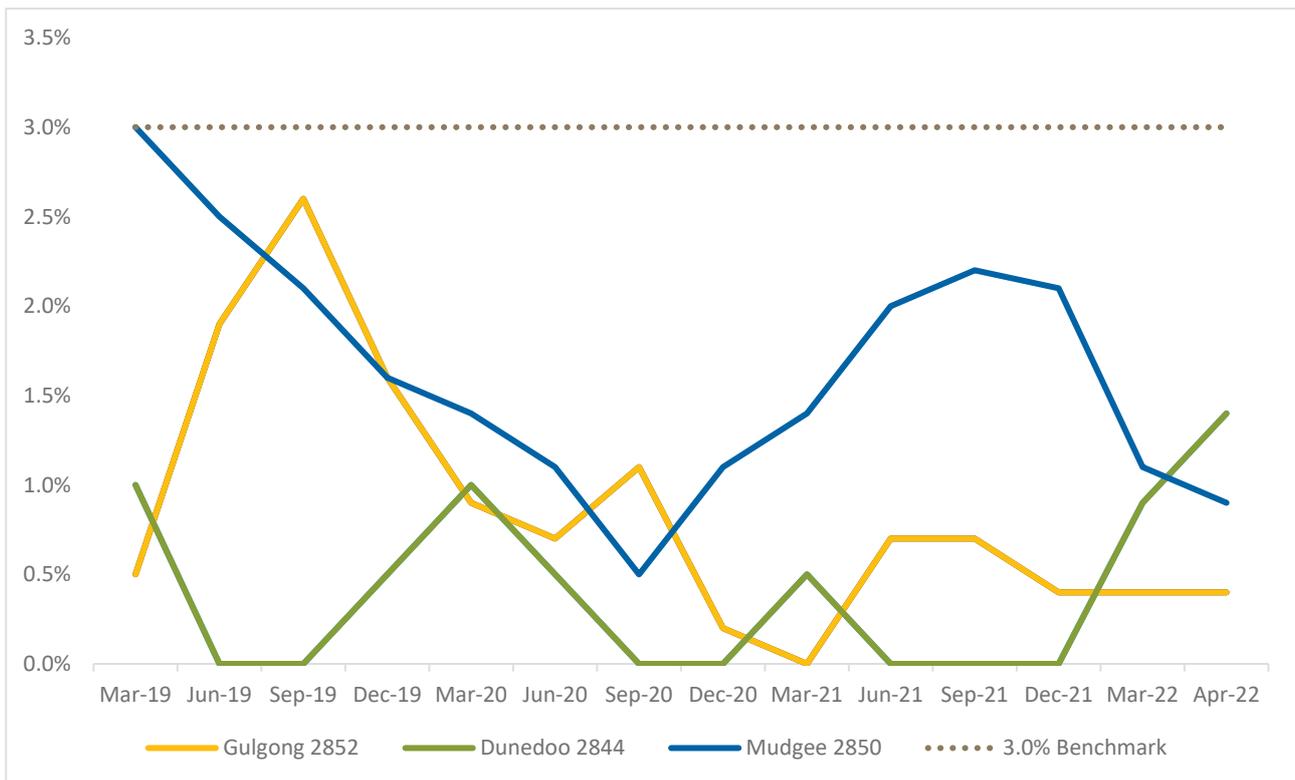


Figure 5.2 Rental vacancy rates

5.5.2 Short-term accommodation

The term short-term accommodation refers to accommodation options that are typically provided to visitors or tenants for a short period of time; for example, motels, hotels, serviced apartments, bed and breakfast, self-contained homes, caravan and camping parks. The length of tenancy in these forms of accommodation can often extend to lengthy stays, depending on accommodation availability, price and personal circumstances.

Short-term accommodation providers in the local and regional area service a number of different industry sectors including tourism, mining, renewable energy and agricultural industry sectors. Tourism is a strong and growing sector in the Mid-Western LGA. The region is known for having the capacity to host large regional events and accommodate their crowds. There are many regional events throughout the year that place significant demand on short-term accommodation in the local and regional area. Both the number of events and patronage is increasing as evident in trends in visitor numbers to the local area.

Within the local area short-term accommodation is concentrated in the larger communities of Dunedoo, Gulgong and Mudgee and consists of a combination of hotels, motels, bed and breakfast accommodation, farm-stay, holiday home rentals (AirBnb) and caravan parks. The majority of short stay accommodation in the Mid-Western LGA is concentrated in and nearby the town of Mudgee. The most abundant form of short-term accommodation in the local and regional area is private holiday rentals through platforms such as Airbnb and [booking.com](https://www.booking.com).

The MWRC estimates there are currently 3,200 rooms of short-stay accommodation in the Mid-Western Regional LGA, with an average occupancy rate of over 80%. In 2022 ACEN undertook a survey of short-term accommodation providers in the local area, specifically in the communities of Dunedoo, Gulgong and Mudgee. The purpose of the survey was to understand seasonal demand for short-term accommodation and seasonal occupancy rates. The findings of the survey confirmed sustained demand across the year with a prevalence of high occupancy rates (80% or over).

Analysis of available on-line short-term accommodation data suggests that in 2022 there are more than 500 active Airbnb rentals in the Mid-Western Regional LGA including an estimated 260 properties in Mudgee and 13 properties in Gulgong. There are an estimated 40 Airbnb properties in the Warrumbungle LGA including nine properties in Dunedoo. The findings of SIA interviews with service providers, real estate agents and the MWRC suggests that the number of Airbnb properties in the Mid-Western LGA has increased substantially in the past three to five years. There is a trend of properties being purchased and transferred out of the stock of private rental or owner-occupied housing and into the short-term accommodation or holiday rental market (2022 field study).

Short-term accommodation in the local area is summarised in Appendix A.

5.6 Vulnerabilities and vulnerable Groups

5.6.1 Disability

In the local area, 5.4% of people have a need for assistance in one or more of the three core activities of self-care, mobility and communication due to a long-term health condition (lasting 6 months or longer), a disability (lasting 6 months or longer), or old age. This is slightly lower than NSW (5.4%), while the population within the regional area has a slightly greater need for assistance (5.9%). within the regional area, 7.3% of the Warrumbungle LGA population identified as requiring assistance compared to 5.3% in the Mid-Western Regional LGA.

The similar need for assistance in the local area and regional area may reflect access to and availability of social services, in particular disability services, in the regional area. Baxter, Hayes and Gray (2011), of the Australian Institute of Family Studies, found that people living in major cities and regional centres are less likely to have problems accessing services such as doctors and disability services, while those in outer regional or remote areas have the most trouble accessing these services. This may contribute to people migrating to regional centres, such as Goulburn within the regional area, and larger cities where those services are more readily available.

5.6.2 Homelessness

As explained by the Australian Human Rights Commission (AHRC) (n.d.):

The causes of homelessness are numerous and complex. Homelessness can be caused by poverty, unemployment or by a shortage of affordable housing, or it can be triggered by family breakdown, mental illness, sexual assault, addiction, financial difficulty, gambling or social isolation. Domestic violence is the single biggest cause of homelessness in Australia.

Homelessness can lead to health problems including poor nutrition, depression, substance abuse, poor dental health, and mental health conditions (AHRC 2021). For homeless persons, hardships with finances, transport, identification, Medicare, and difficulty with appointment maintenance/treatment plans make accessing health care services more difficult than the average person (AHRC 2021). As such, homeless persons are at greater risk of being negatively affected by potential impacts on livelihoods and health and wellbeing.

Rates of homeless are not available for the local area but are available at the LGA level. Homelessness is measured at a rate per 10,000 persons. In 2016 rates of homelessness across the LGAs of the regional area and area of reference were lower than rates of homelessness across NSW, however the rate of homelessness in the Dubbo Regional LGA was markedly higher than the Mid-Western Regional and Warrumbungle LGAs.

Analysis of trend data for the period 2006 to 2016 shows an increasing prevalence of homelessness across NSW (ie an increase from 33.9 persons per 10,000 of population to 50.4 person per 10,000 population). Between 2011 and 2016 the total number of homeless persons in the Dubbo Regional LGA increased by 44% (ie from 128 persons to 185 persons) compared to a reduction in homelessness in the Mid-Western Regional LGA (ie from 53 persons to 52 persons) and relative stability in the Warrumbungle LGAs (ie 13 persons in 2011 and 2016). The relocation of homeless persons to large regional centres or cities where they can access homelessness services and support is indicative of the higher rate of homelessness in cities.

Since the conduct of the 2016 census there has been a further tightening of the housing market (ie low rental vacancy rates and increasing rental values) across many regional NSW communities including the centres of Dubbo and Mudgee. The context of COVID-19 creates additional risk of housing instability and homeless for persons experiencing financial hardship. COVID-19 has facilitated increased migration from urban centres to more regional and rural areas of Australia (Anglicare 2021). This has contributed to increased rents and lower rental availability (particularly affordable housing) in regional areas of Australia, including the Midwestern Regional LGA.

5.6.3 Aboriginal and/or Torres Strait Islander population

At the time of the 2016 Census, 6.5% of the total population within the local area and 6.6% of the regional area population identified as Aboriginal and/or Torres Strait Islander compared to 2.9% in NSW. The largest demographic in the Aboriginal and/or Torres Strait Islander community in the regional area is children (aged 5–14 years) (ABS 2016). Compared to the total population of the regional area and NSW, there is a much smaller proportion of persons aged 65 years and older who identify as Aboriginal and/or Torres Strait Islander. The Aboriginal population's smaller proportion of the population (both males and females) living beyond 65 years aligns with the lower life expectancy among Aboriginal Australians nationally that is particularly acute in Aboriginal males (AIHW 2020), with much of this gap is explained by the relationships between increased socioeconomic disadvantage, worsened mental health outcomes, and related health risk behaviours, including greater proportions of smoking and alcohol use (AHMAC 2017).

5.7 Social infrastructure and services

There are three key communities in the local area: Dunedoo, Gulgong and Mudgee. Each community has a range of services including general practitioner (GP) services, hospital or multi-purpose service (MPS), preschool, primary and secondary education facilities, emergency services (ie rural fire brigade, police station), employment services, youth and Aboriginal and Torres Strait Islander services. Additional services are accessible in the regional area. TAFE is the only provider of post-secondary school education and training in the local area (TAFE 2022). The nearest university facility is located in Dubbo (ie Charles Sturt University). The availability of social infrastructure, services, and facilities in the local and regional area is presented in Table 5.3.

Table 5.3 Social infrastructure, services, and facilities in the local and regional area, 2020

	Local area	Regional area
Hospital services	✓	✓
GP services	✓	✓
Childcare services	✓	✓
Primary schools	✓	✓
Secondary schools	✓	✓
Tertiary institutions	✓	✓
Emergency services	✓	✓
Aboriginal services	✓	✓
Child and family services	✓	✓
Youth services	✓	✓
Housing and homelessness services	✓	✓
Employment services	✓	✓
Disability services	✓	✓
Aged care services	✓	✓
Women's services	✓	✓

Source: Healthdirect (2022), Ask Izzy (2022)

5.7.1 Emergency services

There are three police stations, three ambulance stations, and three fire and rescue stations in the local area. The local area also has a local State Emergency Service (SES) unit and is home to the SES Western Zone Headquarters. The development footprint is in the Cudgong District of the NSW Rural Fire Service (RFS) and adjoins the Castlereagh District. Within the local area RFS brigades are located in Birriwa, Gulgong, Mudgee and Dunedoo. The Cudgong District is the primary combat agency for bush and grass fire incidents in the Mid-Western Regional LGA.

5.7.2 Health services

The local area is located within the northern network of the Western NSW Local Health District (LHD). Mudgee Hospital (part of the Mudgee Hospital and Health Service [HHS]) is the only procedural hospital in the northern network and provides emergency, acute medical, surgical, maternity and subacute inpatient services as well as a range of primary, ambulatory and community health services. The hospital has 51 beds and has recently undergone a significant redevelopment. Gulgong MPS and Dunedoo MPS are smaller hospitals in the northern network. These MPS provide integrated acute and subacute inpatient services, emergency, allied health, primary and community health services, health related services and residential aged care under one organisational structure as agreed by the State and Commonwealth. Dubbo hospital is the main referral hospital for the northern network of the Western NSW LHD.

Consultation participants noted that the region has seen a greater demand for health services in the past two years, generally as a result of increase in population in Mudgee, aging populations with chronic health needs, limited GPs servicing the area, greater distances to travel when needing to see specialists, lack of health services and health services being understaffed. Experienced impacts cited by real-participants in consultation included waiting weeks and sometimes months to see local doctors and specialists and the high costs of travel and accommodation costs required to attend appointments outside of the local area; there are limited GPs; lack of adequate mental health services; in addition COVID-19 has impacted on staffing levels and exacerbated already pressured and understaffed services being understaffed; increased pressures on the ambulance services where people will ring the emergency services if they are not able to get transport or people will present at the emergency department if they are not able to see their GP earlier. The changing nature of the health needs and demographics of rural residents as well as the increased demand on doctors can also have a flow on affect for hospital emergency departments in that people living in rural areas are more likely to report to visit an emergency department because a GP is not available was found in the Health outcomes and access to health and hospital services in rural, regional and remote New South Wales report in May 2022. The report also found that healthcare system in rural, regional and remote areas, which it found to be “in crisis”, leading to “significantly poorer health outcomes” when compared to the city (Parliament 2022). In the local area there are five general practitioner (GP) services which primarily offer standard GP services. The MPSs located in Gulgong and Dunedoo, and the Mudgee HHS also offer a range of health-related services to the local area and broader regional area.

5.8 Road infrastructure and transport

5.8.1 School bus service

School bus services operate in the local area and are provided principally by Ogden’s Coaches and the East End Bus Service. These services connect with educational institutions in Gulgong and Mudgee. Two of the routes operated by East End Bus Service include roads within the vicinity of the study area:

- the Blue Springs route operates between Gulgong, Merotherie and Bungaba and includes part of Barneys Reef Road and Merotherie Road. This is an AM and PM service; and
- the Tucklan route operates between Gulgong and Tuckland Road (to the south-west of the study area) and follows the Castlereagh Highway. This is an AM and PM service.

There is also a privately owned school bus service called Hogden’s Bus service, that operates a service along Barneys Reef Road, Birriwa Bus Route South and Birriwa Bus Route North providing student transport to local schools in Dunedoo. This service is an AM and PM service.

5.8.2 Road incidents

The project is located immediately east of the village of Birriwa on the Castlereagh Highway (B55) and south of the Golden Highway (B84). Road incident (crash) trend data is available at the LGA level and presented in Appendix A for the LGAs of Mid-Western Regional, Warrumbungle and Dubbo Regional. Between 2016 and 2020 the number of fatal or non-casualty road incidents in the Mid-Western Regional LGA declined (ie from 6 incidents to 3 incidents, and from 30 incidents to 26 incidents respectively). However, the number of road incidents causing injury increased during this period from 66 incidents in 2016 to 71 incidents in 2020. In comparison, the number of road incidents in the LGAs of Warrumbungle and Dubbo Regional decreased across all reported indicators for the period 2016 to 2020.

6 Community and stakeholder engagement

This section summarises the findings from the community engagement activities undertaken in relation to the project:

- as part of the EIS engagement; and
- as part of the data collection for the SIA.

6.1 EIS engagement activities and participation

ACEN acknowledges that effective and meaningful community engagement is central to establishing, building and maintaining social licence for the project. Through a well delivered community engagement program that reflects the current social conditions in the local area (ie COVID-19 concerns, flooding and consultation fatigue) ACEN aims to strengthen the communities of the local area and improve the social sustainability of the project, underpinning project success.

A summary of EIS engagement activities and participation is provided below and in Table 6.1. Full details of community engagement activities and outcomes are described in Chapter 5 of the EIS. ACEN has been actively engaging with the project stakeholders since late 2018 via a range of forums, as described below.

Table 6.1 EIS Engagement Activities

Activity	Participation
Stakeholder briefings with key government officers, agencies, elected representatives, local government, and community interest groups	The team has undertaken briefings (face to face, online via Microsoft Teams and teleconference) with government agencies (state and local), elected representatives (state members of parliament (MP)), key stakeholders and community groups including DPE, MWRC and Warrumbungle Shire Council (WSC), CWC Trail Inc.
Gulgong Project office	ACEN established a project office in Gulgong in November 2021. The project office is located at 79B Herbert St Gulgong, is generally open to the public every Tuesday, Wednesday and Thursday from 9.00 am to 5.00 pm and is staffed by a representative of ACEN. The office displays information on ACEN's projects in the Central West and includes posters and fact sheets.
Landholder meetings	ACEN maintains ongoing communication with associated and non-associated landholders and engages in face-to-face discussions as required to progress the project and landholder agreements.
Project website	A dedicated website for the project was established in September 2021 www.birriwasolarfarm.com.au . This page provides project updates, information and frequently asked questions (FAQs). The website is regularly updated to reflect latest project information.
Project community information line	A 24/7 dedicated community information line (1800 290 995) was established in September 2021 to enable local people and stakeholders to speak with a member of the project team. The 1800 number has been promoted on all community notifications and advertising.
Project email address	A project email address info@birriwasolarfarm.com.au answers queries from neighbours and stakeholders. The project email address has been promoted on all community notifications and advertising.
Mailing list	ACEN has also established a newsletter mailing list for those who are interested in receiving updates on the project.

Table 6.1 EIS Engagement Activities

Activity	Participation
Employment and procurement register	ACEN maintains a register of businesses and persons interested in procurement and/or employment opportunities on the project.
Advertising/media	<p>ACEN has placed advertisements in the Gulgong Gossip and Dunedoo District Dairy newspaper.</p> <p>Radio interview with ABC Central West radio advising of the location of the project, the proposal and contact details.</p>
Birriwa Solar and Battery Project Fact Sheet (Project fact sheet)	A Project fact sheet was distributed by letterbox drop to all residences within a 5 km radius of the study area in September 2021. Hard copies were made available in the project office and an electronic copy included on the project website. The fact sheet content was updated in June 2022.
Letterbox drops	<p>Three letterbox drops and direct email rounds to landholders within a 5 km radius of the study area have taken place to promote consultation activities, events and provide project updates.</p> <p>The initial letterbox drop targeted landholders within a 2 km radius of the study area, as well as all dwellings within 5 km. Information included reference to the online project website and hotline phone number, and contact details for the ACEN landholder liaison person. Later letterbox drops facilitated the distribution of the project fact sheet and also project update information.</p>
Community open days	<p>A total of six community open days were held:</p> <ul style="list-style-type: none"> • four community open days were held in Gulgong at the project office, with a total of 21 attendees; and • two community open days were held in Dunedoo: Dunedoo Bowling Club with 14 attendees and Dunedoo Westpac community hall with 7 attendees. <p>The community open days were advertised through the project office, via radio advertisements, social media posts, website updates, flyers and word of mouth.</p>
Community information stalls	<p>Three community information stalls were held at local agricultural shows and other local events:</p> <ul style="list-style-type: none"> • Dunedoo Show with 25 attendees; • Gulgong Show with 20 attendees; and • Henry Lawson Festival in Gulgong with no attendees. <p>The stalls were advertised through the project office, via local radio; social media, website, flyers in store fronts in Gulgong and Dunedoo and word of mouth.</p>
Traditional Owner engagement	<p>The consultation process initially identified 32 Aboriginal stakeholder organisations with potential interest in the project. Following a notification process, nine responded to be registered for subsequent consultation through the project. Four representatives participated in the field investigation of a study area (which incorporated the development footprint for the project) and discussions around tangible and intangible values as part of the Aboriginal heritage stakeholder consultation process for the ACHA (refer to Chapter 5 of the EIS).</p> <p>As a corporate level, ACEN is keen to increase its engagement with the Aboriginal community groups in the Central West. ACEN representatives have met with several of these groups (not related to ACHA process).</p>

In addition to the engagement activities described above, ACEN through the Stubbo Project has established a social investment program (SIP) which over time will transition to a community benefit sharing program (CBSP). The Stubbo Solar and Battery Project (the Stubbo Project), located in Stubbo within the Mid-Western Regional LGA involves the construction and operation of a 400 MW solar farm with energy storage that was approved by DPIE in July 2021. The Stubbo Project SIP is described in full in Section 8.1. In summary the Stubbo Project SIP provides financial and in-kind support for initiatives proposed by community organisations and groups within the Regional area. To date this fund has supported local community groups such as Gulgong Heartbeat, the Henry Lawson Festival, the Dunedoo Show, the Gulgong Show, the Red Hill Environment Centre in Gulgong, the Gulgong Men's Shed and the Prince of Wales Eisteddfod. ACEN is also organising practical workshops for members of the community in association with NSW Landcare and local farmers.

6.1.1 Continuous engagement

After determination ACEN will continue to engage with stakeholders and the broader community throughout the construction and operation of the project.

Principle engagement and consultation activities that will be considered beyond the EIS stage are:

- regular local stakeholder briefings and meetings, including:
 - MWRC and WSC;
 - Transport for NSW (TfNSW);
 - Local State MP; and
 - associated and non-associated landholders;
- regular project updates, including promoting information on the project website;
- regular community notifications and updates as the project progresses through construction and into operation; and
- ongoing operation of the community telephone line, email address, mailbox and website, with set response times for project queries and complaints in accordance with the project grievance mechanism (Section 5).

Further information on future project consultation activities is provided in the Chapter 5 of the EIS.

6.2 SIA field study activities

This section provides a summary of the SIA field study activities and findings.

6.2.1 Participation

The SIA field study consisted of in-depth interviews with near neighbours, service providers, local government representatives and community organisations. All engagement activities were conducted via telephone and videoconference. The scope of the SIA field study program is provided in Table 6.2.

Table 6.2 SIA field study participation

Method	Format	Time Frame	Invited/contacted	Participated
In-depth interviews	Videoconference and teleconference	18 March 2022–19 May 2022	<ul style="list-style-type: none"> • 11 non-associated landholders – contacted 30 separate occasions via phone and email. • 5 associated landholders – contacted 19 separate occasions via phone and email. • 1 local council representatives – contacted on 5 separate occasions. • 25 service providers and community organisations – contacted on 65 separate occasions. 	<ul style="list-style-type: none"> • 7 non-associated landholders. • 2 associated landholders. • 14 service providers. • 1 local council representative.
Real-estate agent and short-term accommodation providers interviews	Face-to-face and teleconference	March 2022–April 2022	<ul style="list-style-type: none"> • 13 real estate agents. • 26 short-term accommodation providers across the locations of Dunedoo, Gulgong, Mudgee and Wellington. 	<ul style="list-style-type: none"> • 13 real estate agents. • 23 short-term accommodation providers.

Notes: 1. Interviews were conducted by ACEN using an interview proforma prepared by EMM. The findings of interviews were analysed by EMM.

The SIA adopted a case study approach⁴ which has focused on a deeper understanding of the potential impacts on individuals and groups that will be potentially impacted and or interested in the project. The findings summarised below are based on a small sample of residents and groups. In addition, interview participants opted into the SIA. The findings of SIA interviews have been analysed with reference to existing baseline statistical data, the findings of consultation programs for similar renewable energy projects in the regional area, a review of recent media articles from the local and regional area, and analysis of public records of council (MWRC and WSC) facilitated community meetings. This approach confirms that the findings of the SIA interviews are generally representative of the broader communities in the local and regional area.

6.2.2 In-depth near-neighbour interviews

Interviews were conducted with associated and non-associated landholders from Wednesday 13 April 2022 to Thursday 19 May 2022. The interviews involved a discussion of the values, vulnerabilities and strengths of the local community, as well as the identification of perceived impacts and benefits as a consequence of the project. Within the local area, 16 nearby neighbours were invited to participate in an in-depth interview, a total of nine (7 non-associated landholders and 2 associated landholders) participated in in-depth interviews. The key findings from the interviews are summarised in Section 6.3.

⁴ A process or record of research into the development of a particular person, group, or situation over a period of time.

6.2.3 In-depth service provider interviews

In-depth interviews were conducted with service providers from the local and regional areas from 18 March 2022 to 11 April 2022. Information was used to validate existing baseline data and enhance understanding of existing social baseline conditions. During the interviews, service providers offered insights into the potential impacts and benefits of the project to specific areas of service in the community. A total of 16 interviews were conducted with the following 16 stakeholders:

- one representative of Mid-Western Regional Council (MWRC);
- one representative of Barnardos;
- two representatives of Aboriginal Employment Services Dubbo (AES Dubbo);
- one representative of VERTO employment and training service;
- two representatives of the NSW Police Service;
- one representative of the Cudgegong Rural Fire Service (RFS);
- three representatives of local health councils (Dunedoo, Gulgong and Mudgee);
- two representatives of Western NSW Local Health District (LHD) within the local area;
- one representative of a general practitioner (GP) service; and
- one representative of a local bus service.

The key findings from the in-depth interviews are summarised in Section 6.3.1.

6.2.4 Real estate agency and short-term accommodation provider surveys

In-depth interviews were conducted with 13 real estate agents and 23 short-term accommodation providers across the centres of Mudgee, Gulgong, Dunedoo and Wellington. Although located outside the local area, the town of Wellington has a supply of short-term accommodation and is within a short commute of the local area. Accommodation in Wellington was explored to gain a more detailed understanding of the broader availability of short-term accommodation for the project and the experienced effects to date of other renewable energy projects (ie the construction of Wellington Solar Farm).

During the interviews, both real-estate agents and short-term accommodation providers offered insights into the local housing market and short-term accommodation market including demand, occupancy rates, vacancy rates and experienced impacts to date.

6.3 Summary of SIA field study findings

6.3.1 Community values, strengths and vulnerabilities

All consultation activities sought to understand how participants viewed their community and identify how the project may impact on their community. Participants identified values, strengths and vulnerabilities as shown in Table 6.3.

Table 6.3 Community identified values, strengths, and vulnerabilities

Values	Strengths	Vulnerabilities
Strong community cohesion and resilience.	Employment services that target indigenous communities and offer training and individual job pathways.	Poor road infrastructure and corresponding road safety, particularly on country roads.
Local economic contribution of the agriculture, tourism and mining industry sectors.	Access to health services in the local area.	Access to medical services (general practitioners (GPs) and other specialist health services).
Rural/country lifestyle and environment.	Productive arable agricultural land.	Ageing population.
Safety and security in the local area.	Tourism and construction sectors and associated economic benefits.	Tight labour market, with limited local supply of skilled labour and corresponding difficulties recruiting.
Geographical location and proximity to larger regional centres of Mudgee and Dubbo.	Cohesive community.	Available supply of short-term accommodation and persistently high occupancy rates.
Access to Dunedoo Saleyards.	Local and regional connectivity and proximity to major centres of Newcastle and Sydney.	Housing market conditions. In particular a lack of affordable rental accommodation for low-income households, and a lack of emergency accommodation.
Community characteristics such as quiet, peaceful, country lifestyle with smaller communities, people are in close contact with nature, agricultural communities.	Generous, friendly and supportive community.	Prevalence of domestic violence.
Tourism industry and geographic proximity to Sydney.	Natural environment and surroundings.	Presence of multiple major projects occurring simultaneously.
Real-estate values.	Diversity of agricultural services in Dunedoo and support for the regional agricultural industry.	Protecting existing community cohesion with the influx of temporary workers.
High standard of living.	Dunedoo Saleyards with fortnightly sales and monthly livestock store sales.	Presence of population with high socio-economic disadvantage.
Youth retention and population growth.	Relaxed, rural lifestyle.	High demand for existing community service and facilities.
Good climate for agriculture and excellent soils.	Variety of art and cultural activities.	Lack of public transport in smaller communities.
	High representation of the Aboriginal people.	Telecommunication services.
	Self-reporting community to keep community members safe.	Absence of 24/7 police presence in some of the smaller communities.
	MWRC established a regional housing taskforce in response to increasing pressure on the supply and affordability of housing in regional NSW.	Underrepresentation of Aboriginal voices across the communities.
	Accessible jobs and low unemployment.	Absence of employment diversity.
		Outmigration of young people.

Table 6.3 Community identified values, strengths, and vulnerabilities

Values	Strengths	Vulnerabilities
		Population decline.
		Presence of vulnerable populations (ie single parents, Aboriginal people, low-income households).
		Inequality in the distribution of wealth in the community.
		Existing pattern of rural landholding consolidation and associated population outmigration.
		Emergency services challenged by the geographical logistics.

6.3.2 Community identified impacts and opportunities

A summary of the most prominent potential social impacts of the project identified by local service providers and key stakeholders through the SIA field study and EIS engagement activities are presented in Table 6.4.

All consultation activities sought to understand how participants viewed their community and identify how the project may impact on their community. The key issues or potential impacts, and opportunities or potential benefits identified by the community are organised into categories of social impact theme.

Table 6.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
 <p>HOUSING</p>	<ul style="list-style-type: none"> Increased pressure on private rental accommodation within the communities of Mudgee, Gulgong and Dunedoo may lead to existing tenants being priced-out of the local area. Increased pressure on short-term accommodation restricts access to accommodation for visitors to the local area. The overlap of multiple projects in the local and regional area may impact upon the ability of the local area to absorb the increase in workforce. 	<ul style="list-style-type: none"> Non identified. 	<ul style="list-style-type: none"> Leasing of local housing and offering subsidised rent for local employees. Opportunities to liaise with MWRC to implement the Regional Housing Taskforce to increase access to affordable housing.

Table 6.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
	<ul style="list-style-type: none"> Increased traffic (workforce travel and truck movements) on local roads may increase road noise, increase commuter journey times and affect road safety impacting near neighbours, local residents and other road users. Increased traffic on local roads and project related road works may impact agricultural farming activities such as stock movement across roads. Influx of temporary workforce could disrupt rural lifestyle and community. 	<ul style="list-style-type: none"> Sustainable long-term employment could contribute to population increase with benefits for way of life in the local area. 	<ul style="list-style-type: none"> Potential population growth with resulting diversification and growth in the local labour pool for other industries (ie health services). Potential for road upgrades with associated improvements in road safety.
	<ul style="list-style-type: none"> Removal of prime agricultural land from production. Loss of agricultural income due to displacement of existing agricultural activities. Decline in property values due to proximity to the project. Disruption to existing farming practices and land use during construction and operation. Presence of the project could adversely impact the tourism industry, particularly if visitor access to short-term accommodation is limited. Distributive equity issues between associated and non-associated landholders. Potential landholder liability if ACEN goes into receivership during operations. 	<ul style="list-style-type: none"> Project benefit sharing agreement with landholders and local community. Local employment opportunities during construction and operation. Increased demand for short-term accommodation with economic benefits for business sector. Project spend by non-local workforce residing temporarily in the local area. Potential provision of training opportunities and upskilling of local people. Job opportunities for youth and Aboriginal and Torres Strait Islander people. 	<ul style="list-style-type: none"> Potential coexistence of agricultural and solar activities ie grazing of livestock and grazing underneath the solar panels. Opportunities for ongoing engagement with landholder to minimise disruption to farming practices. Provide entry level positions for potential workers with limited skills and experience. ACEN could bus workers in and out – this will decrease the private transport on the roads. Develop relationships/build partnerships with local employment providers, recruitment agencies and education services such as TAFE to promote/develop apprenticeship and skills training opportunities. Facilities local workshops and information sessions to educate community members of potential employment opportunities, advertise locally first. Possibility of long-term employment for Aboriginal and Torres Strait Islander people. To enhance benefits associated with livelihood and employment opportunities, ACEN could actively work with local high schools, employment services to secure permanent employment for youth in the local area.

Table 6.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
	<ul style="list-style-type: none"> • Protesting behaviour could be present during construction phase. • Additional workers in the local area of Dunedoo and Gulgong may impact upon community cohesion. • The project would contribute to growing tension within communities between those that benefit from renewable projects and those that don't. • The project could place further strain on services such as emergency accommodation for people experiencing homelessness. 	<ul style="list-style-type: none"> • Provision of renewable energy, which is considered critical infrastructure for NSW. • Community economic development and growth. • Coexistence of agricultural activities with renewable energy activities. • Potential retention of young people in the community. 	<ul style="list-style-type: none"> • Additional community funding and shared value opportunities, particularly through the near neighbour and community benefit sharing program. • Collaboration with the local emergency management group, assessment of risks or gaps in emergency service responses in consultation with local emergency services as a multiagency response team. • Funding to attract and retain key service providers ie doctors. • Opportunity to partner with education providers to create a pipeline of skilled labour for future employment. • Opportunity for ACEN to consider a long-term employment plan that reflects the presence of multiple projects in the region. There is an opportunity for construction workers to move permanently to the LGA to engage in construction work rather than reside temporarily for one project. • Development of a long-term, holistic and well implemented community development program for the project that extends beyond the construction.
	<ul style="list-style-type: none"> • Reduced access to services and facilities (ie medical services) for community members due to demands of project workforce. • Increased pressure on an already strained local health service and emergency service. 	<ul style="list-style-type: none"> • Multiplier effect of large developments – providing jobs, demand for schools, demand for services, and demand on infrastructure which contribute to increased provision of local services and infrastructure (growth). 	<ul style="list-style-type: none"> • Opportunity for ACEN renewable to develop partnerships with key stakeholders to improve service delivery (ie the MWRC, local emergency services, local employment and training service providers. • Encourage employees to undertake pre-employment screening checks outside the Mid-Western LGA to reduce pressure on health service.
	<ul style="list-style-type: none"> • Potential outmigration of generational farming families from the local area. • Potential impacts to shared community beliefs and connections to land. • Potential impacts to Aboriginal cultural heritage. 	<ul style="list-style-type: none"> • None identified. 	<ul style="list-style-type: none"> • None identified.

Table 6.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
 SURROUNDINGS	<ul style="list-style-type: none"> • Visual impact of the project and resulting impacts on sense of place, rural character, visual amenity and community values. • Potential future impacts associated with project decommissioning and future land use. • Public safety/fire risks – perceived public safety and health risks due to the project. • Impacts to local environmental values (ie erosion, noise, habitat loss). 	<ul style="list-style-type: none"> • None identified. 	<ul style="list-style-type: none"> • Improvements in land management with the preparation of appropriate sediment and erosion control management plans that minimise project impacts on the surrounding areas and protect the local water catchments. • Improved rural fire service response with ACEN collaboration and tailored fire management strategies for the project.
 HEALTH & COMMUNITY WELLBEING	<ul style="list-style-type: none"> • Effects of the project approvals process on the health and wellbeing of some near neighbours ie stress and anxiety were cited by some near neighbours as impacts of the project. • Sleep disturbance resulting from the BESS operation. • Nuisance noise from construction activities and increased truck movements in the local area. 	<ul style="list-style-type: none"> • None identified. 	<ul style="list-style-type: none"> • Car-pooling and provision of a bus between the project and key commuter locations ie Mudgee and Gulgong.
 SAFETY	<ul style="list-style-type: none"> • Road safety concerns due to condition of roads and increased traffic volumes with the project construction phase. • Impacts relating to road access, road safety and way of life as a result of the increased truck movements and increased workforce travel during construction. 	<ul style="list-style-type: none"> • Potential road upgrades and improved access in the local area – intersection on the Castlereagh highway, Birriwa south bus route. 	<ul style="list-style-type: none"> • Engagement with local police service, MWRC and TfNSW to implement a workforce driver safety program to reduce driver fatigue and improve road safety.

7 Social impact assessment

This section describes the potential social impacts and opportunities associated with the project and ranks the significance of the identified impacts and opportunities. The aim of the SIA is to assess the proposed change to the current social conditions and has utilised data from several sources to develop a layered picture of the potential social impacts that are likely consequences or changes experienced by the community in which the proposed project is located.

7.1 Introduction

7.1.1 Social impacts

The assessment of social impacts considers the social impact categories described in Section 3.1, consistent with the requirements of the SIA Guideline 2021. In order to prioritise the identified social impacts, a risk-based framework (Figure B.1) has been adopted for the assessment of social impact significance. Using this consequence and likelihood framework allows the assessment of the level of significance of a social impact as low, moderate, high or extreme based on a combination of likelihood and consequence. Both negative and positive impacts have been assessed.

Assessment of social impacts is complex and as such requires the balancing of a range of factors and often competing interests. The impact assessment is reflective of this and has:

- assessed some aspects of the proposed project as both negative and positive as they relate to different groups of people;
- included negative impacts on local communities while documenting the benefits to the broader region;
- considered the impacts on vulnerable groups and provided management strategies to ensure that any existing disadvantages are not exacerbated; and
- considered each community's access to critical resources, such as housing and health care, and how this affects their resilience.

Potential social impacts have been assessed based on the change to, or the perceived change to, the social and biophysical environment as understood through the project and SIA field study program (see Section 6.1.1). These include benefits (ie positive social impacts) and negative social impacts.

The social impacts below have been assessed on a worst-case scenario initially and then the residual effect is assessed on the basis that mitigation of negative impacts or enhancement of positive impacts are successfully implemented. The assessment uses the terms unmitigated and mitigated when referring to negative impacts and un-enhanced or enhanced when referring to positive impacts.

7.1.2 Project refinements

The findings of project scoping and EIS consultation (including the SIA field study program) have informed refinements to the project description. A summary of refinements to the main project elements is presented in Table 7.1 and discussed in detail in Chapter 2 of the EIS.

Table 7.1 Summary of key project refinements

Project element	Refinement	Reason for refinement
Development footprint	Reduction in development footprint	Reduction of visual impacts for associated landholders located to the south and the north of the study area.
Main site access route	Refinement on project access route	Reduce clearing footprint and minimise impacts on native flora and fauna.
BESS design and location within the development footprint	Footprints for substation and BESS infrastructure	To ensure that the final location can respond to identified social and environmental impacts and constraints.
The project access route	The road upgrade corridor	To avoid clearance of native vegetation.
Development footprint	Avoidance of Aboriginal cultural heritage value	One Aboriginal site will be impacted by the project, with the impact footprint refined to avoid other identified sites.
Development footprint	Avoidance of areas of higher biodiversity value	To avoid clearance and impacts of native vegetation.
Development footprint	Revised location of northern fence line	To reduce visual impact of security fencing from the northern public road

7.2 Community impacts

This section provides a detailed assessment, unmitigated and mitigated, on the potential community impacts arising from the project. The key matters assessed include social cohesion and resilience as it relates to composition, cohesion, character, how the community operates and sense of place. The following themes are explored in the assessment:

- community investment;
- social cohesion; and
- growth and economic development.

7.2.1 Community investment and involvement

i Unenhanced

Proponent community investment initiatives can lead to improved sustainability and enhanced resilience in host communities and improvements to other health and wellbeing outcomes. During consultation, service providers and residents spoke of the benefits that came from the presence of major projects and operations (ie mining operations, wind and solar projects) in the local area that implemented community sponsorship and community programs. Community contribution through the funding of community programs that came from these developments in the local area were noted and commended by several stakeholders during in-depth interviews. Stakeholders explained that these contributions were particularly beneficial in small communities, where funding opportunities for small community initiatives and organisations may not be easily accessible or available.

During the project development phase ACEN has been assisting with various initiatives and programs within the local community including the provision of funds to the Dunedoo Show Society for the conduct of the 2022 Dunedoo Show (see Section 6.1 for a description of other ACEN community investment activities). In 2022 ACEN established the social investment program (SIP) for the Stubbo Project. Through the SIP, and on submission of a proposal, community groups and organisations can access financial and in-kind support for various activities (Section 6.1).

Unenhanced, the community benefits arising from community investment and involvement is assessed as **medium**. If the project is approved, the likelihood of community benefits arising from investment and sponsorship activities is **likely**. In the absence of a formalised investment program, the anticipated positive consequences are **minor**.

ii Enhanced

Companies can create enhanced benefits which contribute to both competitive advantage and strengthened communities through corporate social responsibility (Fordham and Robinson 2018) and 'shared value actions' (Porter and Kramer 2011). Creating shared value overlaps with corporate social responsibility by aligning the ethical and philanthropic nature of corporate social responsibility with an agreed business case (Fordham and Robinson 2018). Creating shared value is an approach to business that emphasises the mutual dependency of the competitiveness of a company and the health of surrounding communities (Shared Value Project 2022). Through the shared value approach, social challenges are solved through business activities themselves.

ACEN will adopt a shared value approach in their identification and commitment to community investment and involvement opportunities. Examples of potential shared value opportunities for project include the direct provision of training programs, particularly targeting youth and Aboriginal and Torres Strait Islander People struggling to find employment. This opportunity could be provided as best practice in consultation with local employment, apprenticeship, and training service providers such as the Aboriginal Employment Strategy Dubbo and VERTO (offices located in Dunedoo, Gulgong and Mudgee in the local area). Studies show best practice finds concrete employment targets that are set for local Aboriginal people including career pathways ensure workers are not limited to entry level positions and can be provided with career progression there these opportunities, mentoring and training. These measures could include cross-cultural awareness training for non-Aboriginal employees and supervisors (O'Neill, et al 2021). Using this approach, ACEN could address local vulnerabilities and social need related to both unemployment of vulnerable persons and increased potential retention of local youth but could increase the number of local skilled workers who could contribute to the construction phase of other renewable energy projects in the regional area including ACEN projects (ie Valley of the Winds). A shared value approach will support ACEN to manage negative impacts and enhance the benefits while addressing community issues in the local area.

ACEN is exploring the development and implementation of a Central West and Orana solar projects CBSP (CW and Orana CBSP) that would see investment in a range of opportunities (including shared value opportunities) aligned with the needs of the community, ACEN and the broader renewable energy sector. The development of the CW and Orana CBSP will be informed through a tailored community and stakeholder engagement strategy, including regular meetings with the MWRC and WSC, community groups and community members in the regional area. This strategy will strengthen social cohesion and resilience in the local area by increasing project transparency and facilitating investment into the local community. Further information on the CW and Orana CBSP is provided in Section 8.1.2.

Enhanced, the community benefits related to community investment and involvement is increased too **high**. An implemented shared value approach will ensure that benefits are experienced by both ACEN and the communities of the local area, which address local community issues. Should ACEN implement enhancement measures, the assessed likelihood of social benefit would increase to **almost certain** with positive social benefits having **moderate** levels of impact on the community. A summary of the assessment is provided in Table 7.2.

Table 7.2 Summary of community related to community investment and involvement

Social impact	Issue	Affected parties	Duration	Extent	Unenhanced	Enhanced
 COMMUNITY	Community investment and involvement	Residents of the local area and regional areas	Operation	Local area and regional area	Medium	High

7.2.2 Social cohesion

i Unmitigated

Social cohesion refers to the degree of solidarity and connectedness within a group or community, including “the sense of belonging of a community and the relationships among members within the community itself” (Manca 2014). Building social cohesion within a community requires the engagement of the local community and the establishment and maintenance of effective long-term partnerships (Australian Human Rights Commission 2015).

Given the small size of the operational workforce, the project is very unlikely to make any noticeable impact on the size of the permanent population in the communities of the local area, however as discussed in Section 7.9, there may be positive cumulative impacts for population growth.

a Influx of workers

This section examines the potential impacts of population change associated with an influx of non-local hires during the construction phase of the project. The size of the construction workforce on site at any one time will vary depending on the timing of the various construction components of the project. The construction workforce is estimated to peak at approximately 800 FTE employees during the peak construction phase and will consist of a combination of local hires and non-local hires. To understand the potential (reasonable) worst case scenario for population change associated with the construction workforce, the following assumptions have been made:

- due to the temporary nature of the construction workforce, the families of any non-local hires will not relocate with the worker;
- the workforce may wish to temporarily reside as close as possible to the project, where a range of accommodation facilities and services are available (worst case), or may live within the region more broadly and drive-in and drive-out daily; and
- the majority of non-local workers would be accommodated in around the town of Mudgee due to the number and capacity of short-term accommodation establishments, private rentals and Airbnb properties. A considerably smaller proportion of non-local hires would be accommodated in Gulgong and Dunedoo commensurate with the size of the communities and capacity of short-term accommodation (Appendix A).

Potential temporary population changes have been assessed with reference to the following two scenarios:

- Scenario 1 (worst case scenario) – all workers (100%) are non-local hires and 95% (760 persons) are accommodated in the Mid-Western LGA and 5% (40 persons) in the Warrumbungle LGA (Table 7.3).
- Scenario 2 – 30% (240 workers) of the workforce are local hires and 70% (560 workers) are non-local hires. These non-local hires would be predominantly accommodated in the Mid-Western Regional LGA (Table 7.4).

These scenarios represent two possible outcomes based on the analysis of local labour availability (Section 5.4), noting that any noticeable project induced population change will be temporary and confined to the construction phase of the project.

Under scenario one, the projected temporary population increase across the Mid-Western Regional LGA is 3.0% (760 people) and 6.6% (720 people) in Mudgee.

Table 7.3 Predicted temporary population change – Scenario 1

Geographic area	Population size	Temporary workforce	Percentage (%) change
Mudgee	10,923	720	6.6%
Gulgong	2,521	40	1.6%
Mid-Western Regional LGA	25,158	760	3.0%
Dunedoo	1,221	40	3.3%
Warrumbungle LGA	9,187	40	0.4%
Total temporary workers		800	

Under scenario two the projected temporary population increase across the Mid-Western Regional LGA is 2.1% (540 people) and 4.7% (510 people) in Mudgee (Table 7.4).

Table 7.4 Predicted temporary population change – Scenario 2

Geographic area	Population size	Temporary workforce	Percentage (%) change
Mudgee	10,923	510	4.7%
Gulgong	2,521	30	2.9%
Mid-Western Regional LGA	25,158	540	2.1%
Dunedoo	1,221		
Warrumbungle LGA	9,187	20	0.2%
Total temporary workers		560	

Both scenarios suggest a temporary but sizeable increase in population in the two LGAs and communities, greater than average annual population growth rate between 2016 and 2021 (Appendix A). A population increase of this scale will be noticeable in the local area, particularly in the three key communities of Mudgee, Gulgong and Dunedoo.

The introduction of new groups of people to an area can halter existing values, sense of community and overall social cohesion. Whilst the communities of Mudgee and Gulgong are familiar with sudden and temporary increases in population and have demonstrated some resilience to induced changes, the findings of the SIA field study indicate these communities have experienced difficulties protecting their sense of community, identity and social cohesion during periods of increased temporary population. A review of literature, discussions with MWRC representatives and the findings of the SIA field study program identified a range of impacts experienced to date in the Mid-Western Regional LGA associated with an influx of temporary population, and which have affected the sense of community, identity, and cohesion. Experienced impacts include perceived changes in safety and security within townships, increased occurrence of antisocial behaviour in public places, overcrowded living conditions with streets heavily utilised by parked vehicles, prevalence of people sleeping in vehicles overnight in public areas, considerable increases in traffic on the local road network.

Without any social mitigation measures, the community impacts related to the temporary but sustained influx of non-local hires during construction (under either assessed scenario) is assessed as **high**. The likelihood of impact is assessed as **likely** due to the potential number of non-local hires. The negative consequences are anticipated to be **moderate**.

b **Inequitable distribution of benefits**

Some participants in the SIA field study program expressed concern regarding perceived rising tension in communities between landholders who benefit from project related revenue streams (ie host or associated landholders) and the community members who experience no tangible financial benefits but do experience more adverse temporary or permanent impacts.

Some participants in the SIA field study program noted the potential damage to interpersonal and neighbourly relations that could result due to the emergence of a ‘winners and losers’ effect, and as a result of the development of mistrust and speculation across the community. The findings of recent consultation to inform the scoping study for the nearby Tallawang Solar Farm (Umwelt 2021) indicates that experiences associated with other development projects in the region was seen to be a factor in creating this division – “projects like this can tear people apart”.

The potential impact to community social cohesion in the nearest communities of Dunedoo and Gulgong is assessed as **medium**. The likelihood of the project further exacerbating existing tensions in these communities is assessed as **possible** and the negative consequences are anticipated to be **minor**.

ii Mitigated

a Influx of workers

Any project induced population influx to the local area will be temporary in nature and associated with the construction phase of the project which is estimated to extend for a period of 24 months. ACEN is an Australian based company that develops, builds, owns and operates renewable energy projects as an Independent Power Producer. The project is the third renewable energy project ACEN is seeking to develop in the regional area. ACEN intends on playing an active community role in the regional area for the life cycle of these projects (ie planning, construction, operation and decommissioning). Hence ACEN has a vested interest in ensuring that their policies and their workforce contribute to the social fabric of the local area and deliver value to the communities. To this end ACEN intends to appoint a local based resource prior to the construction of their approved Stubbo Project to coordinate community and workforce engagement across all ACEN projects in the regional area. Key responsibilities of the role would be:

- community and workforce engagement and communications, including media;
- responding to community enquiries and complaints;
- event planning and participation;
- CBSP implementation; and
- local participation plan implementation.

Workforce engagement activities would be aligned with ACEN human resources policies and initiatives that promote positive workforce behaviours and participation in community activities.

Construction workforce behaviour will also be managed through the preparation and implementation of a construction workforce management plan (CWMP). This plan will describe the:

- local workforce numbers and geographic source;
- detailed strategy for accommodating all non-local hires during the construction phase including distribution of non-local workforce across key communities of the local area (ie Mudgee, Gulgong, Dunedoo);
- consultation mechanisms with Mid-Western Regional Council and Warrumbungle LGA, to avert pressure on local resources and ensure a reasonable approach to planning non-local workforce accommodation;
- consultation frameworks with short-term accommodation providers to ensure fairness, open communication, forward planning, and grievance mechanisms;
- plans for medical and other needs to ensure appropriate spread of workforce needs across all local resources and to avoid heavy pressure on a small number of local GPs;
- a Code of Conduct for the project's workers (particularly to avoid anti-social behaviour at peak construction times); and
- how the CWMP will be managed and audited.

A key aim of the CWMP will be to achieve the best mix of benefits for the local area without placing pressure on accommodation and other local services.

Taking into consideration the proposed approach to the community and workforce engagement described above and the content of the CWMP, it is **possible** that the influx of non-local workers to the local area will adversely impact community cohesion, however any potential impacts are anticipated to be **minor**. The potential impact is therefore assessed as a **medium** negative social impact.

b Inequitable distribution of benefits

ACEN acknowledges the concerns expressed regarding the inequitable distribution of project benefits and impact on community cohesion. ACEN recognises that project host landholders stand to benefit more directly in terms of financial revenue as a result of owning the land that is utilised for the project development footprint. ACEN is committed to a range of mitigation and management measures which are also aligned to ACEN's broader social performance.

Through various mechanisms including our Neighbour Benefit Sharing Program (NBSP), Stubbo SIP and proposed CW and Orana CBSP (described below and in Section 8.1), ACEN seeks to ensure that financial and non-financial benefits are distributed to the broader community and other local and regional stakeholders. ACEN aims to do so in a way that drives sustainability, community resilience to change and distributive equity.

Through the following programs, ACEN seeks to ensure that financial and non-financial benefits are distributed to the broader community and other local and regional stakeholders:

- development of a Local Participation Plan and Aboriginal Participation Plan that commits to procurement, employment and investment in job readiness targets for ACEN and its contracting partners;
- establishment of the ACEN CW and Orana CBSP. This CBSP seeks to enhance community benefit sharing across all ACEN solar projects in the CWO REZ by exploring initiatives that are linked to outcomes that meet community priorities identified in the SIA. For example, education and training outcomes for youth, community transport and connectivity, small business and enterprise capacity building, various community grants and scholarships in arts, sporting and culture. Further information regarding the CBSP is provided in Section 8.1);
- the ACEN Stubbo Project SIP (described in full in Section 8.1.1); and
- the NBSP for the project which has been set up so that the nearest neighbours who own eligible nearby properties neighbouring the solar project are also offered the opportunity to directly benefit financially from the project.

The broader community will also benefit from other community contribution requirements ie Section 7.12 levy rate and Voluntary Planning Agreement (VPA) as discussed in Section 8.1.4.

An adaptive management and monitoring framework that defines how ACEN will track, measure, respond and report on social performance commitments will also be implemented with key outcomes made accessible to the public to further increase levels of trust and awareness.

With the implementation of the social enhancement measures described above the potential impact for the project on community social cohesion in the nearest communities of Dunedoo and Gulgong is assessed as **low**. The likelihood of the project further exacerbating existing tensions in these communities is assessed as **unlikely** and the negative consequences are anticipated to be **minor**.

A summary of the assessment is provided in Table 7.5.

Table 7.5 Summary of community impacts related to social cohesion

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 COMMUNITY	Changes to the character and cohesion of communities in the local area due to an influx of temporary population.	Residents of the local area Service providers	Temporary	Local communities of Gulgong and Dunedoo, and to a lesser extent Mudgee.	High	Medium
 COMMUNITY	Changes in community cohesion due to the inequitable distribution of project benefits.	Residents of the local area	Permanent	Local communities of Gulgong and Dunedoo, and to a lesser extent Mudgee. Associated and non-associated landholders.	Medium	Low

7.2.3 Growth and economic development

i Unenhanced

Some participants in consultation expressed that the flow-on economic benefits arising from the project and the cumulative development of renewable energy projects in the Central West Region would create a range of opportunities within the local and regional area, including benefits to the economy from employment and spending on goods and services (ie accommodation), as well as improvements to infrastructure and services ie the local road network. Some stakeholders perceived that the project (together with other projects in the regional area) would stimulate further resident population growth with multiplier effects on employment, business and service opportunities.

The construction phase of the project will inject direct economic activity, including jobs and procurement spend, to the local economy, and indirect economic activity to the local and regional area via wage expenditure. Expenditure by employees who reside in the regional area, and non-labour expenditure that is captured by the local area, will also provide flow-on economic activity to the local economy.

The unenhanced community benefit related to growth and economic development has been assessed as **medium**. Pending the approval of the project, the likelihood of contributions to continued economic growth and development of the local area and the region has been rated as **almost certain**. The positive consequences are assessed to be **moderate** as the benefits are anticipated to be a noticeable improvement in existing economic conditions, however benefits would realise in the medium to long term and are not assumed to be permanent.

ii Enhanced

The operation of the project will provide direct and indirect economic benefits to the local area. ACEN will prioritise local hiring and local procurement (see Section 7.6.1) where feasible and where practical to enhance the potential direct economic benefits to employees and contractors, but to the local and regional areas through local spending. As the approval of the project is the social enhancement measure, the enhanced community benefit related to growth and economic development remains **medium**.

A summary of the assessment is provided in Table 7.6.

Table 7.6 Summary of community related to growth and economic development

Social impact	Issue	Affected parties	Duration	Extent	Unenhanced	Enhanced
 COMMUNITY	Growth and economic development	Residents of the local area and regional area	Construction and operation	Local area and regional area	Medium	Medium

7.3 Surroundings impacts

This section provides a detailed assessment, unmitigated and mitigated, on the project aspects that have the potential to materially change how people experience their surroundings. The particular matters considered include:

- changes in the visual landscape; and
- changes in ecological values and natural attributes.

7.3.1 Changes in the visual landscape

i Unmitigated

Changes to the visual landscape can invoke strong emotions in people who have an attachment to a particular vista and can affect how people experience their rural surroundings. The magnitude of any potential impact experienced by a stakeholder is influenced by a number of factors including a person’s attachment to the surrounds, proximity to the project and established vistas. Existing topography and vegetation can considerably reduce the severity of impact arising from changes to the visual landscape. Near neighbours, particularly those within immediate proximity to the study area are likely to experience the impact with greater severity than a resident located 10 km away who periodically uses the surrounding local road network and takes in the rural vistas.

Visual impacts are typically raised on comparable solar and wind projects across NSW, as evidenced by a review of the more recent projects (ie the *Stubbo Solar Farm EIS* (Ramboll 2020); *Stubbo Solar Farm Response to Submissions Report* (Ramboll, 2021); *Tallawang Solar Farm Scoping Report* (Umwelt, 2021), *Sandy Creek Solar Farm Scoping Report* (EMM 2022), and the assessment report prepared for the Dunedoo Solar Farm SSD 8847 (DPIE 2021)). Further, the visual impact associated with transmission line corridors in the CWO REZ was frequently raised during consultation undertaken by Transgrid (2021) to inform the CWO REZ Transmission Project and also during consultation to inform the revised study corridor for the REZ network infrastructure (EnergyCo 2022). Nationwide research undertaken by the Australian Renewable Energy Agency (ARENA n.d) around social licence to operate large scale solar facilities in Australia identified visual impacts as one of five main themes⁵ of importance to communities across Australia when thinking about large scale solar energy projects.

⁵ The other four themes identified were reliability and efficiency of large scale solar energy projects, environmental impacts of large scale solar energy projects, economic and employment impacts of large scale solar energy projects, health impacts of large scale solar energy projects.

An increase of built infrastructure and associated changes to the rural character of the landscape was viewed adversely by several participations in the SIA field study program. Two non-associated landholders expressed considerable concern regarding the potential impact of the project on rural vistas from their respective private properties. Other participants in the consultation program expressed some concern about the impact of the project on the broader and surrounding rural vistas. A number of participants questioned the extent to which the project would be visible from the Castlereagh Highway and surrounding local road network.

Some community members were concerned that vegetation and particularly mature trees may need to be removed to accommodate project infrastructure and that there was uncertainty around the decommissioning process and the ability to return the area to agricultural land.

ACEN has been engaging with several of the near neighbours since 2018, with the consultation effort being ramped up considerably in anticipation of the EIS since mid 2021 (as outlined in Table 7.1 of this report and Section 2.5 of the EIS). During this time the project design and development footprint has progressively evolved to minimise or avoid visual impacts, where possible (Section 7.1.2). These refinements have been instrumental in reducing potential visual impacts for near neighbours, particularly the closest neighbours, as discussed further below in this section.

Materials such as maps and photos were made available at the various community information sessions held by ACEN for the project and at the project office in Gulgong (Section 6.1) to inform landholder understanding of the scale of project infrastructure. ACEN representatives have provided explanations to landholders and interested persons of how the landscape will need to be changed and why the change is necessary. These actions have been instrumental in harnessing community support for the project.

A Visual Impact Assessment (VIA) (EMM 2022a) was undertaken by EMM as part of the EIS and results are presented in Appendix F and Chapter 6 of the EIS. The VIA assessed the potential visual impacts of the project at a number of representative viewpoints (including the residences to the study area – R3, R5, R7, R11, R12 and R13) surrounding the development footprint. The visual assessment determined that, of the viewpoints assessed, infrastructure may be visible to varying degrees from viewpoints assessed. Based on variable elevation and undulation in the landscape and the presence of vegetation, combined with the height of the solar arrays, the VIA predicts low visual impact from all assessed viewpoints except receptors R3, R7 and R12 (Figure 2.1) and the CWC Trail. These three viewpoints are assessed as moderate visual impact.

R5 is a residence located adjacent to the development footprint. To mitigate and minimise the visual impact on R5, the project design was refined to include at least a 300 m buffer between the residence and the development footprint. Discussions between ACEN and the owners of R5 led to further setback with no proposed PV arrays within lot 12 on DP 750755 east of the residence, with the intention to remove any visible PV arrays within approximately 1 km of R5, to the satisfaction of the neighbours. Ongoing discussions between ACEN and the owner of R5 are taking place to evaluate the need for screen planting near the residence, as recommended in the VIA.

Landscape screening is also proposed to further mitigate visual impacts at the following locations (as shown in Figure 3.1 in this report and Figure 6.1 of VIA):

- screen planting approximately 800 m long along the development footprint boundary at the north-west corner of the study area adjacent to Birriwa Bus Route North, R1 and R1a;
- tree planting along the northern side of Birriwa Bus Route South (along the CWC trail) from Viewpoint 3 extending approximately 1 km; and
- screen planting along the development footprint boundary at R3, comprising approximately 350 m of screening along the boundary.

Consultation will also continue with other identified residences to discuss appropriate measures (ie landscape screening) near these residences to limit views of project infrastructure while preserving views. Additional mitigation measures such as screen planting within properties may be considered in a separate agreement with landholders at R5, R7, R11 and R12.

The VIA concluded mitigation measures incorporated into the design process in conjunction with landscape and visual screening will have a positive effect on reducing the project's visual impact. Once decommissioned, the visual landscape has the capacity to return to its current state. The proposed development could be undertaken whilst maintaining the core landscape character of the area and have a minimal visual impact on the surrounding visual landscape.

The VIA also considered the visual impact of the project from the surrounding road network. The Castlereagh Highway runs 1.4 km east of the project and the Golden Highway runs east to west, some 4 km north of the project with limited opportunity for views of the project. The VIA concluded that the project is unlikely to affect the journey experience of road users.

In addition to each of the visual impact assessment stages, the project refinement process has also responded to identified potential visual impacts from the project. Subsequently, consideration of the effect of project refinement on potential for visual impacts to be experienced by two residents, a buffer has been established between the residence and the development, with the potential to establish screen planting along the roadway and boundaries

Without any social mitigation measures, and considering near neighbours, the impact to surrounds from changes in the visual landscape is assessed as **high**. The likelihood of impact is assessed as **almost certain** and the negative consequences are anticipated to be **moderate**.

Without any social mitigation measures and considering other users of the local road network and people with attachment to the location, the surroundings impacts related to the changes in the visual landscape is assessed as **low**. The likelihood of impact is assessed as **possible** and the negative consequences are anticipated to be **minimal**.

ii Mitigated

As described above, the project design has been refined to minimise the potential for visual amenity impacts at R5, adjacent to the study area. The VIA (EMM 2022a) also recommends landscape screening in three sections of the development footprint to provide screening to R3, R1, R1a and sections of Birriwa Bus Route North and Birriwa Bus Route South, including the CWC trail (Figure 3.1) to further mitigate visual impacts, with screening designed in consultation with the respective landowners.

To further reduce the potential impacts arising from changes in the visual landscape, ACEN will:

- minimise the use of security lighting to the extent possible to achieve a safe and secure environment;
- continue to include project refinement on general measures to minimise the degree of contrast between project infrastructure and the surrounding rural landscape; and
- use planting as a visual screen where practical is a beneficial mitigation measure used to reduce the visibility of project infrastructure from a specific vantage points.

With the above-mentioned mitigation measures in place, it is still likely that a small number of landholders would experience some residual visual impacts during the life of the project.

ACEN will offer receptors R3 and R5 an opportunity to enter the ACEN NBSP. The ACEN NBSP for the project seeks to provide a direct benefit to eligible properties, build trusting and long-term relationships. This is separate to the compensatory agreements with host landholders. While this scheme has primarily been met with positive feedback, some beneficiaries of the scheme still felt that it may not compensate for the impact to their surroundings and how they experienced their rural environment.

Considering the outcomes of both the technical assessment and the additional recommendations described above, it is assessed that the project induced changes to the visual landscape will have a:

- **medium** mitigated social impact on surroundings as experienced by nearby residents; and
- **low** mitigated social impact on surroundings as experienced by the broader community and users of the local road network.

A summary of the assessment is provided in Table 7.7.

Table 7.7 Summary of impacts to surrounds due to changes in visual landscape

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 SURROUNDINGS	Changes to the visual landscape affecting how people experience their rural surroundings.	Near neighbours.	Life of project	Localised	High	Medium
		Other users of the local road network and people with attachment to the location.	Life of project	Localised	Low	Low

7.3.2 Changes in ecological values and the quality of natural assets

i Unmitigated

During consultation a small number of participants expressed concern in relation to how the project may change the natural environment and effect existing ecological values which in turn could impact how individuals experience their surrounds. Questions were asked by a few landholders regarding management of surface water runoff and erosion, also biosecurity issues (ie introduction of invasive weeds). One landholder expressed concern regarding potential impacts to waterways in the local area. Some concerns associated with the environment related to possible unforeseen negative impacts that would not necessarily be realised for some time in the future by which stage it would be too late. For example, concern was raised regarding the potential for ground contamination from surface runoff from the solar panels.

The EIS has assessed the potential impacts of the project on the natural environment. The biodiversity values of the study area are described in the *Birriwa Solar and Battery Project Biodiversity Development Assessment Report* (EMM 2022c). Management of surface water impacts is described in Chapter 6.2 of the EIS.

The study area reflects regional vegetation mapping with areas dominated by exotic vegetation and native pasture. All vegetation within the study area has been impacted by past land use, particularly with ongoing grazing, with the grasslands supporting little native species cover and a lack of native species diversity. Remnant vegetation is restricted to small patches, isolated paddock trees and a vegetated road corridor consisting primarily of Grey Box (*Eucalyptus microcarpa*), Blakely's Red Gum (*Eucalyptus blakelyi*) and Yellow Box (*Eucalyptus melliodora*) (EMM 2022c).

Potential changes in surroundings due to the combined effect of any project induced changes in ecological values and the quality of natural assets will be experienced primarily by near neighbours to the project, including neighbours proximate to the road upgrade corridor. Without any social mitigation measures, the social impact of changes in ecological values and quality of natural assets is assessed as **medium**. The likelihood of impact is assessed as **possible**, which reflects the application of the precautionary principle. The negative consequences are anticipated to be **minor** for the following reasons:

- works within the road upgrade corridor and development footprint have been designed to minimise requirement for vegetation clearing, where possible;
- exclusion of as many high order streams from the development footprint, as possible. Three third order streams, located within the development footprint are restricted development areas, where impact will be avoided, thereby avoiding impacts to any associated riparian vegetation, with the exception of that required for crossings;
- road upgrades proposed for the project, including the proposed public road crossings will improve surface water flows and erosion control due to the installation of new infrastructure and road surface treatments;
- the adoption of appropriate ground disturbances minimisation and management measures for the project include erosion and sediment controls to address identified erosion and sedimentation impacts;
- the location of project infrastructure has been designed to utilise the existing topography where practicable, to avoid land reshaping during the construction phase and rehabilitation phase as far as possible, and to minimise land disturbance and the alteration of drainage patterns; and
- initial earthworks and major land disturbing activities to avoid high rainfall erosivity period where practical to minimise erosion.

ii **Mitigated**

A construction environmental management plan (CEMP) and an operations environmental management plan (OEMP) will be prepared for the project as part of the project mitigation measures (Appendix D of the EIS). The CEMP will document the measures to avoid and minimise direct and indirect impacts to ecological values and natural assets.

With the additional mitigation measures described above, the social impact of changes in ecological values and quality of natural assets is assessed as **low**. A summary of the assessment is presented in Table 7.8.

Table 7.8 Summary of impacts to surrounds due to changes in ecological values

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 <p>SURROUNDINGS</p>	Impact to surroundings from changes in ecological values and natural assets.	Associated and non-associated landholders. Broader community. People with attachment to the locality. Environmental groups and organisations.	Permanent for life of project	Within the development footprint	Medium	Low

7.4 Way of life impacts

This section presents an assessment, unmitigated and mitigated, of the potential project impacts on way of life. Way of life is defined as how people work, play and interact with each other on a daily basis. Key matters that may affect way of life, and considered in this assessment include:

- changes in social amenity resulting from project construction activities (ie noise);
- changes in social amenity resulting from project operation;
- personal disadvantage related to access to affordable housing; and
- intergenerational equity.

7.4.1 Social amenity – construction phase

Participants in the SIA field study program cited concerns regarding potential decline in social amenity due to the impact of construction activities such as noise from traffic movements, noise and vibration from construction activities and intrusion of security lighting. These issues are considered separately below.

i Unmitigated

a Noise and vibration

The SIA field study indicated that near neighbours highly value the “rural feel” of their community, with SIA interview participants describing the “quiet and peaceful” nature of the community. Some SIA field study participants raised concerns that noise from construction activities (ie on site installation of infrastructure, and construction vehicle movements on the local road network) would detract from the existing rural amenity and may become a nuisance.

An assessment of the potential noise and vibration impacts associated with the construction and operations phase of the project has considered noise predictions traffic on local roads and all construction activities. Vibration predictions have also been established for construction activities.

A noise and vibration impact assessment (NVIA) (EMM 2022d) (EIS Appendix J) has been prepared for the project. Maximum construction noise and vibration impacts are expected to occur during the site establishment phase. Predictions based on proposed construction methodology indicate that construction works will comply with noise management levels under the relevant regulatory guidelines by incorporating an exclusion zone during Saturday afternoons (1.00 pm–6.00 pm) for site establishment works within 650 metres of non-associated residences, and a construction exclusion zone of 300 m from non-associated residences during infrastructure delivery and installation. Based on setback distances from proposed works, construction vibration impacts are considered negligible.

The road traffic noise impact assessment as part of the NVIA (EMM 2022d) (EIS Appendix J) considered the noise impacts of the proposed increase in daily truck movements along the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. During peak construction, increases in road traffic noise will occur along these roads. Assessed road traffic noise levels indicate increases of between 2 dB and 4 dB at several residences, however, the predicted levels are below the thresholds provided under the relevant road traffic noise criteria. There are no non-associated residences within 450 m of the segments of Birriwa Bus Route South and Barneys Reef Road that will be used by project related vehicles to access the development footprint.

Further detail in relation to the NVIA is provided in Chapter 6 of the EIS.

In relation to social impact, it is acknowledged that while noise and vibration are estimated to be within the relevant criteria, noise during construction may be audible to certain landholders and therefore may still impact their sense of social amenity. This is particularly the case for some community member who value the 'quiet' nature of the area.

Potential for sleep disturbance from construction activities is discussed in Section 7.5.1i.

b Lighting

Night-time construction activities are not proposed. Lighting proposed during construction will be for security and maintenance purposes. Lighting will primarily occur at the site of the temporary laydown area to be located near the proposed access point to the site.

c Air quality

Construction activities, principally earthworks can give rise to temporary changes in air quality which has the potential to reduce social amenity. Potential air quality issues were not raised by participants during the SIA field study program; however air quality issues have been expressed during consultation for similar projects in the regional area.

The site selection and design process has reduced the need for heavy earthworks as much as practicable by using flatter areas of land already cleared of vegetation for infrastructure placement. It is anticipated that some cutting and filling may be required in undulating areas within the development footprint; however, this will be avoided where practicable. Limiting the amount of heavy earthworks within the development footprint will reduce the amount of dust generated by construction activities.

Mitigation measures detailed in Section 6.15 of the EIS will limit potential dust generation from project-related construction activities and are likely to include speed reduction along unsealed roads, use of water trucks for dust suppression and regular maintenance of unsealed road surfaces.

In summary, potential changes in social amenity due to the combined effect of construction noise and vibration, earthworks and site lighting will be experienced primarily by near neighbours to the project, including neighbours proximate to the access route. These impacts will be temporary in nature and confined to the construction phase. Without any social mitigation measures, the social amenity impact related to construction activities is assessed as **medium**. The likelihood of impact is assessed as **almost certain** due to the proximity of some neighbours to the project. The negative consequences are anticipated to be **minor** for the following reasons:

- noise and vibration levels, including road traffic noise levels are predicted to satisfy the relevant noise criteria at the nearest potentially affected residences;
- the use of site lighting will be minimal and likely confined to operational infrastructure areas;
- the current hours of operation provide a respite period from Saturday evening to Monday morning; and
- impacts will be temporary and confined to the construction stage, although it is acknowledged it will extend for 24 months.

ii Mitigated

The primary mitigation for social amenity impacts is ACEN's complaints and grievance procedure (which includes a dedicated project phone number and project email), which provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback. The complaints and grievances mechanism will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN response.

The implementation of the complaints and grievances procedure does not change the likelihood or magnitude of the potential impact to social amenity, it does however seek to ensure concerns are formally acknowledged and responded to in a timely manner. The mitigated social impact remains **medium**.

A summary of the assessment is provided in Table 7.9.

Table 7.9 Summary of social amenity impacts - construction

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIFESTYLE	Changes in social amenity due to combined effects of traffic, noise from construction activities and lighting.	Near-neighbours, particularly those with residences closest to the local road network and the battery site.	Construction (temporary and medium-term)	Immediate surrounds of study area	Medium	Medium

7.4.2 Social amenity – operations phase

Participants in the SIA field study program also cited concerns regarding potential for a decline in social amenity due to the impact of project operations and in particular noise generated by the BESS.

i Unmitigated

a Nuisance noise

Operational noise associated with the project will principally be from fixed plant and equipment including tracker motors, battery cubicles, inverters, LV/HV transformers and HV transformers. Operational noise has the potential to impact existing social amenity for near neighbours. During the SIA field study some near neighbours identified noise related to the battery operation as a potential negative impact of the operations phase of the project and raised concern that the noise may become a nuisance or daily annoyance.

The EIS has considered two options for the location of the BESS and associated operational infrastructure areas. Option A is located approximately 150 m west from one associated residence (A6) who is a host landholder and currently has a landholder agreement with ACEN for the project. Receptor A6 is rarely occupied. Option 2 is located at the far eastern end of the study area and approximately 195 m from an associated residence (A4) who is also a host landholder and currently has a landholder agreement with ACEN. Receptor A4 is currently unoccupied, but the landholder intends not retain the dwelling for possible use by family in the future if required.

The NVIA assessment of operational noise considered different scenarios, based on two different BESS designs (ie a containerised solution for battery racks or outdoor racks) at two proposed operational infrastructure areas. Four scenarios assessed operational noise levels undertaken for day, evening and night periods with noise compliance predicted for all near landholders with additional mitigation measures included in modelling including; no electrical infrastructure (ie transformers or inverters) to be installed within 250 metres of the property boundary of R3; no electrical infrastructure installed within 250 metres of R5; and the 1,200 MVA grid transformer, located within the BESS, to be installed with a 6.5 metre high barrier, positioned to reduce noise impacts on nearby neighbours. In addition, the NVIA acknowledges that conservative assumptions were made about emissions that will likely result in actual noise levels being lower than the predicted values presented in the assessment. Mitigation measures as outlined above may not be required to achieve compliance when more information is available (eg during detailed design). The NVIA therefore recommends that additional noise modelling be completed during detailed design to refine required mitigation and confirm compliance with the noise police for industry (NPfI).

b Lighting

The impact of night lighting is described in Chapter 6.3 of the EIS and the VIA (EMM 2022a) (Appendix G of the EIS). The project will require limited permanent night lighting, primarily for security and maintenance purposes. Lighting will be confined to the operational infrastructure areas (ie the BESS location and the main compound). Temporary, localised night lighting may be required during general maintenance activities conducted during ongoing operations. If required, lighting will be managed to minimise impacts on surrounding areas (including neighbouring residences).

All external lighting will be installed as low intensity lighting (except where required for safety or emergency purposes) and will comply with *Australian Standard AS 4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*. In addition, the project sits within the Dark Sky Region surrounding the Siding Spring Observatory and developments within this area are required to apply good lighting design principles that eliminate light spill including all external lighting will not shine above the horizontal, it will be inwardly focused and shielded.

c Reflectivity

Glint, which is a momentary flash of light, and glare, which is continuous, excessive brightness, can affect people and land uses in close proximity to solar energy development including residents in nearby dwellings, road users and airports (NSW Government 2021b). Solar cells are designed to absorb light energy to create electrical currents. As such, they will only reflect a portion of the sunlight that falls on them.

Potential reflectivity of PV modules and other project infrastructure is described in Chapter 6.3 and Appendix F of the EIS. PV modules are designed to absorb the greatest amount of light possible, which means they only reflect a small amount of sunlight. Generally, the light reflected is diminished by first hitting the substrate that reflected it. Typical treated glass that is used for solar cells reflects about 4% of the light that hits the cell. This is equivalent to a water body (pond or lake), which is considered to be a fairly low amount of reflection.

The PV modules within the development footprint will also move throughout the day to maximise the sunlight they receive. This means that any locations from which reflected light is visible will only be affected for a short duration each day. The tracking system will not allow the solar panels to exceed 60° from the horizon line. As a result, reflections will be directed upward and away from any ground-based viewers. Geometrically, the lowest angle of reflection will be 30° above the horizon line.

Given the parameters of reflection and the movement of the solar panels, there are no locations surrounding the site where glint or glare are geometrically possible. Together with the limited use of reflective elements in the design of the BESS and associated structures, glint and glare from the project infrastructure is not expected to significantly impact the following:

- receptors within the vicinity of the development area;
- people engaged in agricultural activities in the surrounding landscape;
- motorists and cyclists travelling along the local road network;
- motorists travelling along a number of minor, unsealed rural property access roads and farm tracks; and
- aircraft arriving at or departing from local airfields.

In summary, potential changes in social amenity due to the combined effect of noise from the operation of the BESS, site lighting and reflectivity will be experienced primarily by neighbours closest to the study area, and in particular by neighbours proximate to the BESS. The greatest contribution to social amenity impacts will come from the BESS and associated noise emissions. Without any social mitigation measures, the social amenity impact related to operational activities is assessed as **medium**. The likelihood of impact is assessed as possible due to the proximity of some neighbours to the study area. The negative consequences are anticipated to be **moderate**. The operation of the BESS has the potential to impact existing social amenity for near neighbours due to high levels of uncertainty in the technology proposed for the project. Further, a number of highly conservative assumptions have been made in the noise modelling.

ii Mitigated

The primary social mitigation measures are:

- landholder agreements;
- the ACEN NBSP; and
- ACEN 's complaints and grievances procedure as discussed above.

The two landholders in closest proximity to the BESS sites are associated residences. Associated residences include dwellings whose owners have parts of their properties included in a land agreement with ACEN.

Two locations were considered for the BESS and associated operational infrastructure area, but only one of the two location options will be implemented. It is recommended that additional noise modelling be completed during detailed design to refine required mitigation and confirm compliance with the NPFI once the preferred BESS location is confirmed.

The only lighting proposed are for security and maintenance purposes and this will primarily occur at the BESS compounds/buildings and all night lighting would be inwardly focused and shielded so it does not result in light spill impacts to neighbouring properties or the dark sky requirements.

The implementation of the complaints and grievances procedure does not change the likelihood or magnitude of the potential impact to social amenity, it does however seek to ensure concerns are formally acknowledged and responded to in a timely manner. The mitigated social impact remains **medium**.

A summary of the assessment is provided in Table 7.10.

Table 7.10 Summary of social amenity impacts - operations

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIFESTYLE	Impacts to social amenity from BESS operation	Near-neighbours to the battery site	Operations (long term)	Immediate surrounds of the battery site	Medium	Medium

7.4.3 Personal disadvantage related to access to affordable housing

i Unmitigated impact

Access to housing is a fundamental human need that impacts significantly on personal and family wellbeing. As described in the social baseline (Appendix A) housing is a critical issue in the local and regional area, with direct and indirect impacts likely if the project leads to a shortage in housing availability, or a decrease in affordability. This is particularly relevant to regional towns such as Gulgong, Dunedoo and Mudgee where there are more limited alternatives available should a person or family find themselves priced out of the housing market.

Interpretations of project impacts on the housing market (ie availability and affordability) are complex and depend on each person’s situation. For some stakeholders (ie existing homeowners or investment property owners), housing market impacts such as increased property prices is considered a positive impact. For other stakeholders such as renters or purchasers increased property prices or increased weekly rents is considered a negative impact.

Housing resources within the local area are concentrated principally in the centres of Mudgee, Gulgong and Dunedoo, of which Mudgee provides the largest share of housing resources. Within the broader area of reference, additional and significant housing resources are located in the regional city of Dubbo.

Analysis of housing affordability trends in the local and regional area (Section 5.5) shows:

- a trend of increasing residential property prices and increasing demand from buyers;
- decreasing housing affordability; and
- low rental vacancy rates with a corresponding limited supply of available rental properties.

Consultation with local real estate agents and social housing providers revealed an extremely limited availability of private rental properties in the regional area. Searches on realestate.com.au during late 2021 and again in May 2022 reflected these observations, with 48 properties available for rent in the local area in May 2022, or which the majority were located in Mudgee.

Consultation participants noted that the region has seen a great increase in demand for rental and market properties in the past two years, largely as a consequence of the COVID-19 pandemic with increasing number of people choosing to relocate to less-urban locations, as well as the recent construction of the Mudgee Hospital, Wellington Solar Farm and the earlier Beryl Solar Farm. As such, there is very limited availability of long-term rental accommodation options. Issues can arise from housing renewable energy construction workforces which can place demand on the housing market and availability (Walker & Swift 2015). Experienced impacts cited by real-participants in consultation included overcrowding in rental properties as temporary workforces sought to reduce accommodation costs, displacement of low-income households from rental accommodation due to increasing rental prices, unmet demand for emergency or crisis accommodation due to limited accessibility to affordable emergency accommodation options, and anecdotal evidence of a rise in illegal living conditions across the local area.

If local rental accommodation is inundated with additional demand to service the Project's workforce, this will likely cause increased housing scarcity and a further decrease in rental affordability. A further decrease in rental affordability and availability would likely impact residents who are already vulnerable and may not have the flexibility and resources to find alternative housing. One community support service recognised this, expressing that an increased demand for local rental properties due to an influx of workers could significantly impact vulnerable members of the community such as homeless people and welfare recipients. Furthermore, consultation with real estate agents in the local area highlighted that the increase in properties being purchased for the purpose of holiday homes or Airbnb operations was influencing the number of tenants being evicted from their homes and the overall supply of private rental properties in the local area. This increase in individuals looking for replacement accommodation contributed to the strained availability of rentals in the local area. If additional pressure is put on the rental market, those who are left without accommodation may be at risk of homelessness in some extreme cases.

The project will attract a sizeable temporary population (estimated at up 800 workers) to the regional area during the construction phase, with limited population change anticipated during operations. Given these project characteristics, this assessment considers the impact of the project construction phase on access to housing for renters, specifically low-income households and vulnerable households.

Unmitigated, the potential impact to way of life from the additional pressure on the local rental market is assessed as **very high**. Assuming a worst-case scenario (ie 800 temporary workers and no mitigation measures in place), the likelihood of impact is **almost certain**. If rental prices are increased as the project workforce utilises rental housing in the local area and tenants are evicted or unable to afford rental costs, vulnerable residents who are living in locations such as Mudgee, Gulgong and Dunedoo may have to relocate to areas with fewer opportunities and services to afford rentals and housing. **Major** consequences could arise from this impact due to the forcing of vulnerable members of the community from their current homes. If the inflation of the rental market remains after the construction phase of the project, the impacts on livelihood and liveability could survive throughout the long after the life of the project or be permanent.

ii Mitigated impact

Currently, rental and market housing within communities of the local area cannot adequately support the influx of the project's construction workforce. An effective mitigation approach to negatively impacting the capacity and availability of the local rental market is to:

- prioritise other forms of workforce accommodation during the construction phase of the project;
- increase the extent of the geographic area for local hires and workforce accommodation;
- maximise local workforce participation; and.
- progress industry engagement in relation to management of cumulative impacts.

a Prioritise other forms of accommodation

Potential alternative accommodation options include short-term tourist accommodation (noting there are also capacity issues in the short-term accommodation market as discussed in Section 5.5), Airbnb accommodation (there are more than 500 active Airbnb rentals in the Mid-Western Regional LGA), demountable/towable buildings and cabins or a temporary workforce accommodation village.

The use of these accommodation types would avoid placing additional strain on the local property market. Furthermore, demountable housing units that are easily towable and registrable and can be moved to local towns such as Gulgong and Dunedoo where rental accommodation is particularly limited are ideal for short term or longer social housing options.

ACEN is currently seeking approval for the Valley of the Winds project in the Warrumbungle LGA. This project currently includes the provision of a 400-bed temporary workforce accommodation village for the construction phase of the Valley of the Winds project. If approved, the accommodation village would be located within commute distance of the project. There may be an opportunity for the project workforce to utilise the accommodation village depending on the timing of the Valley of the Winds construction phase.

Ulan Village Green is a permanent workforce accommodation village located at Ulan that services the local area. Consultation with the operators of Ulan Village Green has identified the potential for the development of additional capacity at the village. ACEN will engage further with the operators of Ulan Village Green to explore the development potential further.

b Increase the extent of the geographic area for local hires and workforce accommodation

It is recommended that ACEN expand the potential project workforce accommodation service area to include nearby Dubbo Regional LGA. The city of Dubbo is located approximately 100 km or a one-hour drive from the project and is on the edge of a daily acceptable commute distance for the project workforce. The Dubbo LGA has a more diverse range of employment and training services than the regional area. Dubbo Regional LGA also has a considerably larger labour force and unemployed labour pool than the regional area.

Compared to the local and regional areas, Dubbo LGA also has a greater supply of private rental accommodation and slightly higher vacancy rates meaning slightly more rental properties are available at any one time (ie according to realestate.com.au in May 2022 there were 77 rental properties available in Dubbo postcode 2830). It must however be acknowledged that similar to the local and regional areas, disadvantaged households in Dubbo LGA experience similar issues with accessing affordable housing. The larger housing market in Dubbo LGA means the LGA can likely absorb a share of the project accommodation demand. Dubbo city has a greater supply of short-term accommodation than the regional area, although it still experiences high occupancy rates. The provision of a daily bus service between Dubbo and the project for the construction workforce would assist ACEN to harness both the accommodation capacity and the labour pool in the Dubbo Regional LGA. More than likely this would reduce the project generated demand for short-term accommodation in the regional area.

Adopting a hierarchical approach to local labour hire that prioritises firstly the local and regional areas and secondly Dubbo LGA would reduce the predicted project accommodation demands in the local and regional area, but still ensure these areas do not miss out on employment opportunities or the supply chain benefits. Adopting a similar hierarchical approach to workforce accommodation coupled with the provision of a bus service between Dubbo city and the project for construction workers would considerably reduce overall accommodation demands in the local and regional areas.

c Maximise the number of local hires

Local workforce availability and opportunities to enhance local workforce participation are discussed in Section 7.6.1. No further discussion is required.

d Industry engagement

At the time of finalisation of this EIS, ACEN's Birriwa Solar and Battery project, as well as other generation projects in the region, had recently been shortlisted as Candidate Foundation Generators (CFGs). EnergyCo has offered to work collaboratively with CFGs to provide certainty around assumptions and manage whole-of-REZ issues such as workforce logistics and workforce accommodation. On-going discussions commenced between EnergyCo and CFGs at the end of June 2022 and are expected to continue following lodgement of this EIS.

With the implementation of the mitigation measures described above, the impact to way of life from the additional pressure on the local rental market is assessed as **medium**. The likelihood of negative impact is **possible** with anticipated **moderate** consequences for the local community.

A summary of the assessment is provided in Table 7.11.

Table 7.11 Summary of impacts related to access to affordable housing

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIFESTYLE	Access to affordable housing.	Homeless and at risk of homelessness. Low-income households.	Construction	Mid-Western LGA	High	Medium

7.4.4 Intergenerational equity considerations

Intergenerational equity refers to addressing the needs of the present generation without compromising the ability of future generations to meet their own needs (IAIA 2003). For this assessment, issues that have emerged relating to intergenerational equity include impacts relating to future land use, climate change, renewable energy as a reliable energy source and the potential future opportunities associated with the investment in infrastructure and technologies.

i Unenhanced

Participants in SIA engagement and broader project engagement frequently noted the benefits of the project for climate change.

Development of renewable energy projects aligns with both Federal and NSW commitments to increase renewable energy generation and reduce carbon emissions across the NSW and Australian economies. The project will provide long-term, strategic benefits to the state of NSW, including:

- renewable energy supply to assist with fulfilling the current obligations under state and federal renewable energy targets;
- providing for cleaner reliable electricity generation, assisting with meeting current load demand while reducing greenhouse gas emissions and the impacts of climate change; and
- providing regional investment in the NSW renewable energy sector.

Two associated landholders expressed some concern regarding the long-term approach to waste management, the disposal of project components, particularly the battery parts, and opportunities for recycling of componentry.

It is a requirement of the project SEARs that the EIS clearly describe the disposal and ‘end of life’ strategy for the project. Information regarding waste management (including site decommissioning) is presented in Chapter 6.15 of the EIS.

Unenhanced the benefits of the project for intergenerational equity are considered **high**. If approved, it is **almost certain** that the project will contribute towards improved intergenerational equity with **moderate** benefits.

ii **Enhanced**

ACEN is currently investigating companies that recycle large scale solar units, both in Australia and overseas. ACEN is monitoring the outcomes of the NSW EPA Circular solar program. In 2020 the DPIE commissioned a scoping study to assist in development of the NSW Environment Protection Authority’s (EPA) end of life solar program. In 2021 the NSW Government created a \$10 million fund (the Circular solar grants program) to reduce landfilling of solar panels and battery systems. This investment is intended to future-proof the management of this growing waste stream and help NSW transition to renewable energy sources within a circular economy. The Circular solar grant program supports collaborative ‘whole-of-supply chain’ projects that trial managing end-of-life solar panels and/or battery systems within a circular economy framework.

A decommissioning and rehabilitation plan will be required for the project as a condition of consent. At the time of decommissioning:

- key stakeholders (ie associated and non-associated landholders) would be consulted regarding the decommissioning and rehabilitation plan;
- all above ground structures not required for the ongoing agricultural use of the land will be removed (some access tracks, for example, may be required to be retained by the landholder to enable ongoing access). The panels, hardstands and battery station will be removed and land rehabilitated so that it can be returned to full agricultural use; and
- below ground infrastructure, including some cabling will be left in situ and covered in clean fill material, with the area adequately graded to reflect the slope of the surrounding area and to mitigate the risk of soil erosion.

It is anticipated that during the decommissioning and rehabilitation phase, the development footprint will be rehabilitated and returned, as far as practicable, to its condition prior to the commencement of construction. ACEN has entered into long-term lease agreements with the associated landholders for the construction and operation of the project. The terms of these agreements make express provision for ACEN decommissioning obligations.

As the approval of the project is for the most part the enhancement measure, the enhanced way of life benefit related to intergenerational equity considerations remains **high**.

A summary of the assessment is presented in Table 7.12.

Table 7.12 Summary of impacts related to intergenerational equity

Social impact	Matter	Affected parties	Duration	Extent	Unenhanced	Enhanced
	Intergenerational equity considerations	Broader society	Project life	Beyond the regional area	High	High

7.5 Accessibility impacts

This section provides a detailed assessment of the unmitigated and mitigated accessibility impacts and the matters arising from the project that significantly impact accessibility. The matters assessed include:

- access to short-term accommodation; and
- access to and demand for community infrastructure and services.

7.5.1 Access to short-term accommodation

i Unmitigated

Short-term accommodation is accommodation that is typically provided to visitors or tenants for a short period of time: for example, hotels and motels, serviced apartments, bed and breakfast accommodation, Airbnb rentals, caravan and camping. The length of tenancy in these forms of accommodation can often extend to lengthy stays, depending on accommodation availability, price and personal circumstances.

Ready access to short-term accommodation is critical for the successful operation of many industry sectors ie mining, tourism and the health and social assistance sector. A shift towards regional patterns of service delivery means many industry sectors such as the health care and social assistance sector require short-term accommodation for visiting specialists. Further, in some cases short-term accommodation is also utilised by support agencies for temporarily housing vulnerable individuals or households (ie victims of domestic violence).

It is evident from SIA consultation that the industry sectors of tourism, mining, construction and energy currently place significant and fluctuating demands on short-term accommodation within the local and regional area. Participants in SIA consultation highlighted numerous examples of when the demands from one industry sector for short-term accommodation resulted in impacts on other industry sectors as well as the broader community ie vulnerable households. Cited examples include major mining projects, public infrastructure projects, renewable energy projects and significant regional events.

Tourism is a strong and growing sector in the Mid-Western LGA. The region is known for having the capacity to host large regional events and accommodate their crowds. There are many regional events throughout the year that place significant demand on short-term accommodation in the local and regional area. Both the number of events and patronage is increasing as evident in trends in visitor numbers to the local area. Anecdotal evidence from SIA interviews also suggests a significant increase in the number of Airbnb properties across the Mid-Western Regional LGA to cater for the rise in tourism visitors (Section 5.5).

Within the mining industry, new mining projects, scheduled maintenance shutdowns and the construction works for mine expansion or modifications can generate significant demand for short-term accommodation as the required workforce is often highly specialised and drawn from outside the local or regional area. Major projects such as the construction of renewable energy projects or public infrastructure ie Mudgee Hospital upgrade can also generate significant demand for short-term accommodation, particular when these projects are associated with large workforces.

The project has an estimated peak construction workforce of 800 FTE workers. Project planning indicates that at any one time, approximately 70% of the workforce would be NLHs requiring a bed in short-term accommodation in the local area. At peak construction this equates to approximately 560 workers for an estimated period of 12 months.

Based on a regional accommodation study conducted in 2016 (Hansen Bailey, 2016), data from recent EIS completed for projects in the regional area (NGH Pty Ltd 2020), and the findings of SIA consultation the supply of short-term accommodation rooms in the Mid-Western Regional LGA and Dunedoo in the Warrumbungle LGA is estimated at approximately 3,200 rooms of short-stay accommodation, with an average occupancy rate of over 80% (Section 5.5.2). This suggests there are in the order of 640 rooms of potentially available short-stay accommodation proximate to the project. However, many of these rooms are unlikely to be appropriate for the purpose of housing the project's workforce due to a range of factors including proximity, interest, size, amenities, and quality.

A recurring issue raised during consultation with short-term accommodation providers was the inability for many accommodation providers to commit to long-term bookings over the 24-month construction period due to recurring bookings from visitors to the region. The popularity of the Mid-Western Regional LGA, and in particular Mudgee as a local tourist destination as well as the success of various yearly events that are held in Mudgee, Gulgong and surrounding towns – such as the Mudgee Wine and Food Festival, the Henry Lawson Festival in Gulgong and local agricultural shows – and throughout the region relies on the capacity in the regional area to accommodate tourists. The Mid-Western Regional LGA has developed as a 365-day destination for tourists. Accommodation establishments experience relatively sustained high occupancy rates and are often completely booked out during key regional events, and busy periods of the year and weekends leading to bookings up to a year in advance to cater for frequent attendees of annual events. If the remaining tourist accommodation is fully inundated with project related bookings, and there is a lack of available accommodation for other visitors, there may be associated economic and social impacts such as a decrease in local business, tourism and attendance to events and festivals affecting other industry sectors (refer Section 5.5).

During the SIA field study program, some short-term accommodation operators also referred to the presence of long-term guaranteed annual or regular customers as valuable and imperative to the continued economic viability of the tourism industry. If these customers are unable to find accommodation during the project's construction phase, they may not return to the same establishments after the project is completed, requiring these businesses to invest additional resources (such as advertising) to re-build their presence and customer base following project construction. Furthermore, reducing the capacity of local tourist accommodation without increasing the supply of accommodation could put additional pressure on the market, resulting in increased accommodation prices throughout the regional area which could deter tourists from purchasing accommodation and ultimately attending events and visiting the region. Subsequently, this could affect tourist spending within the regional area and would leave accommodation providers with long term negative impacts following the cessation of project-related business.

Despite the staging of workforce numbers, the project will generate a greater demand for short-term accommodation than can reasonably be met by the supply in the local and regional area. Unmitigated this will have implications for visitors to the region accessing affordable short-term accommodation, vulnerable groups seeking access to emergency accommodation, and the capacity of local short-term accommodation providers to service their existing business. Unmitigated, the social impact resulting from a reduction in the capacity of short-term accommodation in the regional area due to project workforce accommodation demands is assessed as **very high**. Given the limited supply of local workers, and a commitment from ACEN to using as much local accommodation as possible, the likelihood of impacts arising from limited capacity and availability of short-term accommodation is **almost certain**. Without mitigation measures, **major** negative consequences are anticipated.

ii Mitigated

Currently, short-term accommodation providers in the regional area do not have the capacity to meet the anticipated accommodation demands of the project construction workforce. As discussed in Section 7.4.3 an effective mitigation approach to negatively impacting the accommodation in the local area is to ensure a planned approach to workforce accommodation. In the context of managing impacts on short-term accommodation this planned approach should include:

- supplementing existing short-term accommodation in the local area with other forms of accommodation;
- increasing the extent of the geographic area for local hires and workforce accommodation; and
- maximising local workforce participation.

A planned approach to securing workforce accommodation will assist in minimising impacts on short-term accommodation in the regional area. In this regard it is recommended that ACEN and their contractors only accept the rooms that accommodation providers are comfortable and interested in offering and limit the number of rooms of short-term accommodation used by the project in the regional area. The preference for contractors to accommodate their workers in as few locations as possible may result in a perception that contractors are forcing or persuading accommodation providers to offer more accommodation to the project than is their preference, at the risk of not being able to service the project at all. The decision to rent to the project may appear to be based on economically rational decision making. Although businesses are not compelled to rent to the project there is significant benefits for their businesses during the construction of the project. Local short-term accommodation providers with the capacity to rent at least ten rooms to service the project would benefit from being provided the opportunity to rent the rooms they have available to the project, while still being able to allocate rooms to service their existing business, which they have expressed is of significant value.

Although there are likely financial incentives and logistical convenience for the project to house the construction workforce in fewer locations, accepting accommodation providers' stated capacity will ensure that these providers are still able to allocate accommodation to their existing business commitments and customers.

ACEN and their contractors should also ensure that negotiations and contracts with tourist accommodation providers are flexible and account for general long-term commitments and customers to further avoid losses in their regular business. If only a portion of tourist accommodation is allocated for use by the project construction workforce, the potential for businesses to forgo and potentially lose regular tourist business will be reduced.

As discussed in Section 7.4.3, there may be an opportunity for the project to utilise workforce accommodation facilities developed to support other projects in the CWO REZ ie the accommodation village for the Valley of the Winds project, or to support the expansion of existing accommodation villages such as Ulan Village Green.

ACEN will also continue to advocate with industry bodies such as EnergyCo for a strategic approach to understanding and managing cumulative workforce accommodation impacts from CWO REZ development. EnergyCo has offered to work collaboratively with CFGs to provide certainty around assumptions and manage whole-of-REZ issues such as workforce logistics and cumulative impacts on short-term accommodation.

It is also recommended that ACEN in collaboration with industry bodies such as EnergyCo, local councils and tourism organisations develop a platform to liaise with local accommodation providers who have the potential to provide accommodation to workers of the project and other projects in the region. By harnessing the capability of modern software and technology, a communicative platform which could display the availability of local short term/tourist accommodation, including smaller and less commercial providers, has the potential to support the project's workforce and enable a planned and adaptive approach to workforce accommodation. This measure would require additional feasibility assessment by either ACEN or other industry bodies including EnergyCo.

ACEN will prepare a Construction Workforce and Accommodation Strategy (CWAS) for the construction phase of the project. The CWAS will clearly describe how the construction workforce will be accommodated and where they will be accommodated. The CWAS will also describe the actions ACEN has taken or plan to take to minimise pressure on the existing capacity of short-term accommodation in the local area.

Assuming the successful implementation of the mitigation strategies described above the social impact resulting from a reduction in the capacity of short-term accommodation in the regional area due to project workforce accommodation demands is assessed as **medium**. Adverse impacts remain **possible**; however, the consequences would be **moderate**.

Finally, it is recommended that ACEN give further consideration to investigate further opportunities for the provision of demountable housing to accommodate the remaining proportion of project workers. The use of land such as caravan parks, camping grounds and residential properties (rural and urban) to install temporary workforce accommodation in the form of cabins and demountable buildings may provide economic opportunities and benefits for local individuals and businesses. Demountable housing could potentially be repurposed by accommodation providers following the completion of the project for tourist purposes. As there would not be an upfront investment for these structures, accommodation providers could decide to rent or purchase the demountable housing for tourist use following the cessation of the construction period to maintain their increased accommodation capacity. These demountable structures could also be used for social enterprise such as office spaces for local not-for-profit organisations who currently do not have the necessary resource to lease a space, or social/affordable housing.

The use of cabins and demountable structures could also create a legacy benefit by diversifying local accommodation providers' clientele to include project workforces and increasing the regional area's capacity to service large upcoming projects, which is of particular interest with the anticipated development of the Inland Rail and additional renewable energy projects. This diversification would not only benefit accommodation providers but would inject resources into businesses supplying goods and services to accommodation providers, such as food/catering and cleaning goods and services. An increased capacity of local accommodation providers to house project workforces will also contribute to additional spending within local communities by these project workforces.

The implementation of these strategies would not only reduce the pressure arising from workforce accommodation on local tourist accommodation but would create additional benefits for local tourist accommodation providers and flow-on benefits to the regional area. With the implementation of the additional mitigation measures around use of cabins or demountable structures, the potential impact would become a benefit to the community.

A summary of the assessment is provided in Table 7.13.

Table 7.13 Summary of access to short-term accommodation

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
 ACCESS TO INFORMATION/ SERVICES	Limited capacity and availability in short-stay accommodation.	Local tourist accommodation providers. Visitors to the regional area. Other industry sectors who use short-term accommodation.	Construction – 24 months	Local area Regional Area	Very High	Medium

7.5.2 Accessibility to community infrastructure and services

i Unmitigated

Service providers expressed some concerns that the existing health services in the local area would be unable to support the temporary construction workforce. Concerns were also expressed regarding potential cumulative impacts on health services from multiple renewable energy projects in the local area. During consultation some health service workers spoke about the impact of COVID-19 on staffing of health services and delivery of services continues, citing fluctuations in service capacity and capability and a parallel increase in demand from the community. Staffing issues were cited by one health care professional as continuing to impact service delivery.

COVID affected worldwide – but we didn't have extra resources....for example when the new swabbing clinics came out that took nurses and clinicians off the floor....coupled with borders shut and no international nurses coming to Australia there was a significant decrease in the nursing workforce.

The local area is well provided for with health services as described in Appendix A, with access provided to broader health services and increased capacity in nearby Dubbo. The communities of the local area have experienced the impacts of an influx of sizeable temporary workforces through the expansion of the surrounding mining industry sector. Fears remain that these impacts could be repeated given the anticipated influx of construction workers associated with growth in the surrounding renewable energy sector.

As discussed in Section 7.2.2, the project will trigger a temporary population change in the local area due to an influx of construction workers. This does have the potential to increase pressure on existing health services. Unmitigated, the potential impact of the project on resident accessibility to community infrastructure and services is assessed as **high**. The likelihood of service impacts is assessed as **likely** with **moderate** consequences for the communities of the local area and the workforce.

ii Mitigated

The proposed spatial distribution of the construction workforce, as discussed in Section 7.5.1 will assist in reducing pressure on health services in the local area. ACEN would seek to further reduce pressure through the following measures:

- Community benefit sharing (ie ACEN CW and Orana CBSP). Exploring initiatives that are linked to outcomes that meet community priorities identified in this SIA and through further engagement, such as improvements or maintenance of social infrastructure, delivery of health initiatives that support job readiness in young people and Aboriginal and Torres Strait Islander people.
- Prioritising local employment and early investment in partnerships that provide job readiness, training and education outcomes that benefit different sectors of the community and the regional area.
- Advocating with industry bodies such as EnergyCo (ie as part of the CFG process) for a strategic approach to understanding and managing cumulative impacts from REZ development on regional communities in regard to access to and use of infrastructure and services including accommodation.
- Engaging with other renewable energy proponents in the regional area in relation to a coordinated response to manage potential workforce impacts on services and facilities across the regional area.
- Engaging in regular communication with health care providers (hospital services, health and wellbeing services and GP's) across the regional area to ensure they remain informed regarding the project schedule, workforce arrangements and workforce size.
- Where possible, encouraging construction workers to seek routine health care check-ups and any required pre-employment medicals at their place of usual residence and not in communities when on shift roster.

With the implementation of the mitigation measures described above the potential of the project to impact accessibility to community infrastructure and services, particularly health services is assessed as **medium**.

A summary of the assessment is presented in Table 7.14.

Table 7.14 Summary of accessibility to community services and facilities

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Accessibility related to capacity and availability community services and facilities.	Project construction workforce, local residents, and health service providers.	Temporary Medium term – Construction phase	Local Area Regional Area	High	Medium

7.6 Livelihood impacts

This section provides an assessment, unmitigated/mitigated and unenhanced/enhanced, of the matters that significantly impact livelihood as a consequence of the project. The matters assessed are:

- increased employment opportunities;
- local workforce availability and labour draw (construction and operations);
- changes in rural property values;
- rural income diversification;
- use of local goods and services; and
- impacts to other industry sectors.

7.6.1 Employment and training opportunities

i Unenhanced

Employment lies at the heart of socioeconomic opportunity. It provides direct economic benefit to individuals and families, including financial security, increased social mobility and access to higher standards of living. Beyond this, it is well established that working is associated with benefits to physical and mental health, social inclusion and improved developmental outcomes for the children of employed persons (Biddle 2013; Gray et al. 2014; WHO 2012).

At peak construction, the project will employ an estimated 800 FTE workers, and up to 20 FTE workers during the operation phase. Based on preliminary project planning ACEN anticipates up to 30% (240 workers) of the workforce could be local hires ie reside permanently within the regional area, and the majority would be recruited for unskilled roles. This estimate is based on the size and characteristics of the unemployed labour pool and the active labour market in the local area, as described in Section 5.4.

It is anticipated that a local workforce will be engaged, where possible, to fulfill the civil works requirements of the project and the installation of the arrays. Given the characteristics of the regional labour pool, including availability (Section 5.4) opportunities for local workforce recruitment may include trade workers, construction labourers, ground maintenance, road maintenance, and road safety personnel. ACEN anticipates sourcing workers locally will likely have a significant economic and social benefit for the local community and across the region both directly and indirectly.

Consultation with one employment provider in the local area and a further provider in Dubbo emphasised the limited available labour pool in the local and regional area, noting the available unemployed labour pool predominantly consisted of unskilled or lower skilled people. Consultation confirmed the findings of the baseline data analysis ie that the unemployed labour pool consists predominantly of males aged below 24 years and over 50 years, with a strong representation of Aboriginal and Torres Strait Islander People. Employment providers confirmed the labour pool in the local area is skilled, predominantly with Certificate III qualifications reflecting the dominant occupation areas of technicians and trades and machinery operators and drivers.

Both employment providers interviewed expressed the opinion that the renewable energy sector presented considerable opportunities for providing their jobseekers with meaningful employment opportunities. The local area has a very low unemployment rate consistent with the regional area and NSW (Section 5.4.2; Appendix A). The youth unemployment in the local area and regional area is higher for males than females, with the male youth unemployment rate in the area of social influence higher than NSW. Technicians and trades workers and machinery operators and drivers were among the top occupations within the local area. A certificate qualification was by far the top qualification in the local area amongst persons with a non-school qualification. It is reasonable to assume that there are young people living within the local area who have the necessary qualifications to contribute to the construction and operation of the project. Similar trends are also apparent within the regional area. This assessment is supported by data collected in the social baseline.

During in-depth interviews, participants consistently identified employment arising from the project as a potential benefit of the project. A number of participants expressed hope that the project and the associated cumulative growth in the energy industry in the local area would improve youth retention, and help to slow the trend of population decline across some communities in the local area ie Dunedoo. The project could improve youth unemployment in the local area by providing employment pathways for skilled careers. These opportunities would be considerably improved with cumulative development in the renewables industry (discussed further in Section 7.9.3). Studies show that ongoing local employment creates a multitude of local benefits, including continued provision of income for local workers, recirculation of a greater share per dollar into the local economy due to local supply chains and investment in local employees (Civic Economics 2012, 2013), and improved community well-being and resilience (Adams 2018).

Consultation identified strong support from employment service providers for placement of Aboriginal and Torres Strait Islander People in construction roles on renewable energy projects in the region. Consultation identified a sizeable pool of unemployed and underemployed Aboriginal and Torres Strait Islander People in the regional area and broader areas of reference ie Dubbo Regional LGA. One specialist employment service described success to date placing Aboriginal and Torres Strait Islander youth into construction roles on solar projects. This employment service provider noted from experience that many Aboriginal and Torres Strait Islander people seeking employment in the region come from long-term unemployed backgrounds. Some of these people secure roles on construction projects, however the duration of the role is often short ie 6–12 months and then the person returns to unemployment. This employment service provider suggested that ACEN investigate opportunities to provide more sustainable employment opportunities for Aboriginal and Torres Strait Islander people, particular given the various renewable energy projects proposed in the regional area. The provision of on-the-job mentoring was identified as critical to retain Aboriginal and Torres Strait Islander People, particularly youth in jobs. Studies show jobs in clean energy developments occur primarily in the construction phase with far few in operational phase and if consideration was given to prioritizing those jobs for Aboriginal people in both phases this would mean traditional owners could continue working on country (O'Neill, et al 2021).

The findings of consultation undertaken to inform the Valley of the Winds SIA (AAP Consulting 2022) in the Warrumbungle LGA reinforces the above views captured through engagement with service providers. In AAP Consulting (2022) feedback from the employment and training sector noted that:

To really enhance the opportunities of vulnerable communities, including youth and aboriginal people that employees in regional areas need to have a deep understanding of the issues in the area and tailor employment programs and training opportunities to meet the needs for the area. For example, looking at transport options to and from work (AAP Consulting 2022).

Given the current unemployment rate in the regional area and the characteristics of the unemployed (ie unskilled young people, Aboriginal and Torres Strait Islander People, and people aged 50 years and over, it is unlikely local people could gain full-time employment on the construction phase of the project without support. Unenhanced, the benefit to the livelihood of young people from an increase in local employment opportunities during the construction and operation of the project is assessed at **medium**. The likelihood of livelihood benefits related to increased youth employment opportunities is **likely**, with anticipated **minor** positive consequences as benefits will be realised in the medium term but are temporary.

Unenhanced, the benefit to the livelihood of Aboriginal and Torres Strait Islander People from an increase in local employment opportunities during the construction and operation of the project is assessed at **low**. The likelihood of livelihood benefits related to increased employment opportunities is **unlikely**, with anticipated **minor** positive consequences as benefits will be realised in the medium term but are temporary.

ii Enhanced

An estimated 800 FTE workers will be required at peak construction. The majority of this workforce would be sourced from outside the regional area given current labour market conditions (Section 5.4).

ACEN will develop both a Local Participation Plan and Aboriginal Participation Plan that commits to best practice in employment and investment in job readiness by ACEN and its contracting partners. The participation plans will:

- identify training and employment agencies in the regional area or area of reference who have demonstrated success in training and placement of young people and Aboriginal and Torres Strait Islander People in construction industry roles;
- seek to identify particular job positions and supply work packages that will be targeted for local people and Aboriginal and Torres Strait Islander inclusion;
- include a recruitment and training strategy that will consider a range of actions to support engagement of youth and Aboriginal and Torres Strait Island People in project employment opportunities;
- include ongoing engagement with the secondary education providers in the regional area to remain abreast of the size and characteristics of the potential youth labour pool;
- identify opportunities for partnerships with secondary education providers in the regional area to support skill development (ie provision of work experience opportunities on ACEN projects, provision of school based certificate level training opportunities in skill sets that support employment in the renewables sector);
- evaluate opportunities to provide mentoring to youth and Aboriginal and Torres Strait Islander People to support job readiness and job retainment in the renewable energy sector; and
- map details of existing Indigenous businesses and potential Indigenous labour supply.

The participation plans will be supported by the *Construction Phase Stakeholder Engagement Plan* (Construction Phase SEP). The engagement components of the participation plans will be expressed through the Construction SEP.

ACEN will seek to identify shared value opportunities with secondary and tertiary education institutions in the regional area, and employment and training agencies to support participation of locally based vulnerable groups and young people in project employment opportunities.

Assuming the enhancement strategies were effectively implemented there may be an increased number of youth and Aboriginal and Torres Strait Islander People from the regional area with full time employment for a temporary period. This would aid in the retainment of young people in the regional area and improve the life of those employed by providing financial and job security to those employed. Consequently, they would increase their ability to fully participate in social and recreational activities and be better able to apply for mortgages. Youth would have more choices for local employment and be less likely to leave to seek jobs in larger city centres. Spending would increase and this would have a flow on benefit to the economy of the Mid-Western Region more broadly.

Enhanced, the benefit to youth livelihood from an increase in local employment and training opportunities during the construction and operation of the project is assessed at **high**. The likelihood of livelihood benefits related to increased local employment opportunities is **likely**, with anticipated **moderate** positive consequences as benefits will be realised in the medium to long term and are anticipated to result in benefits to the local economy.

Enhanced, the benefit to Aboriginal and Torres Strait Islander People livelihood from an increase in local employment and training opportunities during the construction and operation of the project is assessed at **medium**. The likelihood of livelihood benefits related to increased local employment opportunities is **possible**, with anticipated **moderate** positive consequences as benefits will be realised in the medium to long term and are anticipated to result in benefits to the local economy.

A summary of the assessment is presented in Table 7.15.

Table 7.15 Summary of access to employment opportunities

Social impact	Matter	Affected parties	Duration	Extent	Unenhanced	Enhanced
 LIVELIHOOD	Access to employment opportunities	Youth	Construction	Regional area	Medium	High
		Aboriginal and Torres Strait Islander People	Construction	Regional area	Low	Medium

7.6.2 Local workforce and local job competition (construction)

i Unmitigated

Due to the technical nature of this project and the limited labour supply in the regional area (Section 5.4), it is expected that the majority of the skilled construction workforce (estimated size 600 persons; Table 2.1) required for the project will be sourced from outside of the local area and regional area. However, there will likely be indirect employment opportunities for local businesses to provide services to workers and machinery used in the construction stage, such as the provision of short-term accommodation and servicing of installation equipment.

The findings of EIS consultation and the SIA field study program highlight a common concern among respondents in relation to labour availability. Many respondents anticipate that there may be an insufficient number of local workers available for unskilled, skilled or highly skilled roles during construction. A number of participants expressed the view that the necessary workers, training, and skills would be sourced from outside the Mid-Western Regional LGA. During consultation participants also raised concerns that in communities near the project already experiencing labour shortages ie Mudgee there are concerns that additional jobs generated by the project will draw skilled and unskilled workers from local businesses.

The project may also generate competition for local goods and service providers within the local area – such as fencing contractors, food and accommodation services, security services, electrical services, ground maintenance, and road maintenance services – reducing their availability to work on other jobs within the study area. This competition may impact both local businesses providing goods and services to the project, local residents who also require these services and visitors to the region demanding these services. As evidenced in Mudgee during mining industry expansion between 2010 and 2017, boom times can establish pressure on local communities due to labour draw and competition for local resources. Local workforce and local job competition created by the project during construction may impact local businesses' ability to retain both their staff and their existing local business commitments. Both skilled and unskilled workers may choose to leave their current employment if they are provided the opportunity to work for the project, which may include reasons related to consistency of available work and salary/wage increases (Elliott Whiteing 2018; SMEC 2020). Loss of staff would reduce local businesses' ability to maintain their current business capacity, reducing their economic viability.

Reducing local residents' access to skilled workers and local services could not only impact on local ability to hire services required for their livelihood and homes but could cause these services to become more expensive. However, the local community surrounding the project has experienced competition of the sort associated with the development of major projects and is familiar and potentially equipped for the competition. Based on the assumption of supply and demand market forces, if supply of these goods and services does not increase with the increased demand of local goods and services by the Project, prices will rise.

Unmitigated, the impact of taking a skilled workforce and local service providers from the existing market to service the project is assessed as **medium** impact. As ACEN has committed to use local labour it is **almost certain** that a proportion of the construction workforce will be hired locally. This competition for human resources is anticipated to have **minor** consequences for local business operators as the impacts on livelihood are limited to the construction phase of the project and the affected communities have experienced the impact before and are likely to have developed some resilience to these impacts.

ii Mitigated

Consultation participants across a range of stakeholder groups consistently identified employment arising from the project as a significant potential benefit. Ongoing local employment creates a multitude of local benefits, including continued provision of income for local workers, recirculation of a greater share per dollar into the local economy due to local supply chains and investment in local employees (Civic Economics 2012, 2013), and improved community well-being and resilience (Adams 2018).

It is recommended that project workforce and subcontracting needs are clearly communicated to subcontractors so that they can communicate any delays to their customers or hire additional employees to service their existing business. As long as contractors are aware of project needs, they can assess their options for managing their existing local business.

During consultation, several stakeholders raised the potential benefit associated with providing training and upskilling opportunities to local workers, youth and Aboriginal and Torres Strait Islander people in the regional area. Whilst the construction phase of the project is only 24 months, ACEN has several other projects in the regional area (ie Stubbo Project which is approved and the Valley of the Winds project which is in the approval process) that could be used as a launch pad for training and upskilling programs targeting young people in the regional area, thus securing a pipeline of locally available labour for renewable projects and other business operators in the regional area.

In the local area, there are employment services who offer training, apprenticeship and traineeship services and employment support services, some of whom also specialise in employment and training for Aboriginal and Torres Strait Islander people. Training and upskilling programs can be provided through the Technical and Further Education (TAFE), which includes provision of apprenticeship opportunities and scholarships for locals. Training and upskilling programs should focus on engaging and training/educating disadvantaged, Indigenous, unemployed, and young people with a view to employing recent school leavers.

The successful implementation of these strategies would create additional economic activity within the community associated with local employment, provide opportunities for youth finishing secondary school, and support skill development in the regional area. These measures could provide shared value legacy benefits which enhance the local workforce's and increase the region's capability to support large projects, specifically renewables. This would potentially lead to future opportunities and investments in the local area and create a skilled workforce to service future ACEN projects across Australia.

With these mitigation strategies in place the project has the potential benefit local businesses through labour force capacity development. Livelihood impacts are therefore assessed as a **high(benefit)**. It is **likely** that these benefits will be realised, with **positive** moderate consequences in the short to medium term which will extend to the local and regional economy.

A summary of the assessment is provided in Table 7.16.

Table 7.16 Summary of local workforce and local job competition (Construction)

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIFESTYLE	Limited local workforce supply and increased local job competition.	Local businesses servicing the project and local residents who use those local services required of the Project.	Construction – 24 months	Regional area	Medium (negative)	High (positive)

7.6.3 Local workforce and local job competition (operation)

i Unmitigated

The operational workforce of the project will consist of up to 20 personnel. However, it is assumed that the operational workforce includes workers performing operational maintenance requirements (such as ground maintenance, fencing maintenance, road maintenance, and security), which could be sourced locally. Although the operational phase of the project is not anticipated to create significant competition for local jobs and services, ACEN's commitment to local hiring could still result in a degree of competition for local workforce and businesses. Operations roles would be permanently based in the regional area. This means the project could attract a small number of new residents to the local area. If these residents are couples or families, they may add value to the local workforce through the potential addition of new skills and labour.

Unmitigated, the impact of taking a skilled workforce and local service providers from the existing market to service the project during operation is assessed as **low (negative)**. ACEN has committed to using local contractors and employing locally for permanent roles as much as practicable. However, negligible consequences are anticipated due to the small size of the operational workforce.

ii **Mitigated**

If the recommended enhancement measures during construction are successfully implemented (see Section 7.6.1), it is assumed that capacity of the local workforce and local businesses will have increased by the time the project is operational, thereby reducing potential for labour force competition during operations. In particular, the provision of training and apprenticeship opportunities related to servicing renewable energy farms will create legacy benefits as more qualified personnel are trained year on year within the regional area.

With the mitigation strategies implemented during construction, the impact of local workforce and local job competition during operation becomes a benefit, assessed as **medium**.

A summary of the assessment is provided in Table 7.17.

Table 7.17 Summary of livelihood related to local workforce and local job competition (operation)

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIFESTYLE	Limited local workforce supply and increased local job competition	Local businesses servicing the project and local residents who use those local services required of the Project	Operation – life of the Project following construction	Regional area	Low	Medium

7.6.1 **Changes in rural property values**

i **Unmitigated**

A number of participants engaged in the SIA field study program expressed fear and reservations about the project, specifically in relation to the potential devaluation of neighbouring properties due to changes in visual landscape and social amenity. This issue is commonly raised by near neighbours to major projects including solar, mineral exploration and transport corridor projects. A review of consultation findings for similar projects in the locality (ie *Stubbo Solar Farm EIS* (Ramboll 202); *Tallawang Solar Farm Scoping Report* (Umwelt, 2021) confirms existing concerns regarding potential property value impacts from cumulative major projects in the local and regional area.

The private landholdings located proximate to the project are productive farming operations. Agricultural productivity within and adjoining the study area is described in the *Land Use, Soils and Erosion Assessment* (LUSEA; EMM 2022c) (Appendix L of the EIS). Given the size of the landholdings, it is likely that their agricultural production attributes provide a strong foundation for overall property value. The project will not impact the agricultural production value of properties proximate to the study area. The project does have the potential to adversely impact vistas from some properties (as described in Section 7.3.1). However, given the magnitude of anticipated impacts, the change in visual amenity is not anticipated to have any noticeable effect on property values and ultimately livelihood.

Unmitigated, the likelihood of the project leading to adverse changes in neighbouring property values and impacting livelihood is assessed as **unlikely** and the magnitude of the impact is assessed as **moderate**, giving an overall risk rating of **medium**.

ii Mitigated

There is currently no empirical evidence or detailed academic studies in an Australian setting (ie quantitative research or economic assessments) that considers whether an increase in large-scale solar photovoltaic developments in an area is associated with a decline or increase in surrounding property values. However, it is generally considered that impacts relating to visual amenity drive concerns regarding loss of property value for neighbouring residential properties.

The EIS assessed a range of potential impacts associated with the construction and ongoing operation of the project. Where significant impacts to neighbouring landholders have been identified, the project has been refined and/or management and mitigation measures have been proposed to further reduce potential impacts. This includes the introduction of wide setbacks from neighbouring residences to reduce potential views of project infrastructure, paying particular attention to the most valued views from affected residences, or a significant reduction in the development footprint to reduce visual impacts.

The VIA (EMM 2022a) (Appendix F of the EIS) provides a summary of the management and mitigation measures that will be incorporated into the detailed design and construction of the project and into subsequent management plans during operations. Examples of management and mitigation measures included to further reduce potential impacts on neighbouring landholders include implementation of:

- buffer zones during construction works to minimise potential noise impacts at neighbouring residences;
- a Traffic Management Plan (TMP) and Driver Code of Conduct to minimise potential impacts on the safety and serviceability of the local road network; and
- a CWMP to manage potential for adverse impacts to occur from the construction workforce.

Non-associated landholders potentially impacted by project induced changes in the visual landscape may also have access to the NBSP.

Should the project be approved and following the commencement of construction, ACEN will continue to engage with the local community and will endeavour to manage any unanticipated issues that may arise. A number of open lines of communication remain available for neighbouring landholders to reach out to ACEN and its contractors if their concerns about the project have not been adequately addressed. This includes the project Facebook page, website and community information line.

The mitigated livelihood impact related to a decrease in property value is assessed as **low**. The likelihood of nearby properties experiencing devaluation is **unlikely**, with the negative consequence assessed as **minor**.

A summary of the assessment is presented in Table 7.18.

Table 7.18 Summary of livelihood related to changes in rural property values

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Changes in rural property values	Near neighbours	Medium term	localised	Medium	Low

7.6.2 Rural income diversification

i Unmitigated

The project will generate an alternative revenue stream for associated landholders through landholder agreements. ACEN have entered into access licence agreements with associated landholders allowing the option to lease the land for the life of the project. Upon cessation of any lease arrangement, easement, and or other agreement, infrastructure would be decommissioned, and land would be returned to its pre-existing condition in consultation with the landholders. The use of the land would then be returned to the landholder. Associated landholders will receive financial payments from ACEN under the provisions of the relevant landholder agreement. For associated landholders, the landholder agreements represent an alternative revenue stream to the original land use. Income diversification will assist associated landholders to sustain their livelihoods now and into the future. This is also an important aspect of the NSW Electricity Infrastructure Roadmap that sees renewable energy as a way to help drought-proof traditional farming communities, providing new income streams for landholders that host electricity infrastructure (NSW Energy 2020).

To a lesser extent neighbouring properties will also experience financial benefits from the project through payments from ACEN made under the NBSP (Section 8.1.3). This program is designed to ensure that non associated landholders who may be adversely impacted by the project benefit from a share of the project opportunities.

Unenhanced the project would result in a **high** positive social benefit for the livelihood of associated landholders. The opportunity is **almost certain** to arise given the requirement for landowner agreements. The magnitude of the benefit is considered **moderate** as some of these benefits will last for the life of the project.

Unenhanced the project would result in a **medium** positive social impact for the livelihood of non-associated landholders who are signatories to the NBSP. The opportunity is **almost certain** to arise for potentially affected landholders, however the magnitude of the benefit is considered **minor**. This is because these landholders are likely to experience both direct and indirect impacts from the project and the financial opportunities presented by the NBSP only partially offset the likely project impacts which for some associated landholders include visual impacts and noise impacts.

ii Mitigated

In addition to the landowner agreements, ACEN is committed to exploring opportunities for co-location of sheep grazing and the project as discussed in Section 7.6.4. ACEN is exploring suitable agreement arrangements that consider the agistment of the sheep, allocation of responsibilities for the health and safety of the sheep and the treatment of liabilities. It is envisaged that subject to a successful contractual arrangement the landholder (or tenants) would be able to maintain the existing grazing business, while earning income from leasing the property. This would in turn have benefits for the local and regional agricultural industry which would also benefit non-associated landholders engaged in agricultural activities.

Should co-location of sheep grazing and the project be agreed with ACEN then the project would have a **very high** positive impact on associated landholders. The project benefit is **almost certain** to arise and the magnitude of the benefit could be **major** due to the additional opportunity to continue existing agricultural activities.

No additional mitigation for non-associated landholders is proposed, beyond agreements under the NBSP.

A summary of the assessment is presented in Table 7.19.

Table 7.19 Summary of livelihood related to rural income diversity

Social impact	Matter	Affected parties	Duration	Extent	Unenhanced	Enhanced
 LIVELIHOOD	Opportunities for rural income diversity	Associated landholders	Long-term	Local area	High	Very high
 LIVELIHOOD	Opportunities for rural income diversity	Non-associated landholders with agreements under the NBSP	One-off	Local area	Medium	Medium

7.6.3 Use of local goods and services

i Unenhanced

In-depth interviews with short-term accommodation providers highlighted the benefits these businesses received from major projects in the regional area. Participants cited the procurement of local goods and services, such as accommodation and meals as well as electrical and civil works service requirements of projects as benefiting the regional area.

The construction phase of the project will generate demand for a range of goods and services within and outside the regional area, increasing opportunities for revenue for local business and therefore having a positive impact on livelihoods. The operational phase will generate demand for a range of maintenance related services.

During in-depth interviews, business owners also identified potential indirect flow-on benefits arising from use of local goods and services by employees and contractors, such as spending in local retail shops and use of local services (public and private).

The input of the project to the local and regional economy, particularly construction and subsequent technical services, will also assist in the diversification and strengthening of the local and regional economic base.

Accordingly, the positive consequence of the unenhanced project has been assessed as being **high**. The likelihood of local procurement occurring has been assessed as **almost certain** as a portion of the non-local workforce will seek accommodation in the regional area with direct and indirect benefits for businesses. Although it is possible that local businesses and services will be engaged by the project, forgoing local businesses and suppliers by outsourcing due to the perceived or real limited capability and capacity of local suppliers represents a lost economic benefit. As such the positive consequence of the unenhanced benefit is assessed as **moderate** as the economy of the local area will benefit however the scale of contribution may be limited by the capacity and capability of local suppliers.

ii Enhanced

ACEN has genuine intention to establish positive, long-term connections with the local community, which has been demonstrated through the project design and refinement process, commitments outlined throughout the EIS, and community engagement undertaken to date, which will continue throughout the subsequent stages of the project.

ACEN will prepare an Australian Industry Participation Plan following environmental approval, and before project procurement takes place. This is a legal requirement under the Commonwealth *Australian Jobs Act 2013* that ensures full, fair and reasonable opportunities for Australian industry to compete for work. This plan will provide the following details:

- expected opportunities to supply key goods and services to the project;
- how ACEN will communicate project opportunities and requirements to Australian suppliers; and
- how ACEN will assist suppliers to develop capability and integrate into global supply chains.

ACEN has committed to ensuring that local businesses have the opportunity to be engaged to supply goods and services to the project provided reliability, quality and financial competitiveness can be satisfied. Local businesses will benefit from sub-contracting opportunities during construction and operations (ie fencing installation and maintenance, vegetation management and pest control), as well as indirect economic benefits for service stations and local tradespeople (ie electricians and plumbers). This will also have multiplier effects for economic activity as local businesses contracting or servicing the demand generated by the project will themselves require secondary and support services. As the development progresses and the lead EPC contractor(s) are selected, ACEN will hold information/introduction sessions or distribute engagement materials and updates to local businesses and residents to provide further details on upcoming employment and contracting opportunities.

ACEN will develop a Local Participation Plan that commits to targets for the procurement of local goods and services by ACEN and its contracting partners. The Local Participation Plan will include an assessment of local contractor capabilities and a detailed analysis of existing local enterprise and the skills/education base of local residents. Where possible project supply and workforce requirements will be matched with existing capabilities in the local community.

ACEN acknowledges the capacity limitations in short-term accommodation across the regional area. ACEN will engage in a planned approach to workforce accommodation (Section 7.5.1) to ensure those short-term accommodation providers in the regional area who are willing and have capacity to provide accommodation are utilised by the workforce.

In addition, if required, a community advisory group, which includes representatives from MWRC, local business owners and key stakeholders could be established to meet on an ‘as needed’ basis to discuss construction and workforce-related issues during the construction stage of the project. This would allow ACEN and/or the EPC contractor to communicate the timing of upcoming construction activities, provide local businesses with advanced notice of resource needs and allow the businesses to plan for material needs and peaks and troughs in demand. It could also provide community representatives with a forum for voicing concerns about the project.

As the approval of the project is the enhancement measure, the enhanced livelihood benefit related to use of local goods and services remains **high**. This is also due to the ‘temporary’ although medium-term nature of the benefits. A summary of the assessment is presented in Table 7.20.

Table 7.20 Summary of livelihood related to procurement

Social impact	Matter	Affected parties	Duration	Extent	Unenhanced	Enhanced
 LIVELIHOOD	Use of local goods and services	Businesses within the local area and regional area	All phases of the project	Local area and regional area	High	High

7.6.4 Impacts to other industry sectors

i Unmitigated

a Agriculture

An agricultural assessment (EMM 2022c) has been completed for the EIS (Chapter 6.8 and Appendix K). The assessment has been undertaken in accordance with the DPE draft solar guidelines (discussed in Section 4.2.2). In 2015-2016 in the Mudgee Region-West (within which the study area is located) a total of 348, 702 ha of land was under agricultural production of which livestock grazing activities constituted approximately 85 %. Similarly in 2015–2016 the most important commodities in the Mudgee Region-West (based on the gross value of agricultural production) were livestock products (ie wool, milk, eggs) (\$20 m) and livestock disposal (ie slaughtering and export) (\$58 m). These commodities together contributed more than 80 % of the total value (\$93 m) of agricultural production in the Mudgee-Region West (ABARES 2021a). No suitable trend data was available to understand changes over time in productivity (both output and area of land under production).

Several participants in the SIA field study program expressed concern in relation to the potential conflict from the use of agricultural land for renewable development. These stakeholders raised a number of issues relating to the change in land use from agriculture to energy generation in the local area including:

- potential impact on local and regional agricultural productivity and output, given a potential reduction in the area of land under agricultural production;
- potential reduction in the diversity and supply frequency of specialised agricultural services that are currently offered direct to agricultural operations in the local area attributable to a reduction in the number and/or size of agricultural operations;
- interruptions to livestock grazing regimes due to site access restrictions; and
- potential increase in safety risks when moving stock along the local road network.

During the construction phase, intensive construction on paddocks may temporarily reduce the quality and productivity of land and interrupt existing stock grazing patterns. Increased traffic on the Birriwa Bus Route South and internal traffic crossing at the proposed public road crossings may interrupt or present a risk to livestock movement along the road network. Mismanagement of gates within and on the perimeter of the study area during construction activities also presents a risk to livestock. If not managed properly, the additional loss of livestock as a consequence of project construction traffic could further impact local landholders' stock and potentially impact their livelihoods.

During engagement with ACEN, the owners of R5 indicated their concern about the cattle access within their property, located just south of Birriwa Bus Route South. The landholders currently use land within the study area just north of Birriwa Bus Route North for heavy vehicle manoeuvres to access the cattle yard. The landholders requested a [25 m] setback to the north of Birriwa Bus Route South to maintain heavy vehicle access to the cattle yard. ACEN agreed to an even larger setback to include mitigation for visual and noise impacts.

The owner of R13 uses a wool shed within the site. Based on consultation, the decision was made to exclude the lot containing the woolshed from the development footprint.

One landholder who lives in the local area has been renting a 365ha portion of the site for the last 15 years. During SIA engagement this landholder lamented the fact that he will no longer have access to this property for livestock grazing should the project go ahead.

Some participants in the SIA field study program also spoke about the potential for co-existence of agricultural activities (ie sheep farming) and photovoltaics and questioned whether ACEN had an interest in exploring opportunities for complementary agricultural activities. There are many examples of co-location within Australia and internationally (Clean Energy Council 2021). Examples of co-location include sheep grazing (also the most prevalent form of complementary land use for utility-scale solar farms), beekeeping and/or horticultural activities. The earliest-known trial of grazing on a large scale solar farm in Australia was at the Royalla Solar Farm in 2015. According to the Clean Energy Council (2021) in 2020, there were at least 13 large-scale solar farms grazing sheep in Australia including 10 in NSW. Within NSW, early results from a partnership between the Parkes Solar Farm and Parkes Show Society for a four-year trial of sheep grazing and photovoltaics show improved fleece quality (Jose & Calver 2022).

Unmitigated (including in the absence of co-location of sheep grazing), impacts to agricultural livelihood from project construction and operation is assessed as **medium**, as the likelihood of impacts is **likely** and there is the potential for **minor** consequences due to the potential for socioeconomic impact associated with endangerment of livestock, reduction in local agricultural output and resulting loss of supporting services.

b Tourism

During EIS consultation and in-depth interviews with the MWRC, service providers and accommodation providers, the potential impact of the project on the local and regional tourism industry due to workforce accommodation demand was raised as a negative impact of the project. Many participants in consultation expressed concern that construction phase workforce accommodation demands would reduce access for tourists to local accommodation options, impacting local spend with flow-on impacts to tourism industry economic output and participation at local and regional events.

As discussed in Section 7.7.1, members of the CWC Trail Inc. also expressed concern about the potential impact of the project on the CWC Trail, which is growing in popularity as a tourism activity within the LGA.

The Mid-Western Regional LGA has established itself as a year round tourism destination with a calendar of state and regional annual events that draw sizeable crowds. Analysis of available tourism data for the Mid-Western Regional LGA (REMPPLAN 2022; MWRC 2021b) and anecdotal evidence from consultation shows a steady increase in tourism visits in the LGA in the last five or so years, with a considerable increase in domestic visits in the last 12 months during the COVID-19 pandemic. In 2016 the tourism industry sector and the associated accommodation and food services industry sector combined had an employment share of 9.5% (961 jobs), with both sectors in the top 10 industry sectors of employment (REMPPLAN 2022). The value added by tourism in the Mid-Western Regional LGA is estimated at \$43.272 million. This represents 1.4% of total value added by all industries (REMPPLAN 2022). The latest available tourism data for the Mid-Western Regional LGA shows 691,000 visitors to the region per annum, with an annual spend of \$163 million (m), with visitors accommodated in more than 180 venues. The majority of visits were for holiday (48%) and visiting friends/relatives (32%) (MWRC 2021b).

The findings of consultation with short-term accommodation providers across the LGA indicates sustained high occupancy rates (ie above 80%) in short-term accommodation (Section 5.5.2).

Unmitigated the impact of the project on livelihoods associated with the tourism industry is assessed as **medium**. Given the scale of project workforce accommodation demands and the existing limited capacity in short-term accommodation provision it is **likely** that the project will indirectly impact the tourism industry sector, however the consequences are assessed as **minor**. This is because existing short-term accommodation providers are already operating at or near capacity and therefore there is little opportunity for ACEN to utilise local accommodation.

ii Mitigated

a Agriculture

Frequent communication and provision of information regarding the predicted construction impacts prior to project construction are necessary to prepare landholders for impacts that cannot be fully mitigated and to provide an opportunity for landholder feedback and engagement. This communication will continue throughout the construction of the project, with consistent and frequent communication occurring between landholders and project management/construction teams. Exchange of contact details and establishment of a complaints and grievance management procedure will support effective communication and build trust.

It is imperative that gate and property access procedures, specific to individual landholder needs and requests, are developed and properly performed to reduce the potential for unplanned migration of livestock. The development of gate and property access procedures will require thorough and specific consultation with landholders. The development of gate and property access and procedures will also include safeguarding measures specific to individual landholder preferences to ensure that the procedures are being followed, which may include calling landholders to notify them when gates are being opened and closed or taking photos of the gates to demonstrate proper protocols have been followed. Land access rules agreed with landowners will be provided to all corresponding construction and operation personnel. To reduce the potential impacts to livestock from construction traffic, driver and construction personnel will undergo inductions and training regarding transport and construction operations in and around construction sites and interactions with farming activities.

The above mitigation measures would provide benefits to landholders by reducing landholder shock, irritation, and ensuring the safety of their stock during project construction and operation. This would also enable landholders to plan and prepare their properties and businesses for the anticipated impacts and develop trust between landholders and the project team.

ACEN is committed to exploring opportunities for co-location of sheep grazing and the project. ACEN is exploring suitable agreement arrangements that cover compensation for the agistment of the sheep, allocation of responsibilities for the health and safety of the sheep and the treatment of liabilities. It is envisaged that subject to a successful contractual arrangement the landholder would be able to maintain the existing grazing business, while earning income from leasing the property. This would in turn have benefits for the local and regional agricultural industry with minimal adverse impact on agricultural production.

The project may include the following design elements to support potential co-location of sheep grazing activities and photovoltaics:

- use of single axis solar arrays which track the movement of the sun. The gradual movement of the panels in the day allows exposure to sunlight for the ground cover beneath the panels at some stage each day enabling pasture growth;
- installation of motor guards to prevent sheep's wool from being caught in moving parts;
- ensuring access to water with multiple water sources available and supporting cell grazing;
- provision of perimeter fencing around the development footprint;
- early consideration of internal fencing requirements, with the design of internal fencing arrangements supporting ongoing cell grazing, enabling greater control of livestock;
- placement of arrays to ensure fence line accessibility for agricultural vehicles (ie tractors); and
- implementation of biosecurity management actions ie control of weed spread, during project construction.

During operation, further benefits to agricultural livelihood would arise due to the significant financial benefit to associated landholders from receiving compensation payments. These payments would not only provide additional cash-flow which landholders can invest into their agricultural ventures but would provide financial security in the form of ensured income for 30 years (during the life of the project).

Further, in 2022, in response to sustained concerns from landholders and industry in NSW regarding the potential impacts of renewable energy development the NSW government announced a Task Force to review the framework for managing issues and opportunities from the forecast growth in the renewable energy and the agricultural sectors in NSW. Both industry sectors are identified as important to the State’s prosperity and growth. Renewable energy infrastructure does have the potential to create or exacerbate existing land use conflicts and impact the provision of services if not planned and managed appropriately (NSW Government 2022b). No findings from the review are currently available. ACEN will remain abreast of progress of the review including reviewing the task force findings with a view to implementing any relevant finding were practicable.

With the implementation of the above mitigation and enhancement measures, the mitigated impact transitions to a benefit, assessed as **medium**. Consistent communication, effective gate and property access and procedures, and the financial benefits from compensation payments will have **minor** benefits, including benefits to the local economy and increased trust between landholders and the project team, with a **possible** likelihood level. A summary of the assessment is provided in Table 7.22.

b Tourism

Minimising the potential impacts of the project on the tourism industry sector in the Mid-Western Regional LGA is reliant on the management of project workforce accommodation arrangements. This issue has already been discussed in Section 7.6.4. Assuming the mitigation measures identified in Section 7.6.4 are implemented, the mitigated impact of the project on the tourism livelihood is assessed as **low**.

A summary of the assessment is presented in Table 7.21.

Table 7.21 Summary of livelihood related to other industry sectors

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
 LIVELIHOOD	Impacts to agricultural sector	Associated and non-associated landholders Existing agricultural operators	Long-term	Local and regional area	High (negative)	Medium (benefit)
 LIVELIHOOD	Impacts to tourism sector	Existing tourism facility/service operators	Temporary and medium term	Local area	High (negative)	Low (negative)

7.7 Health and wellbeing impacts

This section provides a detailed assessment, unmitigated and mitigated, on the health and well-being impacts and the matters that significantly impact the health and well-being of residents of the local area as a result of the project. The matters assessed include:

- public safety related to increased traffic on the local road network;
- public safety related to fire hazards;
- health and wellbeing related to stress and anxiety;
- health and wellbeing related to sleep disturbance from operation of the BESS; and
- health impacts from project generated Electromagnetic Fields (EMFs).

7.7.1 Public safety related to increased traffic on the local road network

i Unmitigated

a Public safety related to increased traffic on the local road network during construction

Participants in the SIA field study program identified the potential for increased traffic on the local and regional road network during construction, as a project related issue and expressed concern in relation to the implications this may have for the safety of road users (pedestrian, cyclists, school bus users and other vehicles). Some participants also raised concern regarding the condition of the local road network and the potential for the project to exacerbate the existing poor road conditions due to project related traffic movements. Whilst the impacts of glint and glare on road safety were not raised during consultation, the issue is also considered below.

The primary vehicle access route will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. The primary project access point on Birriwa Bus Route South will provide access to the main portion of the development footprint.

Internal access roads will be constructed to facilitate access to the remainder of the main portion of the development footprint; however, up to three public road crossings will be constructed to allow project-related vehicles to move across public road corridors and between parcels of land that form other portions of the development footprint. These crossings will reduce the impact of project-related vehicles on the local road network and maximise the use of the project's internal road network during construction and operations.

The impact of the project on road safety is described in Section 7.7.1 and in the Traffic Impact Assessment (TIA) (EMM 2022c; Appendix H of the EIS). According to the TIA, at peak construction there will be a maximum of 360 passenger vehicles, 120 heavy vehicles and 13 shuttle buses during the day. In the peak hour of construction there will be 360 light vehicle movements, 13 shuttle bus movements and 28 heavy vehicle movements equating to a total of 401 vehicle movements (EMM 2022b). Note that light vehicle and shuttle bus movements will be incoming during morning and outgoing during evening peak hour. Construction staff are usually expected to arrive at the site before commencement of any construction activities hence there would be minimal overlap during peak hours between construction light and heavy vehicles. Increased traffic volumes on the local road network may have consequential impacts on road safety; however, increased traffic volumes will be temporary.

According to Freire et al (2021), sharing the road with trucks is associated with an increased risk of accidents resulting in serious injury and death for passenger vehicle drivers. According to crash trend data, there were three crashes in the vicinity of the study area on Castlereagh Highway. The nearest crash occurred in 2016 and was located on Castlereagh Highway 1.5 km south of Birriwa Bus Route South. The crash resulted in minor/other injury and involved trucks (EMM 2022c). There were no fatal incidents. This overall crash rate is considered low over the five year period, which indicates there are no current road safety issues affecting the identified access roads for the project.

The road safety concerns outlined above may also be compounded by driver fatigue experienced by both workers travelling to and from the project, logistics and transportation drivers who have been driving for extended periods, often through the night, and shift workers employed in surrounding mining industry operations. Past SIAs have pointed to these public safety impacts arising from driver fatigue when utilising a drive-in-drive-out workforce. The potential for fatigued drivers to be involved in road incidents is significant, and may put local residents, pedestrians, other drivers, and workers themselves, at significant risk.

Unmitigated, the impact to public safety due to an increase in traffic is assessed as **high** as it is considered **possible** for road accidents to occur when a high number of additional vehicles are on the road, some of which will be oversized and hazardous, challenging loads, and drivers are at risk of fatigue. The potential consequence for this impact is **major**, as any road related incidents caused by project-related traffic have the potential to result in serious injury, which will have a lasting impact on safety and wellbeing that may survive long after the life of the project.

b Public safety risk for users of the Central West Cycle Trail

The local road network surrounding the project forms part of the Central West Cycle Trail (CWC Trail). The CWC Trail is approximately 400 km and follows the quiet backroads in a circuit through Mudgee-Gulgong-Dunedoo-Mendooran-Ballimore-Dubbo-Geurie-Wellington-Goolma-Gulgong to Mudgee.

There are two cycle trail routes: a main route and an alternative route. The entire length of Birriwa Bus Route South between its intersection with the Castlereagh Highway to the west and Merotherie Road to the east forms part of the CWC Trail. The main cycle trail route is via Birriwa Bus Route South, east of Barneys Reef Road which traverse through the study area, predominantly along the periphery. The alternative route of the cycle trail intersects with the project access route only at the Barneys Reef Road and Birriwa Bus Route South intersection which predominantly follows Slapdash Creek to the south.

Although newly created, the CWC Trail is understood to be growing in popularity, with the small townships and residences along the route providing a range of services including accommodation and food, for cyclists and support vehicles. A number of companies provide tailored tours, luggage storage and transfers including Alltrails.com.au, PedalVentures in Kandos and EZYRide E-Bike Hire in Mudgee.

The CWC Trail was developed by members of the CWC Trail Inc. ACEN has met several times with members of the CWC Trail Inc. to discuss the project and potential issues. During consultation members of the CWC Trail Inc. expressed concerns about the potential for conflict between users of the CWC Trail and construction traffic during the construction phase of the project. The primary concern of the CWC Trail Inc. related to the proposed road corridor to the site access point and any public road crossings required across the CWC Trail to access the development footprint.

The CWC Trail Inc. also noted that the CWC Trail provides commercial opportunities for a range of businesses within the townships connected by the trail and residences along the trail. 'Mayfield' located on Birriwa Bus Route South and owned by a non-associated landholder, provides refreshments on request and a farm tour. Also located on Birriwa Bus Route South is the 'Halfway House', a farm stay on the Roxanna property (associated landholder) that provides catered or uncatered accommodation for users of the CWC Trail. The access route from the Castlereagh Highway to the project will be via Barneys Reef Road and Birriwa Bus Route South. The access point to the site will be located on Birriwa Bus Route South. At this point all construction and operations traffic will access the development footprint after using the access route. Up to three public road crossings will be constructed to allow project-related vehicles to move across Birriwa Bus Route South to access parcels of land that form part of the development footprint. The CWC Trail extends along the section of Birriwa Bus Route South affected by the site access point and the three public road crossings. Given the anticipated number of construction related vehicle movements on Birriwa Bus Route South (as described above) the project, unmitigated, presents a risk to the safety of users of the CWC Trail.

ACEN initially proposed two road corridor options for access to the site, however the current, and preferred, option was chosen following feedback from the CWC Trail Inc. and consideration of a number of other issues. Option One was chosen as the preferred road corridor for access to the site, via Barneys Reef Road. The site access route selection is discussed in Section 2.5.4 in EIS.

The CWC Trail Inc. has confirmed they are pleased with the changes made to the access route as it means the majority of Birriwa Bus Route South would be unaffected by construction traffic.

Other concerns raised by the CWC Trail Inc. related to the capacity of short-term accommodation in the local area and concern that the project may absorb any spare capacity at the expense of other users such as users of the CWC Trail. This issue is discussed in Section 7.5.1.

Unmitigated, the impact to public safety for users of the CWC Trail due to an increase in traffic is assessed as **very high**. It is considered **possible** for accidents involving cyclists and support vehicles to occur given the remaining crossover in use areas ie Birriwa Bus Route South. The potential consequence for this impact is **transformational**, as any road related incidents caused by project-related traffic have the potential to result in serious injury or death, which will have a lasting impact on safety and wellbeing that may survive long after the life of the project.

ii Mitigated

a Public safety related to increased traffic on local road network during construction

In terms of road maintenance and/or the reduced quality of local roads, the assessment of forecast peak construction traffic volumes indicate upgrades would be needed along the access roads to the project. ACEN will upgrade the area of direct impact for public road upgrade works along the access route, which comprises part of Barneys Reef Road and Birriwa Bus Route South (connecting the access point to the site with the Castlereagh Highway). ACEN has consulted the MWRC and WSC regarding the road upgrades as the access route is located within both the Mid-Western Regional LGA and the Warrumbungle LGA.

With respect to potential impacts on public transport and active transport modes, there are two school bus routes that operate on the local and regional road network proximate to the project (Section 5.8). Given that construction workforce trips would typically occur outside of school travel times, they are not expected to interfere with school bus services – however should the project be approved, direct engagement with these public transport operators should be prioritised to minimise any potential impacts on the operation of these services, particularly if temporary traffic management is required to facilitate oversized deliveries of solar farm components and construction machinery. Once in operation, the project is forecast to generate about 20 vehicles to/from the project in each peak period, which is also forecast to have minimal impact on the road network.

There is also an additional community perceived risk associated with heavy vehicle movements. The TIA (EMM 2022c) predicted at peak construction 14 heavy vehicles entering and 14 heavy vehicles leaving the study area each hour with a total of 240 heavy vehicle movements daily. The transportation of project infrastructure would require over-size over-mass (OSOM) vehicles which would require a specific permit and likely occur outside of hours and under police escort vehicles as part of a convoy.

Vehicle speed affects crash likelihood and severity outcomes, with speed having a consequential and material effect on the level of road safety risk (CARRS 2017). Implementation of the mitigation measures described in Chapter 6.4 of the EIS will reduce potential impacts to road safety. These include the implementation of a Construction Traffic Management Plan (CTMP) in consultation with TfNSW, MWRC and WSC. The CTMP will provide for continued consultation with TfNSW, MWRC and the local community, reduced speed limits along local roads and implementation of a Driver Code of Conduct. The CTMP will include specific safety initiatives for transport through residential areas and the scheduling of project deliveries to avoid peak hours and school bus times where practicable. The Driver Code of Conduct will also include safety-specific tips and guidelines such as requiring compliance with road safety procedures and prohibiting unsafe driving practices such as tailgating, convoying, and speeding and may include the requirement for driver inductions, including a Driver Code of Conduct. Effective implementation of these mitigation measures will reduce the risk of collisions between truck and passenger vehicles by accounting for truck performance limitations. ACEN is encouraged to actively monitor compliance with road safety measures and encourage local residents to report any instances of unsafe driving of construction vehicles using the complaints and grievances procedure.

The potential traffic impacts of the project are considered in Traffic impact assessment (EMM 2022b) (Chapter 6 of the EIS and Appendix G). ACEN will implement the recommendations of the assessment including the following:

- a detailed CTMP including a Driver Code of Conduct is prepared prior to commencement of construction, which incorporates traffic measures to be implemented throughout the project's construction period;
- road upgrading such as resurfacing and widening to the along Barneys Reef Road and Birriwa Bus Route South road will be required to accommodate the increase in traffic associated with the construction phase;
- an Austroads Type CHR right turn treatment on Castlereagh Highway at the Castlereagh Highway/Barneys Reef Road intersection; and
- if cumulative traffic impacts with other construction projects in the area (Tallawang Solar Farm and Barneys Reef Wind Farm) are identified during assessment of the project, an Austroads Type AUL left turn intersection treatment for southbound traffic will also be implemented.

ACEN is investigating the provision of a bus service to and from the project for construction workers residing in Mudgee and Gulgong, acknowledging that much of the skilled construction workforce is likely to require private vehicle use due to equipment requirements. However, as ACEN proposes to target the local area for the recruitment of the unskilled project labour, more than likely there will be sufficient number of unskilled workers seeking to minimise transport costs to site and willing to take up the offer of a proponent provided bus service. ACEN has committed to enforcing carpooling policies amongst the local workforce for travel to and from the project. The combination of bus service and carpooling will reduce the number of daily project-related traffic movements on the local and regional road network. This may in turn mitigate public safety impacts arising from project traffic, as the overall number of individual cars on the road would be reduced. Carpooling and bus services may also mitigate the safety impacts of driver fatigue, as workforce will not be driving alone to and from site after long, and physically enduring shifts. This is a benefit for both workforce health and safety, as well as that of the general public and other road users.

In addition, it is also recommended that CTMP is developed in consultation with the potentially affected school bus service providers to further mitigate any potential conflicts with heavy vehicle movements between the hours of 7.00 am and 5.00 pm, showing consideration of the hours of operation for these important community services. Targeted engagement should also be directed towards the small village of Birriwa and landholders located proximate to the intersection of the Castlereagh Highway and Barneys Reef Road, given the increase in heavy vehicle movements at this location.

It is recommended that the CTMP is supported by a community engagement strategy that support timely and clear community notification of the commencement of the project construction phase, any OSOM movements and road upgrades including the construction of the public road crossings on Birriwa Bus Route South.

Following mitigation, public safety impacts from project traffic is assessed as **medium**. Upon successful implementation of the proposed mitigation measures, the potential likelihood is reduced to **unlikely**. However, the consequences of a rare road accident or collision to occur remain **major**, as the potential for injury remains.

b Public safety risk for users of the Central West Cycle Trail

In addition to the mitigation measures identified above the following measures are to be considered to reduce the risk for users of the CWC Trail:

- in consultation with CWC Trail Inc. prepare a signage plan highlighting the CWC Trail within and at the vicinity of the project;
- ensure the CWC Trail is highlighted in the site induction and Driver Code of Conduct to increase construction workforce awareness of cyclists' presence in the area; and
- any site specific circumstance ie peak construction activities, a traffic controller may be required to manage the vehicular traffic and cyclists which is subject to site supervisor's safety assessment and discretion.

In addition, cyclists travelling along the CWC Trail within the development footprint will be provided will be safely separated during the two-year construction period onto an approximately 2 m wide dust lane in accordance with relevant cycling guidelines and standards and in consultation with community and CWC Trail Inc. Further safety measures such as appropriate signage and traffic controllers may also be considered.

ACEN has initiated a SIP for the Stubbo Project and is investigating the establishment of the CW and Orana CBSP. Through the SIP the CWC Trail Inc. can access funds to support minor improvements to the CWC Trail such as the installation of signage. CWC Trail Inc. may also be able to access funding under the proposed Central West Community Benefit Scheme once established.

The Driver Code of Conduct for the project will include specific guidelines in relation to cyclists and in particular travel on Birriwa Bus Route South. ACEN will maintain the complaints and grievances procedure (described in Section 7.4.1) to enable stakeholders to raise any issues or concerns in relation to the project, and ensure a timely response from ACEN.

Speed limits on Barneys Reef Road and Birriwa Bus Route South and the road corridor will be reduced to 80 km/h for regular traffic.

Mitigated, the impact to public safety for users of the CWC Trail due to an increase in traffic is assessed as **high**. It is considered **possible** for accidents involving cyclists and support vehicles to occur given the remaining crossover in use areas ie Birriwa Bus Route South. The potential consequence for this impact remains **transformational**, as any road related incidents caused by project-related traffic have the potential to result in serious injury or death, which will have a lasting impact on safety and wellbeing that may survive long after the life of the project.

A summary of the assessment is provided in Table 7.22.

Table 7.22 Summary of health and wellbeing related to safety risks for road users

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Safety risks for road users	All users of the local and regional road network	Temporary and medium term (24 months)	Local area	High	Medium
	Safety risks for CWC Trail users	CWC Trail users	Temporary and medium-term (24 months)	Local area	Very high	High

7.7.2 Public safety related to fire risk

i Unmitigated

Bushfire risk is a prevalent concern across rural communities of Australia, with impacts experienced within the local area. In February 2017 the Sir Ivan fire burned through 55,000 hectares of land in the Warrumbungle LGA, destroying 35 homes and killing about 6,000 head of livestock (Ferguson, 2018). The town of Uarbry to the north-east of the project in the Warrumbungle LGA was almost destroyed by the fire.

The project is located within the Cudgegong Rural Fire Service (RFS) District. The Birriwa RFS is the closest fire response unit to the project. Consultation undertaken with the RFS identified the following issues of concern:

- fire risks associated with construction workers travelling to and from the project (ie fires resulting from motor vehicle accidents, or other ignition sources such as cigarettes); and
- fire risks associated with operation of machinery during construction (ie welding activities which could result in grass fires).

Potential fires in the local area would impact the safety of contractors, and nearby residents and community members, livelihood and businesses.

Consultation identified a need to ensure the project does not impede the provision of a safe emergency access route in times of bushfire for nearby landholders and the project workers. Consultation also identified a need to ensure emergency services understand potential risks and how to access the site.

The Preliminary Hazard Assessment (PHA) (Sherpa 2022) considers risk of hazardous events occurring on-site during project construction and operations. The PHA reported that hazardous events resulting in potential fire and/or explosion are not expected to have significant offsite impacts. This was assessed based on the rural location of development, proposed controls and the separation distance between the proposed BESS and nearest residential dwellings (minimum 800 m). It was also noted that fires would likely be localised to the individual unit and is unlikely to spread to other units or plant and equipment in the vicinity. Should a hazardous event related to fire extend beyond the development boundary, the PHA notes it is unlikely that the event would have the potential for significant off-site impact (ie serious injury and/or fatality to the public or off-site population).

The unmitigated impact of public safety issues arising from fire hazards on-site is assessed as **high** as the likelihood of offsite impacts are **possible** despite provision to fire protection/suppression systems for the BESS, local emergency services may struggle in their capacity to respond. The magnitude level is assessed at **major** as the BESS will also be situated in a rural area and there is a large separation distance to the nearest dwelling(s) thus no significant offsite impact expected however it is more likely that onsite employees may be affected with potential injury or loss of life.

ii Mitigated

The potential bushfire risks of the project are considered in the *Bushfire Assessment* (Cool Burn 2022) (Chapter 6 of the EIS and Appendix O). A copy of the bushfire assessment will be provided to the NSW RFS for review and acknowledgment. ACEN will implement the recommendations of the bushfire assessment including the following:

- provision of an Asset Protection Zone around solar farm assets;
- preparation and implementation of a Bushfire Management Plan (BMP) in consultation with the Cudgegong RFS District office. The BMP will include provisions for location of hazardous materials as well as specific measures and procedures to prevent ignition from project activities. It will include an Emergency Response Plan (ERP) which will incorporate all relevant safety procedures and management measures detailed in the relevant acts, regulations and Australian Standards;
- maintenance of internal access roads to provide safe, reliable and unobstructed passage will by Cat-1 fire vehicle access consistent with NSW RFS Fire Trail Standards (NSW RSF 2019); and
- locating a 50–80 kL dedicated water storage in consultation with NSW RFS, to allow for permanent emergency supply and ease of access.

ACEN have noted that equipment will be monitored (ie fire and smoke detectors) and will provide early detection to reduce fire risk. The successful implementation of the recommendations stated in the PHA (Sherpa 2022) to mitigate any potential public safety risks stemming from fire hazards would reduce the fire hazard. ACEN should consult with Fire and Rescue NSW (FRNSW) during detailed design of the facility to ensure that the relevant aspects of fire protection measures have been included.

Emergency Services provision in the local area is described in Section 5.7.1. In preparing and implementing the BMP and ERP, ACEN should consult with the Gulgong and Dunedoo Fire Services, the Birriwa RSF as well as the Cudgegong RFS, MWRC, WSC, and NSW Fire and Rescue.

The above mitigation measures and additional measures detailed in Appendix P of the EIS will reduce the risk of bushfire occurrence and impacts.

Further, ACEN would welcome proposals from the Birriwa RFS and/or the Cudgegong RFS District for initiatives to be funded through the existing Stubbo Project SIP (Section 8.1.1). Additional funding opportunities may also be available through the proposed CW and Orana CBSP (Section 8.1.2). In the event of a bushfire in the local area during construction, ACEN will ensure workers and where possible equipment are made available to assist the RFS with a response.

In consulting with local emergency services, the mitigated public safety impacts due to fire hazards arising from the project is assessed as **medium**. The likelihood of impact is reduced to **unlikely**, with negative consequences remaining **major** due to the severity of impact associated with potential injury or loss of life.

A summary of the assessment is presented in Table 7.23.

Table 7.23 Summary of health and wellbeing related to bushfire risk

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Health and wellbeing impacts related to increased bushfire risk.	Landholders, residents of the local area, construction workforce, road users.	Life of project	Up to regional area	High	Medium

7.7.3 Stress and anxiety

i Unmitigated

The planning and development of major projects can cause stress and anxiety for local communities and landholders. Stress and anxiety are especially associated with uncertainty over a project's potential impacts and can be exacerbated by a lack of, or poor communication with the project proponent. Stress and anxiety are often more prevalent in near-neighbours and people with strong connections to a location, rather than broader communities. Issues related to stress and anxiety were not openly identified during the SIA field study. However, feedback from ACEN regarding interactions with some associated and non-associated landholders shows some evidence. Analysis of community health and wellbeing indicators for the Western NSW Public Health Network (SIA Appendix A) (within which the local area and regional area is located) shows a consistently lower proportion of persons accessing allied mental health services compared to national rates.

ACEN has maintained a proactive approach to engagement with associated and non-associated landholders and the broader communities of the local area. As discussed in Section 6.1 and Chapter 5 of the EIS, project updates have been regularly provided to associated and non-associated landholders and potentially affected landholders have been engaged in discussions regarding compensation and/or the Neighbouring Properties Benefit Scheme. Frequent and tailored engagement with associated and non-associated landholders has ensured individuals are kept informed of the project and provided with an opportunity to ask questions or raise issues and concerns. The presence of the project office in Gulgong together with the facilitation of community information sessions has provided the communities of the local area with readily accessible project information.

Based on the findings of engagement (EIS and SIA) and considering the current baseline conditions for mental health, the potential impact of the project on the health and wellbeing of associated and non-associated landholders is assessed as **medium**. It is **likely** that the project will generate feelings of stress and anxiety in some associated and non-associated landholders, and the potential impact is assessed as **minor**.

The potential impact of the project on the health and wellbeing of the broader community with respect to stress and anxiety is assessed as **low**, with a likelihood of **possible** and a magnitude of **minimal**. No further mitigation is necessary.

ii Mitigated

ACEN acknowledges that the planning and development stage of any major project can cause stress for nearby landholders. Actions to be taken by ACEN to reduce uncertainty, and support positive health and wellbeing amongst near-neighbours includes:

- Pre-approvals phase:
 - ongoing and tailored face-to-face engagement with associated and non-associated landholders; and
 - tailored feedback of the findings of the EIS technical studies focussing on the topics of most interest to each landholder.
- Construction phase:
 - preparation and implementation of a construction phase community engagement strategy to support ongoing and timely engagement with landholders and the broader community; and
 - implementation and landholder notification of the ACEN complaints and grievances procedure to ensure landholders understand how to contact ACEN if issues arise during construction.

With the implementation of the above social management measures, the potential impact of the project on the health and wellbeing of associated and non-associated landholders is assessed as **medium**. It is **possible** that the project will continue to generate feelings of stress and anxiety in some associated and non-associated landholders, however the potential impact is assessed as **minor**.

A summary of the assessment is presented in Table 7.24.

Table 7.24 Summary of health and wellbeing related to stress and anxiety

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Health and wellbeing impact due to project induced stress and anxiety.	Associated and non-associated landholders.	Pre-approvals and construction phase (upwards of 3 years)	Local Area	Medium	Medium
		Broader communities of the local area.	Pre-approvals and construction phase (upwards of 3 years)	Local Area	Low	Low

7.7.4 Sleep disturbance from battery operation

i Unmitigated

Sleep plays a vital role in brain function and overall health and wellbeing. According to Medic et al (2017) sleep disruptions have substantial adverse short and long-term health consequences. Numerous factors contribute to sleep disruption, ranging from lifestyle and environmental factors to sleep disorders and other medical conditions. The operation of the BESS has the potential to affect sleep patterns of residences located in proximity. The NVIA (EMM, 2022d) has assessed the potential for sleep disturbance from the project. Based on the assessment noise sources have been modelled assuming 100% utilisation for day, evening, and night, although based on experience night utilisations are likely to be much lower (typically 20% to 40%). Noise levels from inverters and battery container solutions are controlled by noise from cooling fans which is expected to mask tonal components of noise emissions from these sources. Based on the findings of the NVIA the project is unlikely to lead to sleep disturbance.

Taking into consideration the findings of the NVIA the potential impact of the project on the health and wellbeing of near neighbours due to sleep disturbance from the BESS is assessed as **low**. It is **unlikely** that the project will result in sleep disturbance, and the potential impact to health and wellbeing is assessed as **minor**. No further consideration of this social impact is required.

A summary of the assessment is presented in Table 7.25.

Table 7.25 Summary of health and wellbeing related to sleep disturbance

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Health and wellbeing impact due to sleep disturbance from BESS operation.	Associated and non-associated landholders.	Long-term	Immediate surrounds of the study area	Low	Low

7.7.5 Health impacts from proximity to infrastructure

i Unmitigated

Radiation and electric and magnetic fields (EMFs) are described in Chapter 6 of the EIS and Appendix I (Preliminary Hazard Analysis). Potential for health impacts associated with EMFs occurs only during the operational phase of the project when electrical infrastructure is capable of generating EMFs.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) summarises a paper by Tell et al. (2015), which states that the highest levels of EMFs within the assessed solar PV power-generating facilities were detected immediately adjacent to transformers and inverters, which were close to, but still below the ICNIRP's general public limit. However, at 30 cm from the transformer surface, the measured level dropped to five times lower than the ICNIRP's general public limit (Tell et al. 2015, cited by ARPANSA 2019).

Although the adverse health impacts have not been established, the possibility of impact due to exposure to EMF cannot be ruled out. As part of a precautionary approach, the PHA (Sherpa 2022) assessed the typical exposure levels to EMF for the proposed project infrastructure.

The design and typical exposure levels to EMFs for the project infrastructure has been assessed against the ICNIRP's (1998) Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields. Several controls to reduce the potential for EMFs have been identified and implemented in the project design, including standard solar PV plant characteristics such as inverters housed in shipping containers or steel cabinets. The preliminary hazard analysis determined that EMFs created from the project will not exceed the International Commission on Non-Ionising Radiation Protection (ICNIRP) reference level for exposure to the general public at any location within the development footprint and that the impact on stock and the general public (including neighbouring agricultural workers) in surrounding areas will be negligible.

Given the findings of the PHA, during operations the unmitigated potential impact to health and wellbeing is assessed as **low**. The likelihood of impact is determined as **unlikely** and the impacts is considered **minimal**, given the PHA assessed the consequence from exposure to EMF to result in no or minor injury (Sherpa 2020).

No further consideration of the impact is required.

A summary of the assessment is presented in Table 7.26.

Table 7.26 Health impacts from proximity to infrastructure

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Health and wellbeing is affected by proximity to infrastructure.	Operations workforce. Associated and non-associated landholders.	Permanent Long-term (life of project)	Local area	Low	Low

7.8 Culture impacts

This section provides an assessment, unmitigated and mitigated, on the culture impacts and the matters that significantly impact culture as a result of the project. The matter assessed considers impacts to Aboriginal and Torres Strait Islander people's values systems.

7.8.1 Cultural impacts related to Aboriginal and Torres Strait Islander values

i Unmitigated

The change in land use associated with the project has the potential to result in a sense of loss of cultural heritage and values for Aboriginal and Torres Strait Islander people. An Aboriginal Cultural Heritage Assessment (ACHA) (Ozark, 2022a) was completed to understand the cultural heritage values of the study area (Chapter 6.5 of the EIS; Appendix H). The assessment included consultation with the Registered Aboriginal Parties (RAPs), Knowledge Holders and Local Aboriginal land Councils (LALC).

During field work undertaken to inform the ACHA, no specific cultural values pertaining to the development area were identified by Aboriginal participants. However, it is recognised that Aboriginal communities have strong cultural values towards landscapes and cultural heritage sites.

The ACHA survey of the study area resulted in identification of eight Aboriginal sites including one site (Mangarlowe IF-2) which could be harmed by the project. The remaining sites will be conserved in the landscape, and the project will adhere to the ESD principles of ensuring that impacts are minimised and that the Aboriginal cultural heritage values within the development footprint are maintained. Site types include one scarred tree; two isolated finds; four artefact scatters, and one artefact scatter with potential archaeological deposit. Mangarlowe IF-2 is a single, complete flake manufactured from a volcanic tuff.

As noted in the ACHA, the social and cultural value of Aboriginal sites is mainly determined through consultation with Aboriginal people and generally, the Aboriginal community regard all sites as having high cultural significance. This is because all sites provide context and connection to their ancestors, as well as being a tangible reminder of past Aboriginal occupation of the area. A copy of the draft ACHA was distributed to all RAPs for review on 29 April 2022 and no feedback was received relating to the social or cultural values of the newly recorded sites or the broader study area.

The unmitigated potential for impacts to Aboriginal and Torres Strait Islander values is assessed as **high**, with an **almost certain** likelihood and **moderate** impact. This reflects the fact that one site will be impacted by the project and all sites are regarded by Aboriginal and Torres Strait Islander people as having cultural significance.

ii Mitigated

The ACHA (Ozark 2022a) describes a suite of management and mitigation measures for the salvage of Mangarlowe IF-2. These measures have been reviewed by the RAPs as part of the review of the draft ACHR and no feedback regarding the salvage methods was received. Long-term management of Aboriginal objects will be done in consultation with the RAPs. The remaining seven sites will be protected during the construction of the project through the use of high-visibility temporary fencing. The location of all sites will be shown on all appropriate plans to ensure that they are not inadvertently harmed.

With the implementation of the above mitigation measures the potential impact of the project on Aboriginal and Torres Strait Islander values is **medium**.

A summary of the assessment is presented in Table 7.27.

Table 7.27 Summary of cultural impacts related to Aboriginal and Torres Strait Islander values

Social impact	Matter	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Change to land use results in a sense of loss of cultural heritage values for Aboriginal and Torres Strait Islander People.	Aboriginal and Torres Strait Islander People	Permanent Life of project	Local area	High	Medium

7.9 Cumulative impacts

The assessment of cumulative impacts requires consideration of all reasonably foreseeable development (RFD) not yet approved in the local area, the existing social conditions and the project. Reasonably foreseeable developments are defined as projects and activities that are:

- currently entered into the regulatory project approval pathway;
- have been publicly disclosed by other proponents; or
- may be result from the development of the project.

Reasonably foreseeable developments must have the potential to affect the nature and scale of impacts predicted for the project and must be occurring within the area of social influence of the project. The majority of RFDs identified are renewable energy developments (solar and wind) within a 25 km radius. Of the RFDs projects within 25 km of the project:

- the majority are located in the LGAs of Mid-Western Regional and Warrumbungle;
- two are approved with construction yet to commence (Stubbo Project, and Dunedoo Solar Farm);
- six are in various stages of the SSD approvals process; and
- one is approved and operational (Beryl Solar Farm).

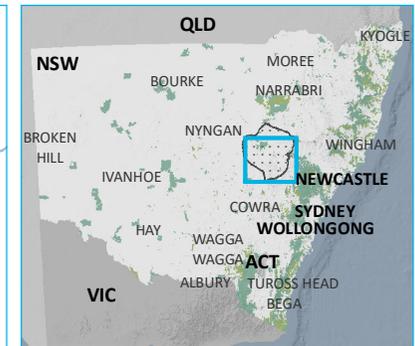
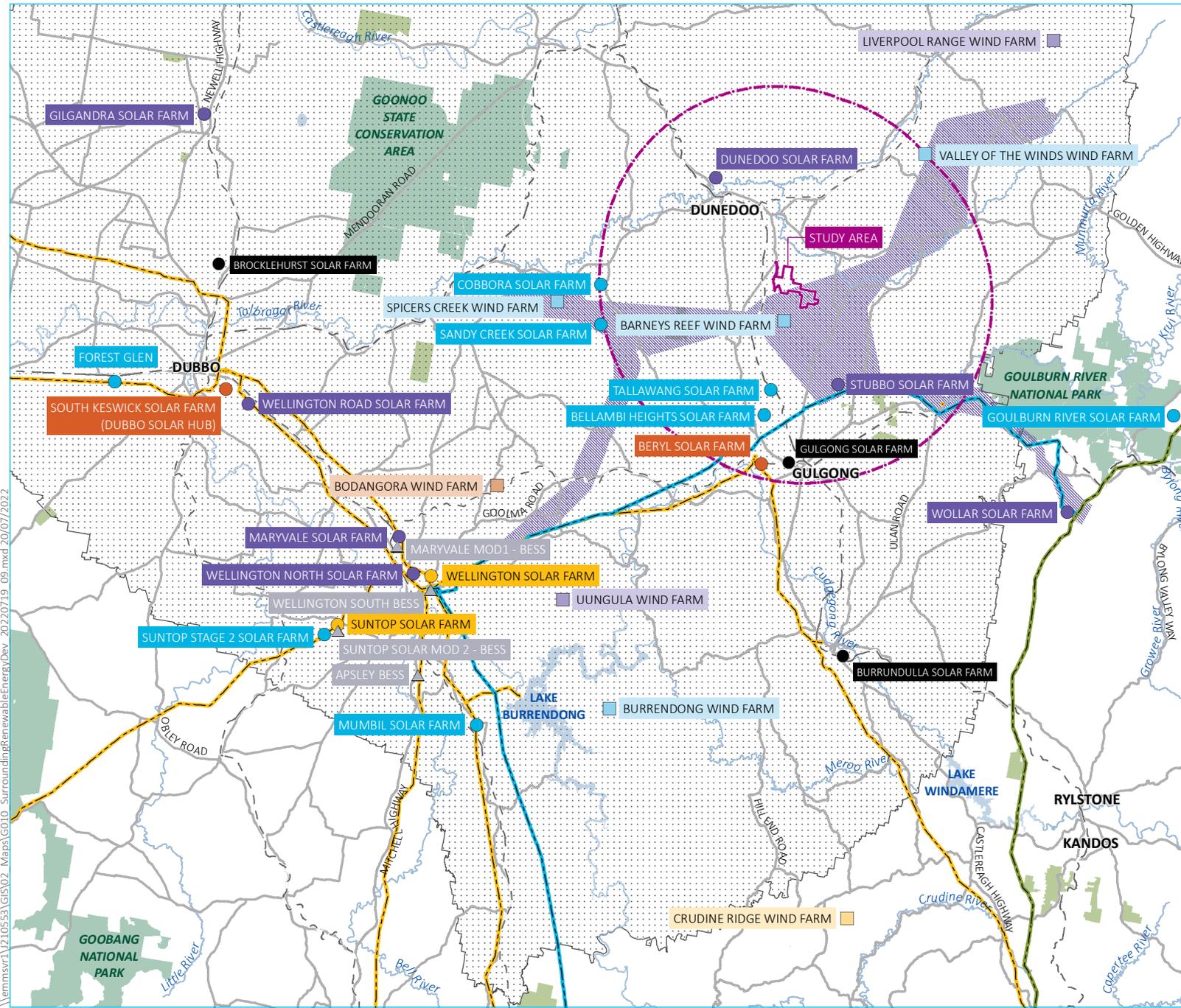
Of these RFDs the following have construction programs with potential to overlap with the project:

- Bowdens Silver Project;
- Stubbo Project;
- Tallawang Solar Farm;
- Barneys Reef Wind Farm;
- Bellambi Heights Solar Farm;
- Valley of the Winds Project;
- Sandy Creek Solar Farm;
- Dunedoo Solar Farm;

- Spicers Creek Wind Farm; and
- CWO REZ Network Infrastructure.

Figure 7.1 shows the location of existing renewable energy operations and nearby major projects (renewable and other) in the regional area.

Appendix E documents the RFDs (see Table E.1) is informed through a review of the DPE Major Projects Register, social baseline study and the SIA field study program. Cumulative impacts are considered further in Chapter 6.14 of the EIS.



- KEY**
- Study area
 - Study area 25 km buffer
 - Central West Orana Renewable Energy Zone transmission corridor
 - Central West Orana Renewable Energy Zone
 - Operating system voltage
 - 132 kV
 - 330 kV
 - 500 kV
 - Surrounding renewable development
 - ▲ Battery Energy Storage System (BESS) (in planning)
 - Solar development

● Withdrawn	 In planning
● In planning	 Approved
● Approved	 Under construction
● Under construction	 Operational
● Operational	
 - Existing environment
 - Rail line
 - Major road
 - Named watercourse
 - Named waterbody
 - NPWS reserve
 - State forest

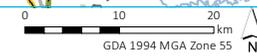
Surrounding renewable energy development

Birriwa Solar and Battery Project
Social Impact Assessment
Figure 7.1



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Source: EMM (2022); DFSI (2017); DPIE (2022); GA (2011); ASGC (2006); ACEN (2022)



7.9.1 Population change

As discussed in Section 7.2.2, the construction phase of the project will generate approximately 800 new jobs at peak construction, with 70% (560 people) expected to comprise of workers from outside of the area (Table 2.2), a temporary population increase of about 560 people is expected. The known construction workforce associated with expected concurrent projects ie Stubbo Project, Tallawang Solar Farm and Barneys Reef Wind Farm and CWO REZ Network Infrastructure is 3,466 full-time employees (see Appendix E) Whilst it is unlikely that all of these employees will be sourced from outside the regional area, the total has been used as it is not possible to predict the level of in migration resulting from other projects. The sum of non-local construction workers for the project and the known construction workforce of concurrent projects is [560+3,466].

Taking into account if the other projects planned for the local area and likely to commence construction at the same time as the project, the potential temporary cumulative population increase, as a result of the project and other concurrent developments could be up to around 4,026 people. This represents an 15.7% increase in total population of the Mid-Western Regional LGA based on the 2021 population figure of 25,563.

7.9.2 Housing and short-term accommodation

The primary issue raised during the SIA field study was the impact of the project on access to private rental housing and short-term accommodation in the local area. A representative from MWRC noted that the local area had limited capacity to absorb the housing demand generated by the construction phase of the project given the multiple SSD projects in the area. Cumulative impacts on both rental housing and short-term accommodation were identified as critical issues during consultation with MWRC and a number of service providers (ie Barnardos). These stakeholders expressed fears that cumulative demands for a range of short-term accommodation would have:

- considerable impact on vulnerable groups in the regional area who seek access to affordable housing; and
- a detrimental impact on the growing tourism industry by reducing access to short-term accommodation for visitors to the region, particularly visitors attending for key regional events. This would have a range of flow-on indirect impacts to the service industry.

The rental vacancy rate in the local area in May 2022 was consistently below the 3.0% benchmark, indicating a tight rental market with an undersupply of rental housing during that time. Whilst the data shows considerable fluctuation in rental vacancy rates across the three communities of the local area, overall rental vacancy rates have steadily declined. In May 2022 there were three rental vacancies in Dunedoo, three in Gulgong and 42 in Mudgee. An additional 77 properties were located in Dubbo (SQM Research 2022).

Increased demand for skilled workforce and trades skills more generally, may arise with the construction and operation of concurrent SSD projects. This may cause potential impacts on the availability of skilled workforce in the local area, requiring additional project workforce to be sourced from outside the local and regional areas, which may increase demand on rental housing within the local and regional areas (further discussed in Section 5.4 and Section 5.5).

The MWRC estimates there are currently 3,200 rooms of short-stay accommodation in the Mid-Western Regional LGA and a much smaller number of rooms in the Warrumbungle LGA, with an average occupancy rate of over 80% (SIA field study). Assuming the majority of workforces associated with other projects that overlap with the project will be sourced from outside the regional area, then the projected cumulative demand for short-term accommodation and rental accommodation in the regional area will be extreme and supplementary accommodation ie temporary workforce accommodation village would need to be provided.

This has significant potential consequences for persons currently at risk of financial hardship, housing instability and homelessness, particularly in the context of COVID-19, which has further contributed to increased rents and lower rental availability in regional areas of Australia, including the Mid-Western Regional LGA, due to migrations from urban centres to more regional and rural areas (Anglicare 2021). Commitments to local hiring, provision of training and apprenticeship opportunities for local workers, and partnership with local employment and training services could reduce the need for outsourcing of workers.

The number of projects in the regional area suggests a long-term pipeline (possibly upwards of 10 years) of construction work opportunities located in the regional area. With industry collaboration there is an opportunity to draw a permanent resident construction workforce to the regional area. This would have a positive effect on accommodation demand as workers may seek to buy in the regional area and relocate permanently if there is a clear pathway forward for long-term employment. The Warrumbungle LGA in the regional area and Dunedoo and Gulgong in the local area are all experiencing a trend of population decline. Encouraging a permanent construction workforce on the regional area would benefit long term sustainability of these communities and the services and facilities they provide, as well as supporting long term economic benefits for business operators.

Addressing the cumulative impacts of housing and short-term accommodation requires a collaborative approach between proponents, local councils, other industry bodies ie EnergyCO. EnergyCo has offered to work collaboratively with CFGs to provide certainty around assumptions and manage whole-of-REZ issues such as cumulative impacts on housing and short-term accommodation, roads and traffic. ACEN has identified a willingness to participant in discussions regarding the management of cumulative accommodation impacts and supports the need for greater collaboration with industry.

It is anticipated that all NLHs associated with the construction phase would be construction workforce would likely be residing in the regional area in short-term accommodation ie hotels, motels, Airbnb properties; and private rental accommodation (see Section 2.2.3 and Section 2.2.4 for more information). It is also anticipated that construction workers from other areas of NSW and outside of NSW will be residing in temporary accommodation in Mudgee, Gulgong, and Dubbo. Existing or proposed accommodation villages, such as Ulan Village Green at Ulan or the Valley of the Winds Wind Farm workers facility (if approved) may be used if capacity is available at the time of construction of the project.

7.9.3 Employment and industry

Multiple concurrent projects occurring in the regional area will exacerbate existing skill shortages impacting both the renewable energy sector and other industry sectors. Employment and longevity of local industry associated with the project was considered a major benefit by local service providers during in-depth interviews. A local employment agency discussed the importance of maintaining employment opportunities through prioritising a local workforce. Renewable developments in the local area were identified as a primary source of local employment during in-depth interviews. As such, some service providers recognised significant employment benefits associated with a large number of ongoing projects and developments.

The multiple SSDs in the area also may have the potential to benefit in local procurement of goods and services, resulting in increased opportunities for revenue for local business and therefore having a positive impact on livelihoods. During in-depth interviews, stakeholders also identified potential indirect flow-on benefits arising from use of local goods and services by employees and contractors, such as spending in local retail shops and use of local services (public and private).

However, the employment demands for the above future projects ie Stubbo Project, Tallawang Solar Farm and Barneys Reef Wind Farm and CWO REZ Network Infrastructure is 3,466 full-time employees may cause potential impacts on the availability of skilled workforce in the local area, should construction periods overlap substantially. This may require additional workers to be sourced from outside the local and regional areas with flow-on impacts to accommodation and other industry sectors, as previously discussed.

7.9.4 Visual amenity

Multiple projects near each other can result in cumulative visual impacts that impact the way a landscape is experienced. Cumulative visual impacts can arise from the presence of similar projects that may have a low impact individually, but when viewed together, can have a significant visual impact on the landscape. Generally, this occurs when:

- multiple renewable energy projects are located within an area and they change perceptions of the area due to repeated exposure to similar projects – this can be referred to as ‘sequential viewing’ and projects do not have to be seen simultaneously; and
- simultaneous views of multiple renewable energy projects from public or private viewing locations.

There are multiple renewable energy projects proposed in the local area including a mix of solar and wind projects. Each of these projects will result in changes to the regional visual landscape which will likely affect how people experience their rural surroundings. The VIA (EMM 2022a) (Appendix F and Chapter 6 of the EIS) presents an analysis of potential cumulative visual impacts from the project and the nearby Barneys Reef Wind Farm and Valley of the Winds Project.

Anticipated cumulative impacts are summarised below:

- Barneys Reef Wind Farm:
 - low visual impact for residents near the Birriwa Solar and Battery Project;
 - low visual impact for travellers along Castlereagh Highway and rail line; and
 - moderate visual impact for travellers along the CWC Trail (Merotherie Road and Birriwa Bus Route South).
- Valley of the Winds Wind Farm:
 - low visual impact for residents near the Birriwa Solar and Battery Project; and
 - low visual impact for travellers along the Golden Highway.

The broader cumulative effects to the visual landscape from multiple solar projects within the CWO REZ has been given little consideration to date, this is despite issues relating to potential visual impacts being consistently raised. Addressing the broader cumulative effects of solar projects on the visual landscape requires a collaborative approach between proponents and other industry bodies such as EnergyCo. Similar to cumulative accommodation impacts, the issues cannot be addressed by individual proponents in isolation.

7.9.5 Traffic and public safety

i Traffic movements

Traffic was raised as a key issue during the SIA field study in relation to concurrent projects and developments in the local area. Additionally, the large number of developments were perceived to contribute to cumulative impacts related to traffic and potential road degradation within the local area. Previous SIAs suggest that construction traffic from multiple SSD's can have a substantial disruption to resident's way of life and health and wellbeing, including impacts surrounding traffic noise and road safety.

Some stakeholders expressed concern that local roads including the Castlereagh Highway may be unable to accommodate increased truck movements associated with the major projects, due to their conditions. Development in vicinity of the project has the potential to generate cumulative traffic impacts with the project. The TIA (EMM, 2022b) has assessed cumulative impacts associated with traffic from surrounding projects and provides further detail concerning traffic impacts from concurrent developments in the regional area (see Appendix G of the EIS).

The greatest potential for cumulative impacts of future projects and the project in relation to traffic are associated with construction of the Tallawang Solar Farm and Barneys Reef Wind which have the potential to have construction periods that overlap with the project. Detailed construction traffic forecasts for these two projects were not publicly available at the time of writing the TIA report and is commercial in confidence. Construction traffic estimates for these projects have been made based on similar solar developments in the region.

According to the TIA, there will be an increase in the peak hour volume of traffic from 450 at the baseline conditions to 600 at the cumulative traffic conditions, with 12% of this total being heavy vehicles (EMM 2022a). These traffic totals are for a worst-case scenario where it is assumed that traffic from the two nearby developments, Tallawang Solar Farm and Barneys Reef Wind Farm, project construction traffic and road network traffic would all overlap in the same morning and evening peak hours. The TIA considers this highly unlikely, and further, arrival and departure patterns of traffic may not necessarily coincide, it has been noted the TIA commitment to revisiting this issue in next phases as additional information becomes available.

ii Safety

The TIA (EMM 2022b) considered the potential cumulative traffic impacts of the project particularly associated with heavy vehicle movements, including a road safety assessment. The impact on road safety for all road users is considered to be negligible, with an assessment concluding no major road safety hazards were identified which may result from the proposed increase in both light and heavy vehicle volumes. Additionally, the recorded crash history along the Castlereagh Highway and road upgrade corridor does not indicate an existing or developing road safety problem that would be made worse by the cumulative contribution of the vehicle traffic to/from the project.

7.9.6 Infrastructure and services

i Social infrastructure and services

Local population growth (temporary or permanent) associated with local and regional development can increase the need for funding and presence of local social and health services due to increased pressures and demand from workforces of the concurrent SSDs. Temporary population growth associated with the proposed SSDs workforces may increase demand for more health services, for different health services including specialists, and for more diversity and capacity in employment and training organisations.

A potential cumulative benefit of the large number of local projects is related to significant combined community contribution (ie benefit sharing agreements and opportunities), procurement and local investment.

ii Waste management facilities

Mid-Western Regional Council operates waste management facilities in Gulgong (approximately 20 km south of the project) and Mudgee (approximately 60 km south of the project), as well as a village and rural waste transfer station at Birriwa. Commercial waste removal and bulk recycling services are also available. In addition, WSC operates a waste transfer station in Dunedoo (approximately 15 km north-east of the project).

Waste management is described in Section 6.13.2 of the EIS. All waste produced by the project will be classified, stored and handled in accordance with the *Waste Classification Guidelines – Part 1: Classifying Waste* (EPA 2014).

A waste management plan (WMP) will be prepared for the project in consultation with DPE and local councils (MWRC and Warrumbungle) and will detail estimated annual quantities, types/classifications of waste generated by the project, as well as management measures. A key aim of the WMP will be to ensure that use of local waste facilities does not disadvantage local businesses or the local community.

Due to the expected volume of project generated waste, it is likely that the waste will need to be managed by a commercial agreement between the EPC contractor(s) appointed by ACEN for the construction of the project, a licenced waste management company and the relevant local councils. Details will be included in the WMP to be developed prior to construction.

Significant quantities of waste generated during construction, such as cardboard packaging and wooden pallets will be suitable for reuse, recycling or alternative use (ie chipping of pallets for mulch), which will reduce the volume of waste going into landfill. As described in Section 7.6.4 in the EIS, ACEN is currently in discussions with several leading PV module suppliers to understand what they are doing to reduce the volume of plastic used in packaging (ie for shipping/transport of PV modules). During decommissioning, dismantled and decommissioned infrastructure will be recycled, where possible. There are presently no dedicated recycling facilities for PV modules in Australia; however, these are expected to be established by the time the project is decommissioned as the industry will have had time to develop. Structures and equipment that cannot be recycled will be disposed of at an appropriately licensed waste management facility.

8 Mitigation and management

This section provides a description of ACEN's approach to community benefit sharing for the project. Community benefit sharing is a corner-stone of ACEN's approach to enhancing potential project benefits or opportunities, and managing potential project social impacts. This section also presents a summary of the identified social impacts and opportunities, the proposed social enhancement measures, and measures to manage potential adverse social impacts. A monitoring and management framework is also presented.

8.1 Community Benefit Sharing

Across the CWO REZ and throughout the EIS community engagement process, ACEN has demonstrated its intention to establish a positive, long-term connection with the local communities. In the region, ACEN currently has two projects in the approvals phase (this project and the Valley of the Winds project) and one approved project (Stubbo Project). ACEN is seeking to develop a CBSP with the local residents and the broader community proximate to ACEN projects aimed at building and supporting local projects and initiatives.

ACEN's intention is to design and implement benefit sharing programs in line with the community needs, the level of social impacts and tailored to the stage of the development, construction or operation of the project. ACEN also aims to have a consistent approach across all the solar projects in the CWO REZ. ACEN also notes that there may be a standardised set of requirements/obligations placed on developers as part of the Long Term Energy Services Agreement (LTESA) and/or Access Rights tenders being run by the NSW Consumer Trustee in the second half of 2022 through to early 2023. In short, these as-yet-undefined obligations may dictate the model and level of community related contributions expected of developers in the CWO REZ.

At the time of lodgement of this EIS, ACEN's contribution to the community involves the following programs:

- Stubbo Project SIP, that aims to eventually transition into a CBSP;
- Central West Orana solar projects CBSP; and
- ACEN's NBSP.

8.1.1 ACEN Stubbo Project Social Investment Program

i SIP Scope

The Stubbo Project is a 400 megawatt renewable energy generator approved for construction by the New South Wales Government in 2021. Construction early works will start end of 2022/early 2023. A Voluntary Planning Agreement (VPA) delivering benefits to communities within the Mid-Western Regional LGA will commence at construction. To complement this, in March 2022, ACEN announced the Stubbo Project SIP available to the Gulgong and local communities. The Birriwa and Merotherie localities are included in the area of benefit of this SIP.

Initial seed funding has been available to the community since March 2022 to support activities that enhance the liveability and vibrancy of the Gulgong community. Table 8.1 summarises the SIP funding mechanisms.

Table 8.1 Stubbo Project SIP Funding Mechanisms

Mechanism	Description
Financial grants	Provided to underwrite the costs of specific projects or programs. Grants typically are provided to start something new, pay for important equipment or training, or undertake research. They are generally limited to a defined time period.
Sponsorships and donations	<p>A sponsorship is an exchange in value. ACEN provides financial or in-kind support and the organisation accepting the sponsorship provides a tangible and measurable return to our business such as media or community goodwill. Our sponsorships are based on the principle of reciprocity and align with our business risks and objectives. This means that aside from assisting community growth, these partnerships allow ACEN to help improve the quality of life and liveability of the community.</p> <p>A donation is a charitable gift to secure goodwill. There is no expectation of a return to the business. Donations should be linked to real and relevant issues such as resilience activities such as COVID-19, floods or bushfire that impact the whole community.</p>
Partnerships	Partnerships are collaborative, ongoing relationships between ACEN, Not-For-Profits (NFP) and community service organisations and generally include a combination of financial and in-kind support. Partnerships are relationships aimed at achieving several goals that either partner would be unable to achieve on their own.

Source: Proponent provided information

ii Applicants

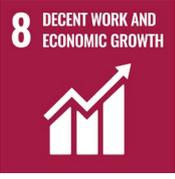
The Stubbo Project SIP is open to applications from the following individuals and/or groups:

- not-for-profit (NFP) organisations and charities (A not for profit organisation is an organisation that is not operating for the profit or gain, either direct or indirect of its individual members);
- incorporated community-based organisations;
- social enterprises; and
- government entities and profit organisations where a project demonstrates a strong contribution to the local community.

iii Social investment value areas

Preference for funding will be given to activities that deliver benefits in at least one of ACEN’s value areas (Table 8.2). ACEN’s approach to social investment is aligned with the *United Nation’s Sustainable Development Goals*.

Table 8.2 ACEN Value Areas

Value	Focus	UN SDGs
Community enhancement and resilience	Activities that enhance communal lives, cohesion and resilience through improved access to technologies and economic opportunities.	 
Education and work	Activities that provide or enhance education, training and employment resources and opportunities.	 
Reconciliation	Activities that address Indigenous disadvantage, promote shared understanding and respect for culture, and promote reconciliation.	
Environment	Activities that support communities to improve environmental resilience and stewardship.	  

Source: Proponent provided information

iv Selection criteria

SIP selection criteria are described in Table 8.3.

Table 8.3 **Selection criteria**

Criteria	Description
Community	The activity directly benefits the Gulgong community.
Sustainability	The activity has good prospects of successful implementation and any long-term costs and maintenance have been planned for. Where possible, other fundraising efforts or contributions from other funding providers have been secured.
Risk	Any risks associated with the activity have been considered. The activity aligns with ACEN's Vision Mission and Values.
Equity and inclusion	Funding will be accessible to a diverse range of groups and people and will not support initiatives that discriminate or disadvantage groups within the community.

Source: Proponent provided information

These guidelines have been developed by ACEN for the Stubbo Project and are subject to modification from time to time. Funding is discretionary and determined by ACEN.

Whilst members of the Birriwa and Merotherie localities may directly benefit from this SIP established for the Stubbo Project, ACEN's intention is to transition the SIP to a broader CBSP across ACEN's solar projects in the Central West Orana, including Stubbo and Birriwa. This transition is expected to occur as development activities of the Birriwa Solar and Battery project progress.

8.1.2 ACEN Central West and Orana solar projects community benefit sharing program

The CW and Orana CBSP has been designed in consultation with the local communities through a number of forums (ie community drop-in sessions) and key stakeholders such as local Councils, State MPs and other relevant public agencies. The CW and Orana CBSP will be designed to deliver benefits to affected communities in response to needs assessment and in a way that supports the community vision for the Mid-Western Regional LGA and Warrumbungle Regional LGA. When implemented, the CW and Orana CBSP is expected to supersede the Stubbo Project SIP.

The objectives of the CBSP will include to:

- deliver meaningful improvements to the communities surrounding the ACEN projects;
- ensure communities in closest proximity to the project's benefit from the presence of the projects; and
- build support for renewable energy in the local area.

The CW and Orana CBSP is expected to commence once the project is determined. Further engagement will be undertaken by ACEN with communities of the local area to determine what types of projects and initiatives the community would like to see funded through the CBSP. Community benefit funds may provide funding for local projects such as sports, clubs, tourism, heritage, arts and culture via a yearly competitive grants process and one-off sponsorship and donations.

As part of the program, ACEN will provide ongoing financial assistance to ensure that there is a direct benefit from the project to the local community. This could include support for local schools, training or education as well as grants or project support for local community or sporting groups.

The CW and Orana CBSP will be refined upon commencement of construction in consultation with WSC, MWRC and the DPE and will be presented to all relevant stakeholders prior to commencement of construction.

The amount of the contribution is yet to be defined but is generally expected to be similar to other contribution programs in place for other ACEN projects. For example, as part of the New England Solar and Battery project currently in construction near Uralla, ACEN has already committed to contribute \$250 per year for every MW (AC) of solar power installed over a period of 25 years. For the Stubbo Project, MWRC and ACEN agreed on a contribution of \$300 per MW installed per year in the VPA. These projects also include contributions during construction.

The commitment for the CW and Orana CBSP will be communicated to the local community at a later stage prior to implementation of the program. Ongoing engagement with the community around the CW and Orana CBSP will continue and additional feedback will also be sought during the feasibility and design periods. It is anticipated there will be a role for the community or its representatives in administering the CW and Orana CBSP throughout the life of the project.

8.1.3 Neighbour Benefit Sharing Program

ACEN has been developing and implementing a voluntary NBSP for its solar projects within the CWO REZ. The objectives of the NBSP are to foster long-term positive relationships with the community and to contribute to addressing more 'perceived' impacts of the projects with the nearest neighbours (in particular, those with their primary residence being located within 2 km of the development footprint). These 'perceived' impacts may be difficult to fully address with mitigation measures as part of project design or refinement. The NBSP also aims to take into consideration some of the cumulative impacts generated by ACEN projects and other CWO REZ projects.

ACEN has initiated the NBSP with neighbours of the project that meet certain criteria such as distance of their dwelling from the development footprint or visual impact on the neighbour's views from their primary residence within a certain distance. The NBSP provides payment based on objective criteria when the project reaches construction and subject to mutual signing of a legal agreement between ACEN and the neighbour, with such agreements being optional and on a voluntary basis. ACEN has agreed to pay the landholder's reasonable legal costs associated with advising on and negotiating the neighbour agreement.

8.1.4 Other contribution requirements

Under the EP&A Act, there are two main kinds of contributions relevant to SSD solar projects:

- Contributions made under Section 7.11 of the EP&A Act, payable when there is a demonstrated link between development and the use of local public amenities or services (specified in contributions plans prepared by Council and referred to as Section 7.11 contributions). These contributions are imposed as conditions of a development consent, specifying that consent is granted on the basis that a proponent will dedicate land free of cost, or pay a monetary contribution (or both), with the contribution to provide, extend or augment the concerned public amenities or services.
- Levies imposed under Section 7.12 of the EP&A Act, expressed as a percentage of the proposed cost of carrying out the development (Section 7.12 levies). As with Section 7.11 contributions, Section 7.12 levies are imposed as a condition of a development consent and are applied to assist in funding public amenities or services generally, rather than those which are demonstrably linked to the development.

The draft NSW Solar Guideline notes that it is proposed, as part of a suite of reforms to the infrastructure contributions system in NSW, amendments are currently being considered, for Section 7.12 Levies for Solar Project to be:

- linked to the output of the project, calculated at a rate of \$2,000 per megawatt; and
- capped at a maximum of \$450,000.

The draft NSW Solar Guideline further promotes benefit sharing by proponents, proposing three principles for contributions and benefit sharing:

- Section 7.11 contributions should only be negotiated through Voluntary Planning Agreements (VPAs) in addition to Section 7.12 levies if the solar project will result in a demonstrated demand for infrastructure and the cost of that infrastructure would exceed any Section 7.12.
- If the Council does not impose Section 7.12 levies or does not have a contributions plan, then the terms of a VPA may be negotiated if offered by the proponent. In this case, the amount should not exceed the rate that would have otherwise been payable under a Section 7.12 levy unless there is a demonstrated demand for infrastructure and the cost of that infrastructure would exceed the payable rates. This suggests that the maximum that should be imposed should be an amount calculated in accordance with the proposed new limits for Section 7.12 levies as the only infrastructure required by a solar project is road upgrades and any road upgrades are typically required to be carried out by the proponent at their cost.
- Notwithstanding this, VPAs may be offered by the proponent to provide payments, in addition to Section 7.11 contributions and Section 7.12 levies, for the purpose of benefit sharing, including community enhancement funds. The New NSW Solar Guideline provides that any benefit sharing should give priority to initiatives which deliver public benefits in areas within the vicinity of the project.

ACEN also notes the project is within the CWO REZ. It was unclear at the time of lodgement of the EIS whether a different regime of contribution will apply in lieu of the mechanism outlined in the draft NSW Solar Guidelines and listed above. Regardless, ACEN will comply with the mandatory contribution obligations for the Birriwa Solar and Battery project, under Section 7.11 and/or Section 7.12 in consultation with MWRC, and/or with any requirements introduced specifically for the CWO REZ in place of such Contributions/Levies. The contributions paid under these requirements will be included in the global amount that constitutes the CBSP as outlined above.

8.2 Summary of Mitigation and Management

Table 8.4 provides a summary of the identified social impacts along with the corresponding perceived stakeholder risk ratings and mitigated technical risk rankings. In addition, key potential stakeholder partners have been identified to participate in the monitoring and management of impacts, along with a range of proposed social impact mitigation and management strategies. Note that not all potential impacts will be the responsibility of the proponent to mitigate or manage, their role may be to cooperate or inform the mitigation, provide data and information, through to direct responsibility for mitigation and management of the identified potential social impacts and the opportunity for partnerships.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 COMMUNITY	Community benefit related to community investment and involvement.	Medium (positive)	High (positive)	Local businesses including tourism operators. Community organisations and groups. Local councils. Employment and training organisations in the regional area. Secondary education institutions in the local area.	ACEN will adopt a shared value approach in their identification of future community funding opportunities, employment, apprenticeship and training opportunities, and community involvement opportunities. At the time of EIS lodgement, ACEN's contribution to the community involves the following programs: <ul style="list-style-type: none"> • Stubbo Project SIP; • CW and Orana solar projects CBSP which would see investment in a range of opportunities aligned with the needs of local communities, ACEN and the broader renewable energy sector; and • ACEN's NBSP.
 COMMUNITY	Community impacts related to reduced social cohesion due to an influx of temporary workers.	High (negative)	Medium (negative)	Local councils. Short-term accommodation providers. Employment and training organisations in the regional area.	ACEN will adopt a number of different measures to reduce the size of the temporary construction workforce including a targeted approach to securing local employees. Construction workforce behaviour will be managed through the implementation of a CWMP. ACEN will appoint a locally based resource to coordinate community and workforce engagement across all ACEN projects in the local area.
 COMMUNITY	Community impacts related to reduced social cohesion due to the inequitable distribution of project benefits.	Medium (negative)	Low (negative)	Local business operators. Employment and training organisations in the regional area.	ACEN will develop a Local Participation Plan and Aboriginal Participation Plan for the project construction phase.
 COMMUNITY	Community impacts related to growth and economic development.	Medium (positive)	Medium (positive)	Local business operators. Local councils. Employment and training organisations in the regional area.	ACEN will prioritise local hiring and local procurement where feasible and where practical.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 SURROUNDINGS	Surroundings impacts experienced by near neighbours due to changes in the visual landscape.	High	Medium	Associated and non-associated landholders.	<p>ACEN will:</p> <ul style="list-style-type: none"> • minimise the use of security lighting to the extent possible to achieve a safe and secure environment; • continue to include project refinement on general measures to minimise the degree of contrast between project infrastructure and the surrounding rural landscape; and • use planting as a visual screen to reduce the visibility of solar project infrastructure from specific vantage points. <p>The ACEN NBSP will also be implemented.</p>
 SURROUNDINGS	Surroundings impacts experienced by other stakeholders due to changes in the visual landscape.	Low	Low	Other users of the local road network and people with attachment to the location.	Landscape and visual screening elements will be implemented as part of the project to reduce the visual impact of the project as viewed from the local road network.
 SURROUNDINGS	Surroundings impacts due to changes in ecological values and the quality of natural assets.	Medium (negative)	Low (negative)	N/A	A CEMP and OEMP will be prepared for the project.
 LIFESTYLE	Way of life impacts (changes in social amenity) resulting from construction activities.	Medium (negative)	Medium (negative)	N/A	ACEN will implement a Complaints and Grievances Procedure. The procedure will provide an opportunity for stakeholders to raise complaints, grievances, and provide feedback. The procedure will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN response.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 LIFESTYLE	Way of life impacts (changes in social amenity) resulting from project operation.	Medium	Medium	N/A	Principal social mitigation measure for way of life impacts include: <ul style="list-style-type: none"> landholder agreements; ACEN's NBSP; placement of the BESS; and ACEN 's complaints and grievances procedure. Once the preferred BESS location is identified, additional noise modelling will be completed during detailed design to refine required mitigation and confirm compliance with the NPFI.
 LIFESTYLE	Way of life impacts (personal disadvantage) related to access to affordable housing.	High (negative)	Medium (negative)	Local councils. Real estate-agents and short-term accommodation providers. Employment and training organisations in the regional area. Social housing providers ie Barnardos.	ACEN will prepare a CWAS for the project. The CWAS will seek to mitigate negative impacts and facilitate: <ul style="list-style-type: none"> the prioritisation of alternative forms of workforce accommodation during the construction phase of the project; an increase in the extent of the geographic area for local hires and workforce accommodation; and enhanced local workforce participation. ACEN will also progress industry engagement (ie with EnergyCo) in relation to the management of cumulative workforce accommodation issues.
 LIFESTYLE	Way of life impacts related to intergenerational equity.	High (positive)	High (positive)	N/A	The approval of the project, as a renewable energy project promotes intergenerational equity. ACEN will also develop a decommissioning and rehabilitation plan for the project that would describe how development footprint would be returned, as far as practicable, to its condition prior to the commencement of construction.
 ACCESS TO INFORMATION/ SERVICES	Accessibility impacts due to capacity of short-term accommodation.	Very high (negative)	Medium (negative)	Short-term accommodation providers. Local councils. Mudgee Regional Tourism.	ACEN will prepare a CWAS for the project. The CWAS will clearly describe how the construction workforce will be accommodated and where they will be accommodated. The CWAS will also describe the actions ACEN has taken or plan to take to minimise pressure on the existing capacity of short-term accommodation in the local area. ACEN will continue to advocate with industry bodies such as EnergyCo for a strategic approach to understanding and managing cumulative workforce accommodation impacts from CWO REZ development.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 <p>ACCESS TO INFORMATION/ SERVICES</p>	<p>Accessibility related to community infrastructure and services.</p>	<p>High (negative)</p>	<p>Medium (negative)</p>	<p>Western NSW LHD including health service providers in the local area. Health Councils in the local area.</p>	<p>The approach to workforce accommodation management will also reduce pressure on health service providers in the local area by reducing the number of temporary workers residing in the local area. ACEN would seek to further reduce pressure by:</p> <ul style="list-style-type: none"> • engaging in regular communication with health care providers across the regional area; • community benefit sharing with potential investment in initiatives that support health service delivery or health awareness; • prioritising local employment and early investment in partnerships that provide job readiness, training and education outcomes that benefit different sectors of the community and the regional area; • advocating with industry bodies such as EnergyCo for a strategic approach to understanding and managing cumulative impacts from REZ development; and • engaging with other renewable energy proponents in the regional area in relation to a coordinated response to manage potential workforce impacts on services and facilities across the regional area.
 <p>LIVELIHOOD</p>	<p>Livelihood benefit related to access to employment and training opportunities (Youth).</p>	<p>Medium (positive)</p>	<p>High (positive)</p>	<p>Local employment and training services in the local and regional area, such as TAFE, Mission Australia, and the Goulburn District Education Foundation.</p>	<p>ACEN will prioritise hiring of workers with relevant skills residing within the local area. ACEN will develop a Local Participation Plan that commits to employment and investment in job readiness by ACEN and its contracting partners. ACEN will work with local employment, apprenticeship and training agencies to enhance the potential of hiring local and regional workers.</p>
 <p>LIVELIHOOD</p>	<p>Livelihood benefit related to access to employment and training opportunities (Aboriginal and Torres Strait Islander People).</p>	<p>Low (positive)</p>	<p>Medium (positive)</p>	<p>Employment and training agencies supporting Aboriginal and Torres Strait Islander People. Local Aboriginal Land Councils. Local councils.</p>	<p>ACEN will develop an Aboriginal Participation Plan that commits to employment and investment in job readiness by ACEN and its contracting partners. The participation plan will be supported by the Construction Phase SEP.</p>

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 LIVELIHOOD	Livelihood impacts related to limited workforce supply and job competition (construction).	Medium (negative)	High (positive)	Business operators in the local area Local councils. Employment and training providers.	ACEN will ensure that project workforce and subcontracting needs are clearly communicated to subcontractors so that they can communicate any delays to their customers or hire additional employees to service their existing business.
 LIVELIHOOD	Livelihood impact due to limited workforce supply and job competition (operations).	Low (negative)	Medium (positive)	Business operators in the local area Local councils. Employment and training providers.	With the implementation of the described employment and training measures, more than likely the capacity of the local workforce and local businesses will have increased by the time the project is operational, thereby reducing potential for labour force competition during operations. In particular, the provision of training and apprenticeship opportunities related to servicing renewable energy projects will create legacy benefits as more qualified personnel are trained year on year within the regional area.
 LIVELIHOOD	Livelihood impacts due to changes in rural property values.	Medium (negative)	Low (negative)	Near neighbours.	Where significant impacts to neighbouring landholders have been identified, the project has been refined and/or management and mitigation measures have been proposed to further reduce potential impacts. This includes the introduction of setbacks from neighbouring residences to reduce potential views of project infrastructure, paying particular attention to the most valued views from affected residences, or a significant reduction in the development footprint to reduce visual impacts. ACEN will also implement the following measures to reduce impacts to neighbour properties and thus minimise potential risk of property devaluation: <ul style="list-style-type: none"> • buffer zones during construction works to minimise potential noise impacts at neighbouring residences; • a TMP and Driver Code of Conduct to minimise potential impacts on the safety and serviceability of the local road network; and • a CWMP to manage potential for adverse impacts to occur from the construction workforce.
 LIVELIHOOD	Livelihood benefit related to use of local goods and services.	High (positive)	High (positive)	Local business operators.	ACEN will support local business by utilising their established supply networks and providing sufficient opportunities and information for local businesses to secure new supply contracts. Wherever possible and practical, ACEN will work with the local businesses, and the local community to prioritise and use local goods and services.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
 LIVELIHOOD	Livelihood benefits related to rural income diversification (associated landholders).	High (positive)	Very high (positive)	Associated and non-associated landholders.	Negotiated agreements will deliver livelihood benefits to associated and non-associated landholders. In addition, ACEN will continue to explore opportunities with landholders to support co-location of livestock grazing with the solar project operation.
 LIVELIHOOD	Livelihood benefits related to rural income diversification (non-associated landholders).	Medium (positive)	Medium (positive)	Associated and non-associated landholders.	The NBSP will deliver livelihood benefits to non-associated landholders.
 LIVELIHOOD	Livelihood impacts to the agricultural sector.	High	Medium (benefit)	Associated and non-associated landholders. Local farming organisations Agricultural businesses in the local area.	Agreements with associated landholders and implementation of ACEN's NBSP will delivery supplementary income to associated, and non-associated landholders which in turn may create an opportunity for further investment in agricultural activity. ACEN will engage in frequent communication with landholders and ensure early provision of information regarding the predicted construction impacts to prepare landholders for impacts that cannot be fully mitigated and to provide an opportunity for landholder feedback and engagement. Gate and property access procedures, specific to individual landholder needs and requests will be developed and implemented. ACEN will continue to explore with landholder opportunities to support co-location of livestock grazing with the solar project operation.
 LIVELIHOOD	Livelihood impacts to the tourism sector.	High (negative)	Low (negative)	MWRC. Tourism business operators. Short-term accommodation providers.	ACEN will focus on the management of workforce accommodation demands to minimise impacts on the tourism industry sector. The CWAS will clearly describe how the construction workforce will be accommodated and where they will be accommodated. The CWAS will also described the actions ACEN has taken or plan to take to minimise pressure on the existing capacity of short-term accommodation in the local area.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
	Public safety related to increased traffic movements on the local road network.	High (negative)	Medium (negative)	WSC. MWRC. TfNSW.	A detailed CTMP will be developed and implemented for all phases of the project and will involve engagement with school bus operators, CWC Trail Inc. MWRC, WSC and TfNSW. The CTMP will include a Drive Code of Conduct. Road upgrades will be undertaken such as resurfacing and widening along Barneys Reef Road and Birriwa Bus Route South, and new intersection treatment on Castlereagh Highway at the Castlereagh Highway/Barneys Reef Road intersection. Subject to demand ACEN will implement a bus service to and from the project for construction workers residing in Mudgee and Gulgong. ACEN will also encourage carpooling.
	Health and wellbeing impacts related to safe use of the CWC Trail.	Very high (negative)	High	CWC Trail Inc. WSC. MWRC.	ACEN has engaged and will continue to engage in frequent and tailored communication with CWC Trail Inc. The CTMP will include a Driver Code of Conduct and will include direction for drivers on the road to not travel within 100 m of cyclists on Birriwa Bus Route South and not to overtake any cyclists on Birriwa Bus Route South. Speed limits on Birriwa Bus Route South and Barney's Reef Road will be reduced to 80 km/hr for regular traffic.
	Health and wellbeing due to fire risk to public safety.	High (negative)	Medium (negative)	NSW Fire Service. Cudgegong District RFS Birriwa RFS. Associated and non-associated landholders.	ACEN will prepare a BMP including an ERP for all phases of the project. In preparing and implementing the BMP and ERP, ACEN will consult with the Gulgong and Dunedoo Fire Services, the Birriwa RSF as well as the Cudgegong RFS, MWRC, WSC, and NSW Fire and Rescue. A dedicated water storage facility will be located on the development footprint, to allow for permanent emergency supply and ease of access. Equipment in use will be monitored (ie fire and smoke detectors) and will provide early detection to reduce fire risk. Internal access roads will be maintained at all Health and wellbeing due to stress and times to provide safe, reliable and unobstructed passage for fire vehicles. The proposed CW and Orana solar projects CBSP would provide an opportunity for the local RFS operations to access funding for training and infrastructure investments.
	Health and wellbeing impacts due to project related stress and anxiety (associated and non-associated landholders).	Medium (negative)	Medium (negative)	NA	ACEN has engaged and will continue to engage in frequent and tailored communication with associated and non-associated landholders. This will ensure individuals are kept informed of the project and provided with an opportunity to ask questions or raise issues and concerns.

Table 8.4 Social impact

	Matter	Unmitigated	Mitigated	Potential partners	Proposed mitigation and management
	Health and wellbeing impacts due to project related stress and anxiety (Broader communities of the local area).	Low (negative)	Low (negative)	NA	<p>ACEN will maintain the project office in Gulgong, during construction and will appoint a locally based resource to manage engagement with the community and other stakeholders.</p> <p>ACEN will development and implement a Construction Phase SEP to guide engagement with the community. And ensure timely release of project information.</p> <p>ACEN proposes to hold a series of community information sessions prior to EIS exhibition to ensure the community is informed of the findings of the technical studies.</p>
	Health impacts arising from sleep disturbance due to operational noise.	Low	Low	NA	ACEN will implement the recommendations of the NVIA.
	Health impacts arising due to proximity to project infrastructure.	Low (negative)	Low (negative)	NA	Elements that reduce EMF exposure have been included in the project design including standard solar PV plant characteristics such as inverters housed in shipping containers or steel cabinets. Potentially ENMF emitting infrastructure ie BESS, underground cabling and arrays have been sited away from occupied residences.
	Cultural impacts related to Aboriginal and Torres Strait Islander Values.	High (negative)	Medium (negative)	<p>RAPs.</p> <p>Other Aboriginal and Torres Strait Islander organisations and residence of the regional area.</p>	<p>Long-term management of Aboriginal objects identified within the development footprint will be undertaken in consultation with the RAPs. Identified sites outside the disturbance footprint will be protected during the construction of the project through the use of high-visibility temporary fencing. The location of all sites will be shown on all appropriate plans to ensure that they are not inadvertently harmed.</p> <p>Aboriginal and Torres Strait Islander Organisations in the regional area or with cultural interests in the local area will be encouraged to engage with ACEN regarding shared-value investment opportunities.</p>

8.3 Monitoring and management framework

It is proposed that a monitoring and management framework be developed to ensure that the identified positive and negative impacts are monitored over time to measure the effectiveness or otherwise of the proposed management measures, including the changing conditions and trends in the Mid-Western Regional LGA and Warrumbungle LGA over the same period.

It is proposed that the monitoring and management framework identifies the following key aspects:

- track progress of mitigation and management strategies;
- assess actual project impacts against predicted impacts;
- identify how information will be captured for reporting to impacted stakeholders including landholders, communities and government on progress and achievements;
- key performance indicators, targets and outcomes;
- responsible parties; and
- mechanisms for ongoing adaption of management measures when and if required.

To ensure the effectiveness of the management measures for the identified positive and negative impacts, it is recommended that a continuous improvement approach be adopted allowing for the review and adaption of impacts, management measure and outcomes.

If development consent is received for the project, ACEN will continue with ongoing consultation activities with both stakeholders and community members throughout the construction and operation of the project.

ACEN's current community and stakeholder engagement strategy includes provisions that provide information and encourage community feedback related to (but not limited to):

- updates on the status and life of the project; and
- identification of ongoing shared value opportunities within the local community.

ACEN's community and stakeholder engagement strategy incorporates a range of communication strategies and opportunities to provide feedback through a variety of channels, including:

- community information sessions (face to face and virtually);
- individual face to face meetings with associated and non-associated landholders;
- stakeholder briefings;
- project website updates;
- contact channels – dedicated project information number and email;
- newsletters; and
- letterbox drops.

The community engagement strategy applies the instruments that best fit the overall needs of the project. The approach also ensures that mechanisms for both information dissemination and feedback collection are incorporated. Consideration should be given to aligning a social impact monitoring and management framework within ACEN's existing community and stakeholder engagement strategy.

9 Conclusion

9.1 Overview

The SIA has been informed through a tailored and comprehensive SIA consultation process and a thorough examination of qualitative and quantitative data. The SIA assesses material social impacts. The area of social influence of the project consists of the people impacted or likely to be affected by the project. In this regard the SIA has focuses on the local area which includes the key communities of Dunedoo, Gulgong and Mudgee, and the regional area consisting of the Mid-Western Regional LGA and the Warrumbungle LGA.

ACEN is seeking SSD consent for the construction and operation of the project, a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure (the project). The solar component of the project will have an indicative capacity of around 600 MW and include a centralised BESS of up to 600 MW for a 2-hour duration. The project will be developed within a development footprint of approximately 1,300 hectares and will connect to the proposed Central-West Orana Renewable Energy Zone transmission link.

The construction phase of the project would last for approximately two years utilising a workforce of up to 800 people. The operational phase would last for about 30 years utilising a workforce of approximately 20 people.

The project is in the localities of Birriwa and Merotherie, approximately 15 kilometres south-west of the township of Dunedoo, in the Central West of NSW. The project is within the Mid-Western Regional Council LGA with part of the access road within the Warrumbungle Shire Council LGA and is within the Central-West Orana Renewable Energy Zone.

9.2 Area of Social Influence

The local area is a rural area with as strong rural character and residents who highly value their rural way of life. The estimated population of the local area in 2016 was 14,738 people, with the majority of population located in Mudgee and the smaller communities of Gulgong and Dunedoo. The estimated population of the regional area in 2016 was 33,460 people with more than 70% of the population located in the Mid-Western LGA. Both the local and regional areas have sizeable Aboriginal and Torres Strait Islander populations (6.5% and 6.6% respectively) compared to NSW (2.9%).

The smaller rural communities of Gulgong and Dunedoo are experiencing a trend of population decline. This trend is also evident in the Warrumbungle LGA. Population decline in these locations is affecting the availability of services and facilities. There is strong desire from the communities to reverse the current trend of population decline. Population growth in the regional area has centred almost exclusively on the community of Mudgee, which is the largest centre in the local area and the Mid-Western Regional LGA.

The local and regional areas have highly constrained labour markets with sustained low unemployment rates. This has implications for project recruitment and in particular the size of the potential local workforce for the project. The findings of in-depth interviews with employment agencies, MWRC and service providers highlighted the prevalent recruitment difficulties currently been experienced by many employers in the regional area. Young school leavers and youth in the existing secondary education system identified as potential sources of workers for the project.

The local and regional area has a considerable supply of short-term accommodation including hotels, motels, caravan parks and Airbnb properties. Short-term accommodation in the regional area is heavily utilised by the tourism industry sector (ie for visitors to the region) and also the health and social support sector for visiting service providers. utilised by the mining industry sector and other industry sectors for business. Within the MWRC LGA, all forms of short-term accommodation are experiencing sustained high occupancy rates primarily due to a combination of strong demand from the tourism industry, mining and construction industry sectors. Short-term accommodation is frequently booked many months in advance, with repeat business common in many operations. The findings of in-depth interviews and surveys suggest limited capacity in the existing short-term accommodation market to accommodate additional projects in the regional area, without affecting our industry sectors ie the tourism sector.

Consistent with national trends, the private rental market across the regional area is highly constrained. Rental costs have been steadily increasing for some time in parallel with declining availability. Rental vacancy rates across the local area are very low and trending low. Some communities in the local area ie Mudgee are experiencing rental affordability issues. A number of communities in the regional area are attractive residential locations for low-income households ie people with a disability, single-parents and Aboriginal and Torres Strait Islander households. Communities in the local area with high accessibility to services and facilities ie Mudgee are also attractive residential locations for vulnerable households. During in-depth interviews a number of stakeholders expressed concern at the possible displacement of these low-income households due to the demand for private rental accommodation generated by the project construction workforce.

The local area is host to a large number of renewable energy projects either approved and yet to be constructed or progressing through the approvals process. The outcomes of SIA consultation indicate that residents of the local area are experiencing consultation fatigue due to the number of renewable energy projects being progressed in the regional area. Consultation has identified a suite of concerns in relation to potential cumulative impacts including those related to workforce accommodation, labour availability, visual impacts, traffic and agricultural production.

Other concerns raised during consultation are generally consistent with issues raised industry wide and relate to social amenity impacts from construction activities and operational noise (ie from the BESS) as well as visual impacts, health concerns regarding potential for EMFs, safety concerns from increased traffic on the local road network, livelihood impacts related to changes in property values and impacts to other industry sectors ie agriculture and tourism.

9.3 Evaluation of the project

This SIA methodology was developed in accordance with the SIA Guideline 2021 and informed by best practice guidance and standards set out by the IAIA and IFC. The assessment of the social impacts considered a range of complex factors and often competing interests. The impact assessment is reflective of this and has:

- assessed some aspects of the proposed project as both negative and positive as they relate to different groups of people;
- included negative impacts on local communities while documenting the benefits to the broader region;
- considered the impacts on vulnerable groups and provided management strategies to ensure that any existing disadvantages are not exacerbated; and
- considered each community's access to critical resources, such as housing and health care, and how this affects their resilience.

The SIA has assessed the potential social impacts (negative and positive) of the project for near neighbours, broader communities, vulnerable groups and a range of other stakeholders. Potential social impacts (negative and positive) will accrue to associated and non-associated landholders, with negative impacts primarily associated with the construction phase of the project. A number of refinements have been made to the project to reduce the scale of impact to landholders and have included:

- the project site access routes;
- BESS design, capacity, duration, and location within the development footprint; and
- the development footprint including revisions to include setbacks from public roads and neighbouring dwellings.

The detailed refinements are provided in Section 2.5.4 in the EIS.

The outcomes of the SIA indicate that the social impacts to the local and regional areas are confined mainly to the construction phase of the project and relate primarily to labour demand, and the potential impacts of workforce accommodation demands on rental accommodation and short-term accommodation. These are also cumulative issues. Considering the other projects planned for the local area and likely to commence construction at the same time as the project, the potential cumulative construction workforce demands from the renewable energy sector in the local area could be as great as 4,026 people.

Associated and non-associated landholders will experience some economic benefits from the project through agreements with ACEN and the NBSP. The broader communities of the local area will benefit through the proposed Central West Community Benefit Scheme and spending facilitated through other contribution requirements as described in Section 8.1.4. A Local Participation Plan and Aboriginal Participation Plan will seek to ensure economic and employment benefits are realised at the local and regional scale and for vulnerable groups in the community.

ACEN will appoint a locally based resource to coordinate community and workforce engagement across all ACEN projects in the local area. The project office in Gulgong will continue to provide a centralised point of contact for the project and other ACEN projects. A complaints and grievances procedure will ensure that issues and concerns can be easily raised by the community, recorded and responded to by ACEN across all phases of the project.

Definitions and abbreviations

ABS	Australian Bureau of Statistics
AC	Alternating current
ACHA	Aboriginal cultural heritage assessment
AHIMS	Aboriginal Heritage Information Management System
AHMAC	Australian Health Ministers' Advisory Council
AHRC	Australian Human Rights Commission
AHURI	Australian Housing and Urban Research Institute
AIHW	Australian Institute of Health and Welfare
AIQA	Air Quality Impact Assessment
Associated residence	A dwelling whose owners have a landholder agreement with ACEN for the project. In the EIS, residences identified with an 'A' are associated residences.
BESS	Battery energy storage system
BOCSAR	Bureau of Crime Statistics and Research
CEEC	Critically endangered ecological community
Construction footprint of public road crossings	The area of direct impact for construction of the public road crossings (see definition below).
CWO	Central-West Orana
CW and Orana CBSP	ACEN Central West and Orana solar projects community benefit sharing program
Cr	Councillors
DC	Direct current
DAWE	Department of Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and Environment
Development footprint	The area to be developed within land where ACEN holds landholder agreements. All operational components of the project will be within the development footprint. The development footprint is the outcome of the iterative process outlined in the EIS which led to excluding certain areas of environmental or social constraint.
DPE	Department of Planning and Environment
DPI	Department of Primary Industries
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Ltd
EP&A Act	Environmental Planning and Assessment Act 1979
EP&A Regulation	Environmental Planning and Assessment Regulation 2000
EPA	Environment Protection Authority

EEC	Endangered ecological community
EIS	Environmental Impact Statement
EMM	EMM Consulting Pty Limited
EnergyCo	Energy Corporation of NSW
EPA	NSW Environment Protection Authority (EPA)
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
ha	hectares
IAIA	International Association for Impact Assessment
Impact footprint	The maximum extent of ground disturbing work associated with construction and operation of the project. The impact footprint comprises: the development footprint, road upgrade corridor, construction footprint of public road crossings.
Indicative connection point(s) to the T-Link	The indicative location of the interface point, between the project and a connection option to the Merotherie Energy Hub, yet to be defined in consultation with EnergyCo.
Km	kilometres
kV	Kilovolt
LALC	Local Aboriginal Land Council
LGA	Local Government Area
LHD	Local Health District
LEP	Local Environmental Plan
LGA	Local government area
MNES	Matters of national environmental significance
MW	Megawatts
Non-associated residence	A dwelling that is not associated with the project, with no landholder agreement with ACEN. Residences identified with an 'R' are non-associated.
NBSP	Neighbour Benefit Sharing Program
NSW	New South Wales
NPFI	Noise police for industry
Operational infrastructure area	The proposed location of key operational infrastructure, including the BESS, substation, T-Link connection point, offices, car park, amenities and storage. Two locations are considered for the operational infrastructure area, but only one of the two location options will be implemented.
PCT	Plant community type
Planning Systems SEPP	<i>State Environmental Planning Policy (Planning Systems) 2021</i>
PMST	Commonwealth Protected Matters Search Tool
Proposed access point to the site	The proposed location where all construction and operation traffic will access the development footprint after using the access route. Access through the development footprint will be possible via internal tracks. Access between different project components (ie solar arrays, BESS) will occur via public road crossings

Public road crossing	Proposed intersection between internal tracks and public roads to allow construction and operational traffic and cable crossings between different components of the project.
PV	Photovoltaic
Restricted development area	Land within the development footprint where disturbance will be avoided wherever possible, with the exception of that required for the provision of access and electrical reticulation (ie private internal access roads and electrical cables).
REZ	Renewable Energy Zone
Road upgrade corridor	The area of direct impact for public road upgrade works along the access route, which comprises part of Barneys Reef Road and Birriwa Bus Route South (connecting the access point to the site with the Castlereagh Highway).
SEARs	Secretary's Environmental Assessment Requirements
SEARs	Secretary's Environmental Assessment Requirements
SEIFA	Socio-Economic Indexes for Areas
SES	State Emergency Service
SIA	Social impact assessment
SIA Guideline 2021	Social Impact Assessment Guideline for State Significant Projects
SIA Technical Supplement 2021	Technical Supplement: Social Impact Assessment Guideline for State significant Projects
SIP	Social investment program
SSC	State suburb classification
SSD	State Significant Development
STE	State/Territory
SIA	Social impact assessment
SSD	State significant development
Study area	The area of assessment for baseline surveys and studies conducted for the EIS. The study area comprises the maximum area considered for the project based on the extent of land where ACEN hold landholder agreements and the area of potential impact for road upgrades
Operational infrastructure area	The proposed location of key operational infrastructure, including the BESS, substation, offices, car park, amenities and storage. Two location options are considered for the substation, BESS and ancillary infrastructure area in this EIS (Option A or Option B, refer to Section 3), but only one of the two location options will be implemented.
T-Link	Transmission link – NSW Energy Corporation's planned new 500/330 kV transmission line, substation(s) and related infrastructure within the CWO REZ.
TEC	Threatened ecological communities
TIA	traffic impact assessment
The project	Birriwa Solar and Battery Project; a large scale solar photovoltaic generation facility along with battery storage and associated infrastructure. 'The project' refers to the project in its entirety; encompassing arrays of PV modules, power conversion units, BESS, connection infrastructure, road upgrades and ancillary infrastructure.
ACEN	ACEN Australia Pty Ltd

10 References

- AAP Consulting 2022, Social Impact Assessment Valley of the Winds wind farm, NSW February 2022
- ABARES 2019, Australian Agricultural Census 2015-16 visualisations – Mudgee west, Available: <https://www.awe.gov.au/abares/data>. Accessed: 7th February 2022.
- ABS 2006, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2011, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2011, Australian social trends March 2011: Year 12 Attainment. ABS cat no. 4102.0 Canberra: ABS, Australian Bureau of Statistics.
- ABS 2016, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2022, Labour Force Australia April 2022 from Labour Force, Australia, April 2022 | Australian Bureau of Statistics (abs.gov.au)
- ABS 2022, Labour Force, Australia methodology April 2022 from Labour Force, Australia methodology, April 2022 | Australian Bureau of Statistics (abs.gov.au)
- ABS 2022a Labour Force Survey December 2021 from <https://www.parliament.nsw.gov.au/researchpapers/Pages/NSW-regional-labour-force-data---interactive-portal.aspx#Interactive%20charts>
- Adams, JM 2018, Improving individual and community health through better employment opportunities, health affairs, viewed 3 December 2020, <https://www.healthaffairs.org/doi/10.1377/hblog20180507.274276/full/>.
- AHMAC 2017, Aboriginal and Torres Strait Islander Health Performance Framework 2017 Report, Australian Health Ministers' Advisory Council, Canberra. https://www.niaa.gov.au/sites/default/files/publications/2017-health-performance-framework-report_1.pdf
- AHRC 2021, Homelessness is a Human Rights Issue, Australian Human Rights Commission, viewed XX <https://humanrights.gov.au/our-work/rights-and-freedoms/publications/homelessness-human-rights-issue#:~:text=These%20include%20depression%2C%20poor%20nutrition,illness%20than%20the%20general%20population.>
- AHRC n.d., Homelessness, Australian Human Rights Commission, <https://humanrights.gov.au/our-work/education/homelessness>
- AHRC 2015, Building Social Cohesion in our Communities from <https://humanrights.gov.au/our-work/race-discrimination/publications/building-social-cohesion-our-communities-2015>
- AHURI 2019, Understanding the 30:40 indicator of housing affordability stress, Australian Housing and Urban Research Institute, <https://www.ahuri.edu.au/policy/ahuri-briefs/3040-indicator>
- AirBnB 2022, Places to stay, viewed 25 March 2022, <https://www.airbnb.com.au/>
- AIHW 2020, Social Determinants of Health, Australian Institute of Health and Welfare, <https://www.aihw.gov.au/reports/australias-health/social-determinants-of-health>.
- AIHW 2022, Hospitals, Australian Institute of Health and Welfare, <https://www.aihw.gov.au/reports-data/myhospitals>
- Anglicare 2021, Rental Affordability Snapshot, <https://www.anglicare.asn.au/wp-content/uploads/2021/05/rental-affordability-snapshot-national-report.pdf>
- ARENA n.d, Establishing the social licence to operate large scale solar facilities in Australia: insights from social research for industry, from <https://arena.gov.au/assets/2020/11/establishing-the-social-licence-to-operate-large-scale-solar-facilities-in-australia.pdf>

Ask Izzy 2021, Ask Izzy, <https://askizzy.org.au/>

BOCSAR 2021, Local government area excel tables 2021, NSW Bureau of Crime Statistics and Research, https://www.bocsar.nsw.gov.au/Pages/bocsar_datasets/Local-area.aspx

Baxter, J, Hayes, A, and Gray, M 2011, Families in regional, rural and remote Australia, the Australian Institute of Family Studies from <https://aifs.gov.au/publications/families-regional-rural-and-remote-australia>

Biddle N 2013. CAEPR Indigenous Population Project: socioeconomic outcomes. Canberra: Australian National University. Viewed 30 May 2022

Centre for Accident Research and Road Safety 2017 'Speeding' Centre for Accident Research and Road Safety. Available from <https://research.qut.edu.au/carrsq/wp-content/uploads/sites/296/2020/12/Speeding.pdf>

Gray M, Hunter B & Biddle N 2014, The economic and social benefits of increasing Indigenous employment. Canberra: ANU. Viewed 30 May 2022.

O'Neill, L., Riley, B., Hunt, J., & Maynard, G. 2021, Clean energy agreement making on First Nations land: What do strong agreements contain? Centre for Aboriginal Economic Policy Research, Australian National University from <https://doi.org/10.25911/VHH3-F498>

https://assets.nationbuilder.com/vicwind/pages/2684/attachments/original/1639974882/Clean_Energy_Company_Guide.pdf?1639974882

Charles Sturt University 2022, 'Our University', <https://about.csu.edu.au/our-university>

Civic Economics 2012, Indie Impact Study Series: Salt Lake City, Utah, viewed 3 December 2020, <http://nebula.wsimg.com/09d4a3747498c7e97b42657484cae80d?AccessKeyId=8E410A17553441C49302&disposition=0&alloworigin=1>.

Civic Economics 2013, Independent BC: Small Business and the British Columbia Economy, viewed 3 December 2020, https://ccednet-rcdec.ca/sites/ccednet-rcdec.ca/files/ccednet/pdfs/independant_bc_small_and_the_british_colombia_economy.pdf.

Clean Energy Council 2021, Australian Guide to Agrisolar for Large-scale solar for proponents and farmers March 202 from <https://www.cleanenergycouncil.org.au/resources/resources-hub/australian-guide-to-agrisolar-for-large-scale-solar-1>

Cool Burn Fire and Ecology 2022, Bushfire Assessment Report Birriwa Solar Project May 2022

DPIE 2019, NSW 2019 Population Projections: ASGS 2019 LGA projections, Department of Planning, Industry and Environment, NSW Government, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections>.

DPIE 2021a, Social Impact Assessment Guideline for State Significant Projects, Department of Planning, Industry and Environment, NSW Government.

DPIE 2021b, Technical Supplement: Social Impact Assessment Guideline for State Significant Projects, NSW Department of Planning, Industry and Environment.

DPIE 2021c, Undertaking Engagement Guidelines for State Significant Projects, NSW Department of Planning, Industry and Environment.

DPIE 2021d, Draft Central West and Orana Regional Plan 2041, viewed 25 March 2022, <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Central-West-and-Orana>

DPI 2022, NSW Government leading the way with farm renewable energy review, 8 March 2029 from <https://www.dpi.nsw.gov.au/about-us/media-centre/releases/2022/ministerial/nsw-government-leading-the-way-with-farm-renewable-energy-review>

Elliott Whiteing 2018, Olive Downs Coking Coal Project Draft Environmental Impact Statement: Social Impact Assessment, Pembroke.

EMM 2022, Sandy Creek Solar Farm Scoping Report prepared for Lightsource BP April 2022

EMM 2022a, Birriwa Solar and Battery Project Visual Impact Assessment prepared for ACEN June 2022

EMM 2022b, Birriwa Solar and Battery Project Traffic Impact Assessment prepared for ACEN June 2022

EMM 2022c, Birriwa Solar and Battery Project Land Soils and Erosion Report prepared for ACEN June 2022

EMM 2022d, Birriwa Solar and Battery Project, Noise and Vibration Impact Assessment for ACEN July 2022

Energy Co 2022, Revised study corridor community feedback report Central-West Orana Renewable Energy Zone, June 2022 State of New South Wales

Ferguson 2018, NSW Coroner to inquire into 2017 Upper Hunter and Central West Bushfire ABC Western Plains from <https://www.abc.net.au/news/2018-02-08/dunedoo-coronial-inquiry-to-examine-catastrophic-nsw-fire/9408802>

Fordham AE & Robinson GM 2018, 'Mapping Meaning of Corporate Social Responsibility – An Australian Case Study', International Journal of Corporate Social Responsibility, 3(14).

Freire, M; Gauld, C; McKerral, A and Pammer K. 2021. 'Identifying Interactive Factors That May Increase Crash Risk between Young Drivers and Trucks: A Narrative Review' International Journal of Environmental Research and Public Health 18, 6505, p. 1-20.

Hansen Bailey, 2016, Bylong Coal Project EIS Response to Submissions for Worley Parsons Services Pty Limited, March 2016

Healthdirect Australia 2021, National Health Services Directory, <https://about.healthdirect.gov.au/nhsd>.

IAIA 2003 International Principles for Social Impact Assessment

ICNIRP 1998, ICNIRP Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields (up to 300 GHz) from <https://www.icnirp.org/cms/upload/publications/ICNIRPemfgdl.pdf>

Infrastructure NSW 2018 Building Momentum: State Infrastructure Strategy 2018-2038, Infrastructure NSW, from https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf

Infrastructure NSW 2018 Building Momentum: State Infrastructure Strategy 2018-2038, Infrastructure NSW, from https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf

Jose H and Calver O (2022) Solar farm trial shows improved fleece on merino sheep grazed under panels ABC Rural 30 May 2022 from <https://www.abc.net.au/news/rural/2022-05-30/solar-farm-grazing-sheep-agriculture-renewable-energy-review/101097364>

NSC 2021, Australian Jobs Report, from <https://www.nationalskillscommission.gov.au/australian-jobs-report>

NSC 2022, National Skills Commission (2022) SALM Smoother LGA Datafiles (ASGS 2021) December Quarter 2021, from <https://www.nationalskillscommission.gov.au/topics/small-area-labour-markets%20accessed%207%20April%202022>

NSC 2022, Labour Market Dashboard Central West, April 2022 from <https://labourmarketinsights.gov.au/regions/publications-employment-region-dashboards-and-profiles/new-south-wales/>

NSC 2022a, Recruitment Experiences and Outlook Survey, April 2022 from Recruitment Experiences and Outlook Survey | National Skills Commission

NSC 2022b, Vacancy Report, April 2022 Released date 25 May 2022 from Vacancy Report April 2022.pdf (nationalskillscommission.gov.au)

NSC 2022c, Labour Market Dashboard Central West, April 2022 from New South Wales | Labour Market Insights

NSC 2022d, Employment region employment by industry, February 2022 from Employment Regions (job active) downloads | Labour Market Insights

NSC 2022e, Employment Region Industry profile - Central West Employment Region, 20 April 2022 from industry-profile-central-west.pdf (labourmarketinsights.gov.au)

NSC 2022f, Employment Region Industry profile, 20 April 2022 from industry-profile-central-west.pdf labourmarketinsights.gov.au

NSW Energy 2020, *Electricity Infrastructure Roadmap* from <https://www.energy.nsw.gov.au/government-and-regulation/electricity-infrastructure-roadmap>

NSW EPA 2022, Circular Solar grants program, from <https://www.epa.nsw.gov.au/working-together/grants/infrastructure-fund/circular-solar-trials>

NSW Fire and Rescue 2021, Find a fire station, NSW Fire and Rescue, from <https://www.fire.nsw.gov.au/page.php?id=9205>

NSW Government Communities & Justice (ud) Central West and Orana Region - What's the Housing Demand? Department of Families from https://www.facs.nsw.gov.au/__data/assets/file/0017/341207/CentralWestandOranaRegionWhatstheHousingDemand.pdf

NSW Government 2013, Warrumbungle Local Environmental Plan 2013, viewed 25 April 2022, <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2013-0670>

NSW Government 2018, A 20-Year Economic Vision for Regional NSW' NSW Government, from <https://static1.squarespace.com/static/59ae4a2a6f4ca38d47990cd8/t/5d63391c30af730001d228a3/1566783815503/20-Year-Vision-for-RNSW-accessible.pdf>

NSW Government 2021a, A 20-Year Economic Vision for Regional NSW' NSW Government, from <https://www.nsw.gov.au/a-20-year-economic-vision-for-regional-nsw-refresh>.

NSW Government 2021b, Draft Large-Scale Solar Energy Guideline DPIE December 2021 [https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Exhibition+Draft+Revised+Large-scale+Solar+Energy+Guidelines+\(1\).pdf](https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Exhibition+Draft+Revised+Large-scale+Solar+Energy+Guidelines+(1).pdf)

NSW Government 2022b Issues Paper Renewable Energy & Agriculture in NSW Department of Primary Industries April 2022 from Renewable Energy & Agriculture in NSW

Manca A.R. 201, Social Cohesion. In: Michalos A.C. (eds) Encyclopedia of Quality of Life and Well-Being Research. Springer, Dordrecht. https://doi.org/10.1007/978-94-007-0753-5_2739

Medic G, Wille M, Hemels M 2017, Short- and long-term health consequences of sleep disruption Nat Sci Sleep. 2017;9:151-161. Published online 19 May 2017 from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5449130/>

Mid-Western Regional Council 2017, Mid-Western Regional Towards 2030 Community Pan, viewed 20 March 2022, <https://www.midwestern.nsw.gov.au/files/assets/public/council/plans-and-strategies/plan-community-plan-towards-2030.pdf>

Mid-Western Regional Council 2020, Our Place 2040, Mid-Western Regional Local Strategic Planning Statement viewed 25 April 2022, https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Local+Strategic+Planning+Statements/LSPS+2020/LSPS+Regional%3B/Mid+Western+Regional+Council+Local+Strategic+Planning+Statement+2020.pdf

Mid-Western Regional Council 2021b, Economic and Business Profile for the Mid-Western Region, updated June 2021 from 2021-Economic-and-Business-Profile-UPDATE-FINAL.pdf (choosemudgeeregion.com.au)

NGH Pty Ltd 2020, Environmental Impact Statement Dunedoo Solar Farm September 2020 for ibvogt from <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-8847%2120200930T022412.275%20GMT>

OzArk Environment & Heritage 2022a, Aboriginal Cultural Heritage Assessment Report Birriwa Solar and Battery Project, prepared for ACEN Australia Pty Ltd

OzArk Environment & Heritage 2022b, Historic Heritage Assessment Report Birriwa Solar and Battery Project, prepared for ACEN Australia Pty Ltd

Parliament 2022, Health outcomes and access to health and hospital services in rural, regional and remote New South Wales, May 2022, from <https://www.parliament.nsw.gov.au/lcdocs/inquiries/2615/Report%20no%2057%20-%20PC%202%20-%20Health%20outcomes%20and%20access%20to%20services.pdf>

Porter, M & Kramer, MR 2011, Creating Shared Value: How to reinvent capitalism – and unleash a wave of innovation and growth, Harvard Business Review.

RAMBOLL 2020, Stubbo Solar Farm Environmental Impact Statement prepared for UPC Renewables Australia Pty Ltd December 2020

RAMBOLL 2021, Stubbo Solar Farm Response to Submissions Report prepared for UPC Renewables Australia Pty Ltd June 2021, from <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=EXH-12252539%2120210602T052948.756%20GMT>

REA Group 2022, Explore Australia's suburbs, <https://www.realestate.com.au/neighbourhoods/>.

Shared Value Project 2022, *What is Shared Value?* accessed May 30 2022 <https://sharedvalue.org.au/about/shared-value/>

Sherpa 2022, Birriwa Solar and Battery Project Preliminary Hazards Analysis, prepared for ACEN Australia Pty Ltd June 2022

SMEC 2020, Isaac Downs Project – Social Impact Assessment, Prepared by SMEC for Stanmore IP South Pty Ltd.

SQM Research 2022, Residential Vacancy Rates, https://sqmresearch.com.au/graph_vacancy.php.

TAFE NSW 2022, TAFE NSW Dunedoo, Mudgee and Dubbo, TAFE NSW, from <https://www.tafensw.edu.au/locations/western-nsw/dunedoo>

Tell et al. 2015, cited by ARPANSA 2019 Electromagnetic Fields Associated with Commercial Solar Photovoltaic Electric Power Generating Facilities from <https://www.arpansa.gov.au/electromagnetic-fields-associated-commercial-solar-photovoltaic-electric-power-generating-facilities>

TransGrid 2021, Central-West Orana REZ Transmission Community Engagement Feedback Report December 2021 – September 2021 from <https://www.transgrid.com.au/media/wzpd25g1/cworez-community-engagement-feedback-report.pdf>

Umwelt 2021, Tallawang Solar Farm Scoping Report Final July 2021 for RES Australia Pty Ltd from <https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-23700028%2120210712T043458.031%20GMT>

Walker RP & Swift A 2015, Wind energy essentials: social, economic, environmental impacts, Wiley, New Jersey.

Warrumbungle Shire Council 2012, Community Strategic Plan, from <https://www.warrumbungle.nsw.gov.au/contact-us>

Warrumbungle Shire Council 2022, Community Strategic Plan 2022-2037, from <https://www.warrumbungle.nsw.gov.au/our-council/have-your-say/have-your-say-articles/community-strategic-plan-2022-2037>

WHO World Health Organization) 2012, Health in the post-2015 development agenda: need for a social determinants of health approach. Geneva: WHO. Viewed 30 May 2022

Appendix A

Social baseline study

Social Baseline Study

Birriwa Solar Farm and Battery Project

Prepared for ACEN Australia

July 2022

Social Baseline Study

Birriwa Solar Farm and Battery Project

ACEN Australia

J210553 RP1

July 2022

Version	Date	Prepared by	Approved by	Comments
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1 Overview

A social baseline study is a requirement of the New South Wales (NSW) Department of Planning, Industry, and Environment's (DPIE 2021a) *Social Impact Assessment Guideline for State Significant Projects* (DPIE 2021a). The baseline study describes the existing population and social conditions of potentially affected communities within the social impact assessment (SIA) study area which form the benchmark against which the potential social impacts are assessed. A review of relevant social indicators was undertaken to inform an understanding of the existing social conditions and trends. This allowed for the differentiation and measurement of the changes that are likely to occur with the project compared to those that would occur without the project (IAIA 2015). Accordingly, this social baseline identifies the area of social influence for the Birriwa Solar Farm and Battery Project (the project) and describes the existing known and predicted social conditions.

2 SIA study area

The project is within the Birriwa and Merotherie Australian Bureau of Statistics (ABS) State Suburb classification (SSC) areas, is 15 kilometres (km) south-west of the township of Dunedoo and is within the Mid-Western Regional Local Government Area (LGA) with part of the access route within the Warrumbungle Shire LGA. While the site itself is localised, direct and indirect impacts may be farther reaching. As such the project impacts and opportunities have been considered at two spatial scales (or study area): a local area and a regional area. These areas are defined in Table 2.1 and illustrated in Figure 2.1.

The local area consists of the communities anticipated to experience the most direct social impacts of the project (ie impacts related to local social infrastructure and services, workforce, business and industry, housing and accommodation, and community health and wellbeing).

The regional area consists of the geographic areas likely to experience few direct and more indirect social impacts of the project. These indirect impacts are associated with use of infrastructure, supply chains, roads, transportation of goods, materials and equipment, the movement of workers (some of which may have drive in drive out arrangements) and cumulative impacts arising from other projects in the area. The Mid Western Regional LGA and Warrumbungle LGA are identified as the regional area.

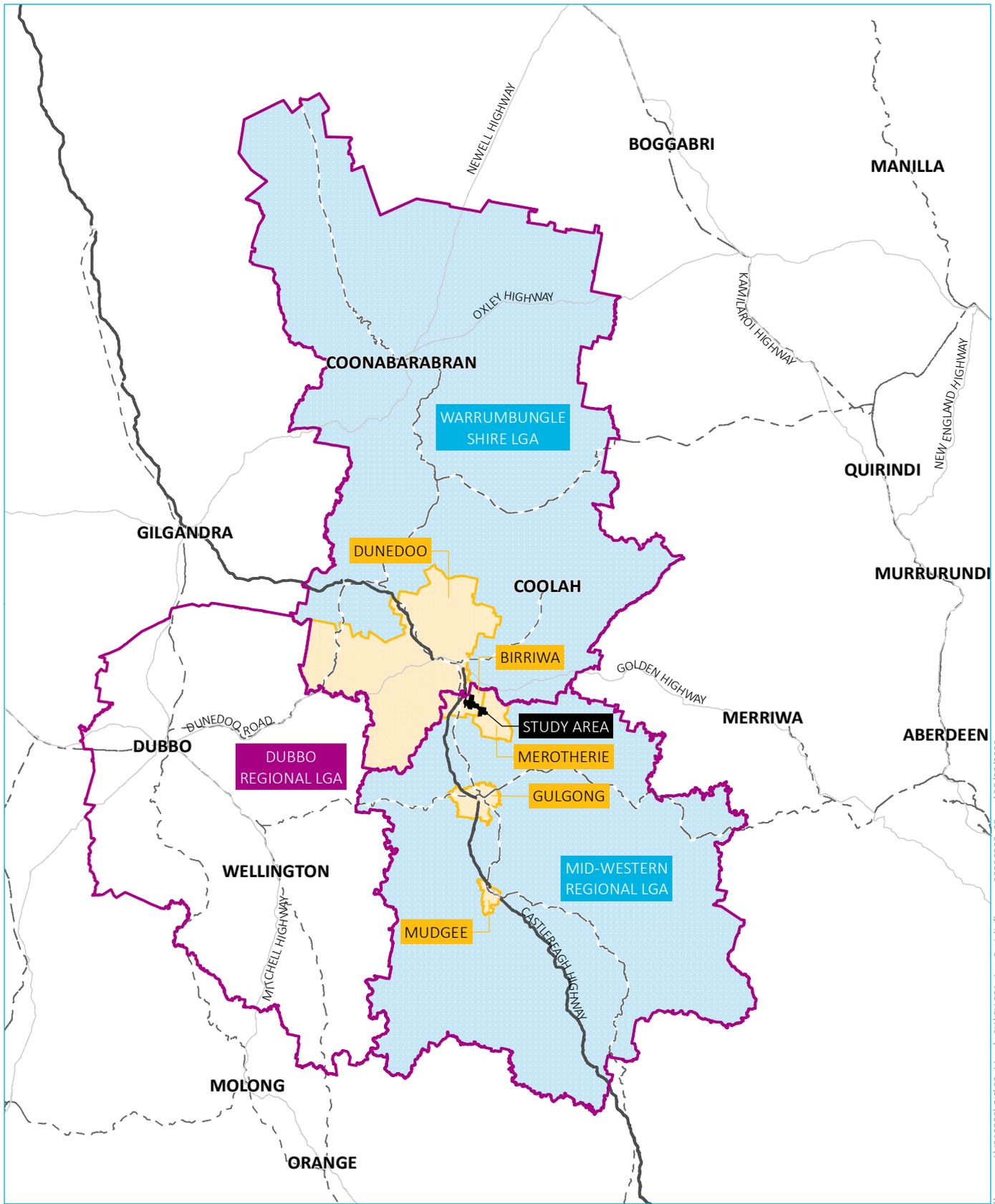
The area of reference includes the Dubbo Regional LGA due to the potential for project workers to be sourced from and accommodated in this LGA.

The communities have been mapped to the ABS categories used for data collection (Table 2.1).

Table 2.1 SIA study area

Study area	Geographic area	2016 ABS data category	Referred to in report as:
Local area	Birriwa	Birriwa SSC	Local area
	Merotherie	Merotherie SSC	
	Gulgong	Gulgong SSC	
	Dunedoo	Dunedoo SSC	
	Mudgee	Mudgee SSC	
Regional area	Mid-Western Regional LGA	Mid-Western Regional LGA	Regional area
	Warrumbungle LGA	Warrumbungle LGA	
Area of reference	Mid-Western Regional LGA	Mid-Western Regional LGA	Area of reference
	Warrumbungle LGA	Warrumbungle LGA	
	Dubbo Regional LGA (formally known as Western Plans Regional LGA)	Western Plans Regional LGA	
State of New South Wales	New South Wales (NSW)	New South Wales State (STE)	NSW

Note: Any reference to these defined geographic areas in this report is a reference to the corresponding ABS data category.



Source: EMM (2022); ACEN (2022); ABS (2017); DFSI (2017); GA (2011); ASGC (2006)



- KEY**
- Study area
 - Area of reference
 - Regional area
 - Local area
 - Rail line
 - Castlereagh Highway
 - Major road

- INSET KEY**
- NPWS reserve
 - State forest

SIA social locality

Birriwa Solar and Battery Project
Social Baseline Study
Figure 2.1



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3 Political and planning context

This section provides a summary of the relevant federal, state and local plans and strategies that inform an understanding of the area of social influence.

3.1 Federal

The project is located within the federal electorate of Calare, which is currently represented (in the house of Representatives) by the Hon Andrew Gee Member of Parliament (MP), member of the National Party of Australia.

Relevant federal legislation includes:

- the *Environmental Protection and Biodiversity Conservation Act 1999* administered by the Department of Agriculture, Water, and the Environment (DAWE) that seeks to protect and conserve cultural heritage sites and protected areas of national environmental significance; and
- the *Renewable Energy (Electricity) Act 2000*, administered by the Department of Industry, Science, Energy and Resources.

3.2 State

The NSW Parliament consists of a Legislative Assembly (lower house) and Legislative Council (upper house). The project is within the NSW State electorate of Dubbo. The current member for Dubbo is the Hon. Dugald Saunders of the National Party of Australia.

The project is classified as State significant development (SSD) in accordance with the provisions of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the *State Environmental Planning Policy (Planning Systems) 2021*. The EP&A Act and its subordinate legislation and policies sets out the environmental planning and assessment process for projects classified as SSD. The NSW Department of Planning and Environment (DPE) is responsible for administering the EP&A Act and its subordinate legislation and policies.

3.3 State strategies and plans

3.3.1 A 20-Year Economic Vision for Regional NSW

A 20-Year Economic Vision for Regional NSW (NSW Economic Vision) (NSW Government 2021) is the NSW Government's plan to drive sustainable, long-term economic growth in regional NSW. The NSW Economic Vision, previously released in 2018, sets out the Government's priorities and plans to achieve long-term social and economic success for regional communities across the state.

The NSW Economic Vision sets out a long-term plan and framework for how the NSW Government will support businesses to invest in the regions with confidence. The NSW Economic Vision responds to the changed economic landscape and opportunities that have emerged in regional NSW since the 2018 Vision was released following the drought, bushfires, flood, and COVID-19 pandemic, and will drive the next stage of recovery by focusing on the key enablers of economic success. It will ensure regional NSW is connected, with reliable transport and freight infrastructure, secure and sustainable water and energy, strong education and training, quality services and a stable business environment.

The NSW Economic Vision:

- Divides regional NSW into the following five types of regional economies, based on their underlying geography, population and economic features: metro satellites; growth centres; coastal; inland; and remote. Regional NSW is defined as all of NSW, with the exception of the metropolitan areas of Greater Sydney, Newcastle and Wollongong. These regional economies also contain smaller local economies, defined as functional economic regions (FERs).
- Identifies seven engine (established) industries (ie agribusiness and forestry, resources and mining, tourism and hospitality, tertiary education and skills, health and residential care, freight and logistics, defence) and three emerging industry sectors (ie advanced manufacturing, renewable energy, technology-enabled primary industries).
- Provides a snapshot of Regional NSW today that presents the current economic and demographic environment, with reference to the thriving agricultural, energy and resources industries, and strong manufacturing, tourism, and services sectors.
- Describes the global forces shaping regional economies, and the implications of these trends (this considers the major shifts in the global economic outlook and global events, including the COVID-19 pandemic, that influence regional economies particularly through population, trade and investment).
- Presents the current priorities for the NSW Government (NSW Government 2021).

The Mid-Western Regional LGA is identified as a regional economic growth centre and is located within the Mid-Western FER. The future focus for identified growth centres includes opportunities to improve connectivity, ensure water and energy security, and support both engine and emerging industries with the right regulatory settings, research and development and investment attraction (NSW Government 2021).

The Warrumbungle LGA is identified as a remote regional economy and is located within the Castlereagh FER. The future focus for identified remote regions includes a strong focus on building community resilience, research and investment in key enablers such as infrastructure and technology to drive opportunities for emerging industries, based on local endowments, to create more sustainable economies.

3.3.2 Building Momentum: State Infrastructure Strategy, 2018–2038

The *State Infrastructure Strategy 2018–2038* (State Infrastructure Strategy) (Infrastructure NSW 2018) sets out Infrastructure NSW's independent advice on the current state of NSW infrastructure, and the infrastructure needs and priorities over the next 20 years. It looks beyond current projects and identifies policies and strategies needed to provide infrastructure to meet the needs of a growing population and economy.

The State Infrastructure Strategy presents:

- Strategic directions: six cross-sectoral strategic directions are incorporated into the strategy to ensure good-practice across infrastructure sectors and throughout infrastructure lifecycles.
- Geographic infrastructure directions: the strategy recognises the different opportunities and needs experienced within NSW, Regional NSW, and Greater Sydney and Outer Metro, and outlines geographic-specific approaches for infrastructure planning, investment, and policy.
- Policy and investment strategies for sectors: using the strategic and geographic infrastructure directions, policy and investment strategies are outlined across key infrastructure sectors (ie transport, energy, water, health, education, justice, culture, sport, and tourism).

The State Infrastructure Strategy identifies energy as a key industry sector. The strategic objective for the energy sector is to encourage private sector investment to deliver secure, reliable, affordable, low emission energy supply.

3.3.3 Central-West Orana Renewable Energy Zone

The Central-West Orana (CWO) Renewable Energy Zone (REZ) was declared on 5 November 2021. The Central West region of NSW was selected by the NSW Government for the development of the CWO REZ due to the region's significant potential for renewable energy infrastructure and regional development (NSW Government 2022). The declaration is the first step in formalising the REZ under the *Electricity Infrastructure Investment Act 2020*. It sets out the intended network capacity (size), geographical area (location) and infrastructure that will make up the REZ. The project site is located wholly within the boundary of the CWO REZ (Figure 3.1). The project aligns with the NSW and Commonwealth Government's objectives for energy security and reliability and emissions reductions and will contribute to the continued growth of renewable energy generation and storage capacity in the CWO REZ.

3.3.4 Central West and Orana Regional Plan 2036

The Central West and Orana Regional Plan 2036 (the Regional Plan) (DPIE 2017) guides land use planning priorities and decision making in the Central-West and Orana Region for the next two decades. The Regional Plan applies to 19 local government areas including the Mid-Western Region, Warrumbungle and Dubbo Region. The Regional Plan is currently undergoing its first five-year review to reset its priorities and extend its reach to 2041. The Regional Plan acknowledges that recent landmark renewable projects distinguish the region as a leader in renewable energy development.

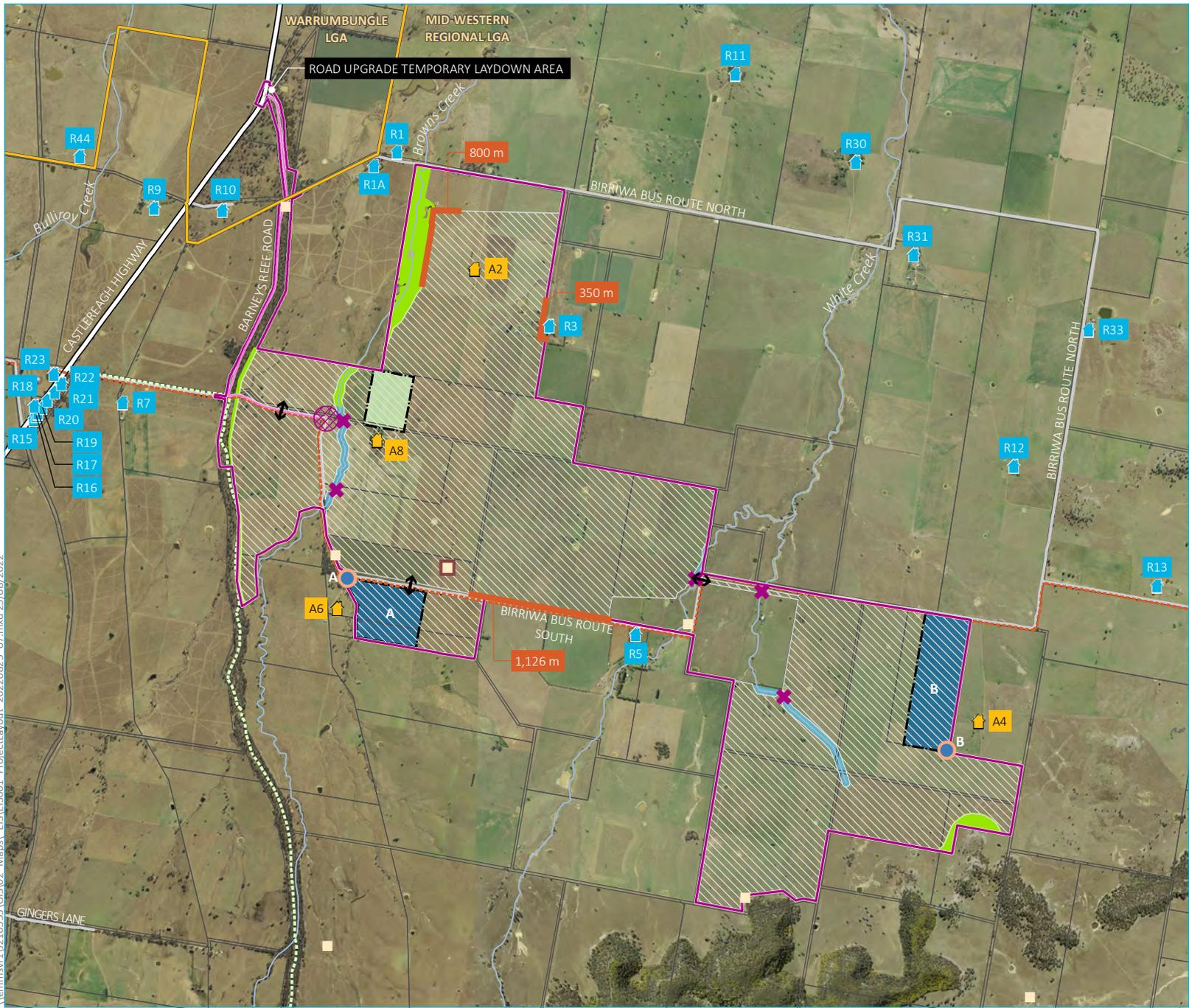
The Regional Plan sets out four regionally focused goals including:

- the most diverse regional economy in NSW;
- a stronger, healthier environment and diverse heritage;
- quality freight, transport and infrastructure networks; and
- dynamic, vibrant and healthy communities.

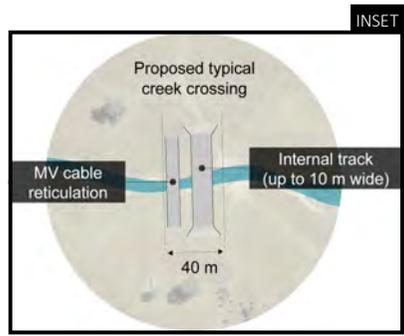
In addition to the four goals, the plan outlines 29 directions and 126 actions. The goals articulate the intended outcome, the directions identify the broad issues or policy areas that need focus, and the actions represent the initiatives required to achieve the goals. The project will contribute to achieving the overall goals of the plan particularly in relation to the following directions:

- Direction 1: Protect the regions diverse and productive agricultural land – use of the land for renewable development such as solar farms is compatible with continued agricultural use of the land.
- Direction 9: Increase renewable energy generation – the project is directly addressing this direction.
- Direction 12: Plan for greater land use compatibility – land use planning and conflict has been taken into consideration when selecting the project site.
- Direction 13: Protect and manage environmental assets – refinement of the project layout has been subject to environmental constraints analysis including constraints associated with biodiversity, heritage and visual values.
- Direction 15: Increase resilience to natural hazards and climate change – renewable energy projects support current climate change policy directions to prioritise investment to reduce carbon emissions.

- Direction 16: Respect and protect Aboriginal heritage assets – the project layout has been designed to avoid all known Aboriginal sites within the project site except for one.



- KEY**
- Study area
 - Impact footprint**
 - Development footprint
 - Road upgrade corridor
 - Restricted development area
 - Potential public road crossing location
 - Project layout**
 - ✖ Potential creek crossing point (refer to inset below for indicative design)
 - Proposed access point to the project
 - Connection point (option A or B)
 - Proposed operational infrastructure area including substation, operational facility and BESS (option A or B)
 - Temporary construction compound
 - Landscape screen planting
 - Existing environment**
 - ↑ Dwelling not associated with the project
 - ↑ Dwelling associated with the project
 - Aboriginal heritage site (to be salvaged)
 - Aboriginal heritage site (to be avoided)
 - Vegetation to be retained
 - Major road
 - Minor road
 - Watercourse
 - Cadastral boundary
 - Local government area boundary
 - Central West Cycle (CWC) Trail**
 - CWC main route - Gulgong to Dunedoo
 - CWC alternate route - Slap Dash Creek side trail



Project overview

Birriwa Solar and Battery Project
Social Baseline Study
Figure 3.1



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Source: EMM (2022); DFSI (2017, 2022); GA (2011); ACEN (2022)

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GDA 1994 MGA Zone 55

3.3.5 Central West and Orana Regional Draft Plan 2041

The Draft *Central West and Orana Regional Plan 2041* (draft Regional Plan) (DPIE 2021d) outlines the goals and actions for the Central West and Orana Region to achieve a sustainable future. It applies to 19 local government areas including the Mid-Western Region, Warrumbungle and Dubbo Region. When finalised the draft Regional Plan will replace the Regional Plan described above. The release of the final Regional Plan is anticipated later in 2022.

The 2041 vision for the region is:

A healthy, connected and resilient region, with a prosperous economy (DPIE 2021d).

The draft Regional Plan presents 22 regional objectives based on the following four themes:

- a sustainable and resilient place;
- people, housing, and communities;
- prosperity, productivity and innovation; and
- location specific responses.

The draft Regional Plan identifies Orange, Bathurst and Dubbo as the key regional cities in the Central West and Orana. Lithgow, Mudgee, Cowra, Forbes and Parkes are identified as strategic centres.

The draft Regional Plan describes the Central West Orana REZ as supercharging the development and consumption of a mix of renewable energy resources. According to the draft Regional Plan the REZ is expected to:

Attract \$5.2 billion in private investment to the region by 2030, support around 3,900 construction jobs, 500 ongoing jobs and contribute to achieving a Net-Zero emissions future for NSW (DPIE 2021d).

The project will contribute to achieving the overall vision of the draft Regional Plan particularly in relation to the following objectives:

- Objective 3: Plan for resilient places and communities – the project responds to the region’s identified vulnerability to climate change by avoiding areas of natural hazard, supporting current climate change policy directions, and providing opportunities for diversification of farm income.
- Objective 5: Ensure site selection and design embraces and respects the region’s landscapes, character and cultural heritage – the site selection process for the project considered the landscape and character values of the local area, with strategic planting proposed to reduce potential impacts. Aboriginal cultural heritage values present on the site have been identified and avoided wherever possible.
- Objective 10: Provide accommodation options for temporary workers – project workforce accommodation requirements are clearly described in the Environmental Impact Statement (EIS) and a workforce accommodation strategy proposed to minimise impacts on other industry sectors, eg tourism and the broader community.
- Objective 12: Leverage existing industries and employment areas and support new and innovative economic enterprises – the project will generate approximately 800 full-time equivalent (FTE) direct employ opportunities for the local and regional area at peak construction. Direct and indirect project spending (procurement) will support local and regional business sustainability and encourage business diversification.

- Objective 13: Protect agricultural production values and promote agriculture innovation, sustainability and value-add opportunities – the project site selection process, including detailed constraints analysis has considered local and regional agricultural production values and sought to avoid areas identified as good quality agricultural land. The project provides host landowners with opportunities for diversification of farm income.
- Objective 20: Leverage the Central West and Orana REZ to provide economic benefits to communities – Project employment and procurement opportunities will delivery economic benefits to the local and regional area.

3.4 State guidelines

3.4.1 SIA Guideline 2021

i Social Impact Assessment Guideline for State Significant Projects

The SIA Guideline (DPIE 2021a) provides direction on assessing impacts arising from SSD projects in the context of the environmental impact assessment process under the EP&A Act. In this guideline, SIA is the process of identifying, predicting, evaluating and developing responses to the social impacts of a proposed State significant development project which requires proportionate and tailored assessment to suit each project’s context and the nature and scale of its potential impacts and benefits.

The SIA Guideline requires that all State significant projects have a clear and consistent approach to assessing social impacts. The SIA Guideline aims to:

- build higher levels of community understanding of projects;
- help proponents to understand what is required to meet the department’s expectations;
- give stakeholders and the community confidence that their concerns and perspectives are being considered early in the assessment;
- reduce project risks and costs related to unplanned or reactive management of social impacts;
- create better proponent-community relations and more socially sustainable outcomes;
- streamline assessments by reducing departmental requests for more information; and
- better integrate the SIA and Environmental Impact Assessment (EIS) (DPIE 2021a).

The SIA Technical Supplement 2021 accompanies the SIA Guideline to provide specific methods and techniques for the identification and assessment of social impacts and benefits (DPIE 2021b).

ii Undertaking Engagement Guidelines for State Significant Projects

The *Undertaking Engagement Guidelines for State Significant Projects 2021* (engagement guideline) (DPIE 2021c) describes the requirements for effective engagement on State significant projects in NSW. The engagement guideline outlines requirements for proponents to engage with the community, councils and government agencies at each phase of the environmental assessment. The engagement guideline also outlines the actions the Department of Planning and Environment (DPE) will take as well as identifies opportunities for community participation during each phase. It emphasises early planning and engagement, effective engagement, proportionate engagement, innovation, and transparency. The primary audience of the engagement guideline is proponents and their teams, who are responsible for engaging with the community and other stakeholders during each phase of the environmental assessment. The engagement guideline also provides the community and other stakeholders with a better understanding of how, when and on what they can provide feedback, and how it will be addressed by proponents and decision-makers.

The engagement guideline outlines specific requirements for engagement for all phases of the planning approvals process, including:

- scoping of the EIS;
- preparation of the EIS;
- EIS exhibition and responding to submissions;
- assessment and determination;
- post-approval; and
- during modifications.

3.5 Local

3.5.1 Governance structures

The project is located within the Mid-Western Regional LGA; however, the project effects (direct and indirect) are anticipated to extend to the Warrumbungle LGA.

A summary of the governance structure (ie relevant Mayors and Councillors (Cr)) in each LGA is provided in Table 3.1.

Table 3.1 LGA Governance Structures, 2022

LGA	Role	Councillors	
Mid-Western Regional Council	Mayor	Councillor Des Kennedy	
	Deputy Mayor	Councillor Sam Paine	
	Councillors	Councillor Paul Cavalier	Councillor Katie Dicker
		Councillor Alex Karavas	Councillor Robbie Palmer
		Councillor Peter Shelly	Councillor Phil Stoddart
		Councillor Percy Thompson	
Warrumbungle Shire Council	Mayor	Councillor Ambrose Doolan	
	Deputy Mayor	Councillor Aniello Iannuzzi	
	Councillors	Councillor Denis Todd	Councillor Kodi Brady
		Councillor Dale Hogden	Councillor Zoe Holcombe
		Councillor Jason Newton	Councillor Kathryn Rindfleish
		Councillor Carlton Kopke	

Source: Mid-Western Regional Council 2022, Warrumbungle Shire Council 2022

3.5.2 Local planning context

The Mid-Western Regional Council (MWRC) and the Warrumbungle Shire Council (WSC) have local plans and strategic plans that articulate their vision for the future of the communities in each respective LGA. These plans are summarised in Table 3.2.

Table 3.2 Mid-Western Regional LGA and Warrumbungle LGA planning context

Plan/strategy	Summary	Responsibility	Timeframe
<i>Our Place 2040 Mid-Western Regional Local Strategic Planning Statement (Strategic Planning Statement) (MWRC 2020)</i>	<p>The Strategic Planning Statement sets out the 20 year vision for land use planning in the Mid-Western Regional LGA.</p> <p>Planning Priority 7 of the Strategic Planning Statement is to “support the attraction of a diverse range of business and industries”. The following land use action supports this planning priority “consider renewable energy development in appropriate areas that avoids impacts on the scenic rural landscape and preserves valuable agricultural land”.</p>	MWRC	2022–2040
<i>Mid-Western Region Community Plan (MWRC, 2017)</i>	<p>The Mid-Western Region Towards 2030 Community Plan 2017–2021 encourages active communication between Council and the community through engagement and participation in planning processes.</p> <p>The plan represents an opportunity to create and foster community-based goals, values and aspirations – to drive a sustainable community that reconciles the economic, social, environmental and civic leadership priorities for the region.</p> <p>The plan aims to:</p> <ul style="list-style-type: none"> • look after the community; • protect the natural environmental; • build a strong local economy; • connect and link the regions to the rest of NSW; and • good governances and meeting the needs of the community. <p>A new community plan is currently in the community engagement phase.</p>	MWRC	2017–2021
<i>Mid-Western Regional Local Environmental Plan 2012 (LEP) (NSW Government, 2021)</i>	<p>The LEP describes the applicable zoning and land use planning regulations, and development standards.</p>	MWRC	2012 – present
<i>Regional Economic Development Strategy 2018–2022 (REDS) (MWRC, 2018)</i>	<p>The REDS identifies economic development opportunities that capitalise on the LGAs endowments and industry specialisations.</p> <ul style="list-style-type: none"> • Develop a mature and diversified tourism sector. • Capitalise on existing viticulture strengths. • Grow industry clusters around mining, manufacturing and agriculture. • Support the attraction and retention of an increased number of diverse businesses and industries while developing a strong entrepreneurial reputation. • Promote the region to target businesses that complement key local industries. • Develop an emerging retiree/aged care sector. 	MWRC	2018–2022

Table 3.2 Mid-Western Regional LGA and Warrumbungle LGA planning context

Plan/strategy	Summary	Responsibility	Timeframe
<i>Delivery Program 2017/18–2021/22 and Operational Plan</i> (MWRC 2022)	<p>The Delivery Program and Operational Plan explores the actions to be taken to achieve the strategic outcomes identified in the <i>Mid-Western Region Community Plan</i>.</p> <p>The Delivery Program comprises a timeframe of 3 years, while the Operational Plan presents an annual plan. The contents of the delivery program and operational plan are organised according to 5 themes: community; natural environment; local economy; connecting the region; and governance. Each theme consists of numerous strategies with a set of specific actions to be taken to ensure their realisation. The Delivery Program and Operational Plan provide a guidance framework for the investment of Voluntary Planning Agreement funds.</p>	MWRC	2017/2018 to 2021/2022
<i>Asset Management Strategy 2017–2021</i> (MWRC 2021)	The Asset Management Strategy presents the MWRC’s plan to manage and operate the appropriate mix of sustainable community infrastructure that supports communities in the Mid-Western Regional LGA. This strategy endeavours to help meet the objectives set out in the community plans.	MWRC	2017–2021
<i>Warrumbungle Shire Community Strategic Plan</i> (WSC, 2017)	The community strategic plan for the Warrumbungle LGA was released in 2012, and the outcomes and priorities were reviewed in 2017. The community strategic plan identifies the main priorities and aspirations for the Warrumbungle LGA and establishes objectives and strategies to achieve those objectives that address social, environmental, economic and civic leadership issues as identified by the community.	WSC	2017–2032
<i>Warrumbungle Shire Draft Community Strategic Plan 2022/2037</i> (WSC, 2022)	<p>The WSC has recently released a draft community strategic plan for the period 2022-2037. The community vision articulated in the draft community strategic plan is “a peaceful and sustainable way of life built by a strong community”. The draft community strategic plan outlines objectives and actions under the four themes of:</p> <ul style="list-style-type: none"> • caring for the environment; • civic leadership; • strengthening the local economy; and • supporting community life. 	WSC	2022–2037
<i>Warrumbungle LEP 2013</i> (NSW Government, 2013)	The LEP describes the applicable zoning and land use planning regulations, and development standards.	WSC	2013 – present

Table 3.2 Mid-Western Regional LGA and Warrumbungle LGA planning context

Plan/strategy	Summary	Responsibility	Timeframe
<i>Operational Plan & Delivery Program (WSC 2021)</i>	<p>The WSC Operational Plan and Delivery Program acts as a yearly review of the Council's commitment to the community, and outlines their quarterly progress and achievements, as well as their visionary framework for the preceding years. The plan and program identify seven core goals to address the needs and aspirations highlighted during community consultation:</p> <ul style="list-style-type: none"> • natural environment; • local economy; • community and culture; • rural and urban development; • recreation and open space; • public infrastructure and services; and • local governance and finance. <p>In addition to outlining the values of the regional community (including honesty, integrity, fairness, transparency, passion, and opportunity), the plan explores the treasured natural features of the region. The second part of the document outlines the budget and delivery program for achieving these goals, and protecting the unique aspects of the Warrumbungle Shire, while also identifying areas for improvement.</p>	WSC	2020/21–2023/24

4 Demographic profile

4.1 Population and population trends

The estimated population of the local area in 2016 was 14,738 people (Table 4.1), with the majority of population located in Mudgee (74.1% or 10,923 people) and the smaller communities of Gulgong (17.1% or 2,521 persons) and Dunedoo (8.3% or 1,221 persons). The smaller population size in Gulgong and Dunedoo likely reflects the limited number of services available in these communities.

The estimated population of the regional area and the area of reference (ie including the Dubbo LGA) in 2016 was 33,460 people and 83,537 people respectively. The population of the local area represents 44.0% of the regional area population and 17.6% of the area of reference population.

Population trend data for the local area and regional area is presented in Table 4.1, Figure 4.1 and Figure 4.2. Population data was not available for the SSCs in the local area for the 2006 and 2011 ABS census periods due to changing ABS structures. The population trend in the local area is consistent with the NSW trend (ie population has experienced a gradual increase over time but has experienced a lesser overall growth rate).

Analysis of population trend data (ie 2006 to 2016) for the local area, regional area and area of reference shows an increase in population in the ten years to 2016 (ie 10.9%, 8.3% and 21.5% population increase respectively). The population growth rate in the ten years to 2016 in both the local area and the regional area was lower than NSW (ie 14.2%).

The majority of population increase in the local area between 2006 and 2016 occurred in Mudgee, with the greatest population change occurring between the years 2011 and 2016 in parallel with sustained growth in the surrounding coal mining industry. The smaller communities of Gulgong and Dunedoo experienced population decline between the years 2006 and 2016, a trend that is generally consistent with other small rural communities across Australia. The notable population decline that occurred in Dunedoo between 2006 and 2011 can be attributed to rural property acquisition activities associated with the then proposed Cobbora coal mine. In 2008 these property acquisition activities led to the 'boarding up of 114 farms and homes in Dunedoo' (Innis 2015) and the associated outmigration of former residents (estimated at 95 families [Innis 2015]).

The population growth experienced in the regional area in the period 2006 to 2016 occurred entirely in the Mid-Western LGA. Warrumbungle Shire LGA experienced a population decline (ie -4.3%) during this period. Of the three LGAs of interest, Dubbo Regional LGA experienced the greatest population change (ie 32.3%) in the ten years to 2016.

Figure 4.2 shows population growth in the area of reference, component LGAs and NSW for the period 2006 to 2021.

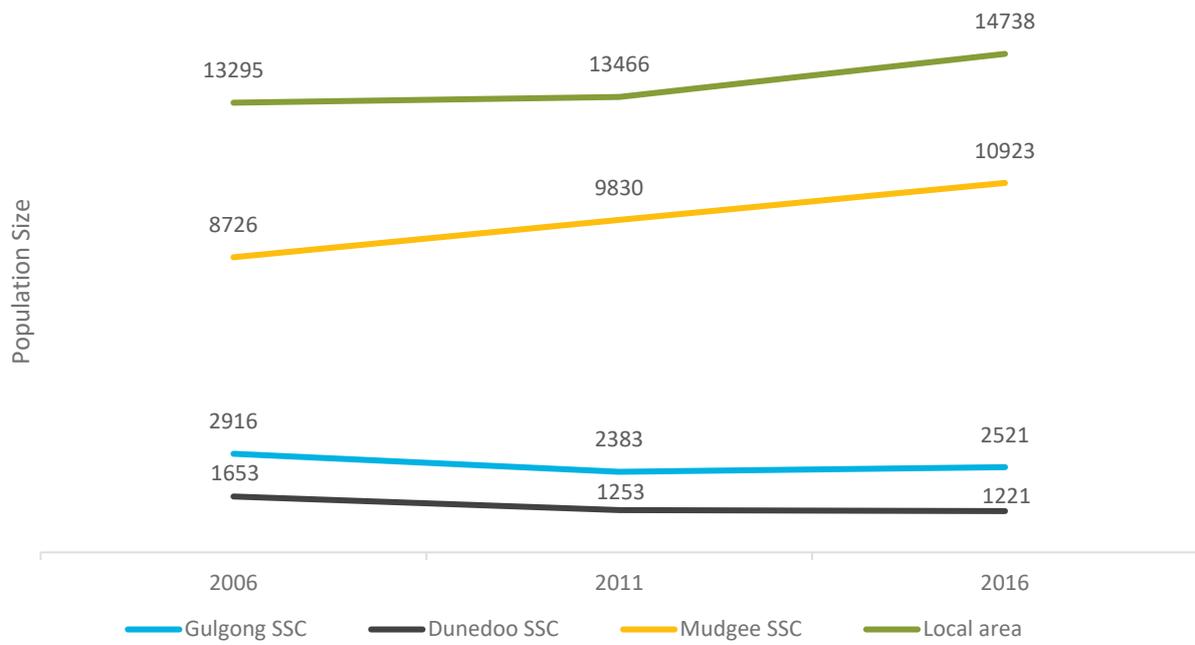
Figure 4.2 shows that population growth in the Dubbo Regional LGA between 2011 and 2021 has been a driving force of population change in the area of reference. The Mid-Western LGA has continued to experience steady population growth from 2016 to 2021. In contrast, the adjoining Warrumbungle Shire LGA has continued to experience population decline.

Table 4.1 Population trends, 2006–2016

Location	2006	2011	2016	Total % change 2006–2011	Total % change 2011–2016	Total % change 2006–2016
Birriwa		NA	49		NA	
Merotherie		NA	24		NA	
Gulgong	2916	2383	2521	-18.3%	5.8%	-13.5%
Dunedoo	1653	1253	1221	-24.2%	-2.6%	-26.1%
Mudgee	8726	9830	10923	12.7%	11.1%	25.5%
Local area	13,295	13,466	14,738	1.3%	9.4%	10.9%
Mid-Western LGA	21,085	22,318	24,076	5.8%	7.9%	14.2%
Warrumbungle LGA	9,810	9,588	9,384	-2.3%	-2.1%	-4.3%
Regional area total	30,895	31,906	33,460	2.9%	18.1%	8.3%
Dubbo Regional LGA	37843	38,805	50,077	2.5%	29.0%	32.3%
Area of reference total	68,738	70,711	83,537	2.9%	18.1%	21.5%
NSW	6,549,174	6,917,656	7,480,228	5.6%	8.1%	14.2%

Source: ABS 2006; ABS 2011; ABS 2016a, Census of Population and Housing: General Community Profiles.

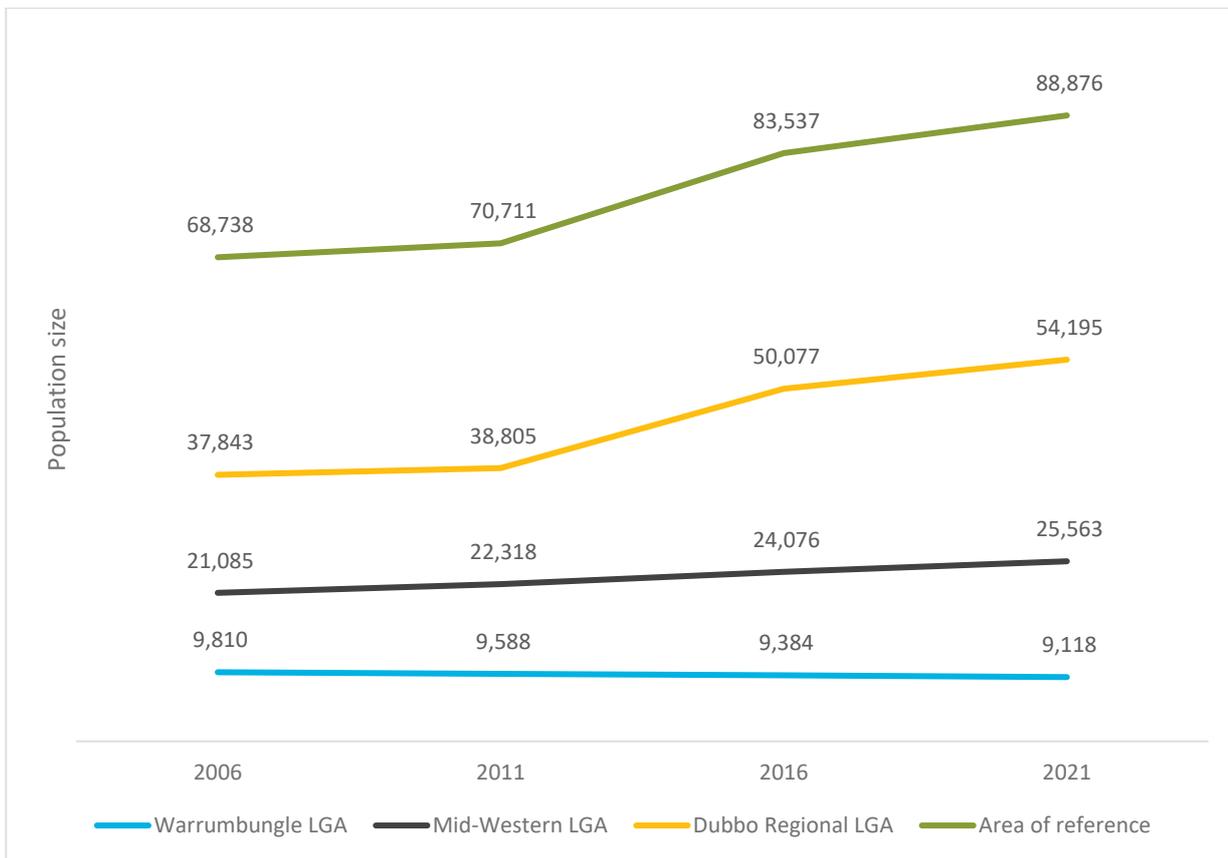
Notes: Population totals for Birriwa SSC and Merotherie SSC are not available for 2006 and 2011.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Notes: Population trends for Birriwa SSC and Merotherie SSC are not shown as population data was not available for the 2006 and 2011 Census periods.

Figure 4.1 Population trends in the local area, 2006–2016



Source: ABS 2016, Census of Population and Housing: General Community Profiles, 2021 ABS 2022, Regional population.

Figure 4.2 Population trends in the regional area and area of reference, 2006–2021

4.2 Population projections

Population projections (DPIE 2019) are published by the DPE for the period 2016–2041 at the LGA level (Table 4.2 and Figure 4.3). Population projections suggest that the population of the regional area is estimated to increase by 149 people from 34,108 in 2016 to 34,257 in 2041, representing a total increase of 0.4% and an average annual increase of less than 0.1%.

Within the regional area, population projections for the LGAs indicate that the:

- population of Mid-Western Regional LGA is estimated to increase by 2,378 people from 24,546 in 2016 to 26,924 in 2041, representing a total increase of 9.7% and an average annual increase of 0.4%; and
- population of Warrumbungle LGA is estimated to decrease by 2,229 people from 9,562 in 2016 to 7,333 in 2041, representing a total decrease of 23.3% and an average annual decrease of 0.9%.

Projected annual average population growth rates in the LGAs of Mid-Western Regional and Warrumbungle LGA are well below the projected annual average population growth rate for NSW (1.5%).

The data shows that while the regional area population is projected to grow, the growth is more gradual than NSW. Regional NSW is experiencing a slowing of population growth which may be attributed to a continued aging population as well as changes in and closures of major industries (Informed decisions, 2016).

Of the three LGAs of interest, Dubbo Regional LGA is projected to have the highest annual average growth rate and the highest overall population increase (ie 14.3% or an increase of 7,373 people) from 2016 to 2041. Mid-Western Regional LGA is forecast to experience a population increase of 2,378 or 9.7% over the same period.

In contrast to the noted LGAs, the Warrumbungle Shire LGA is forecast to experience population decline (ie -23.3% or a decline of 2,229 people).

Analysis of actual 2016 and 2021 population estimates (ABS 2022; Figure 4.2) for the LGAs of interest shows that in 2021, the population of the:

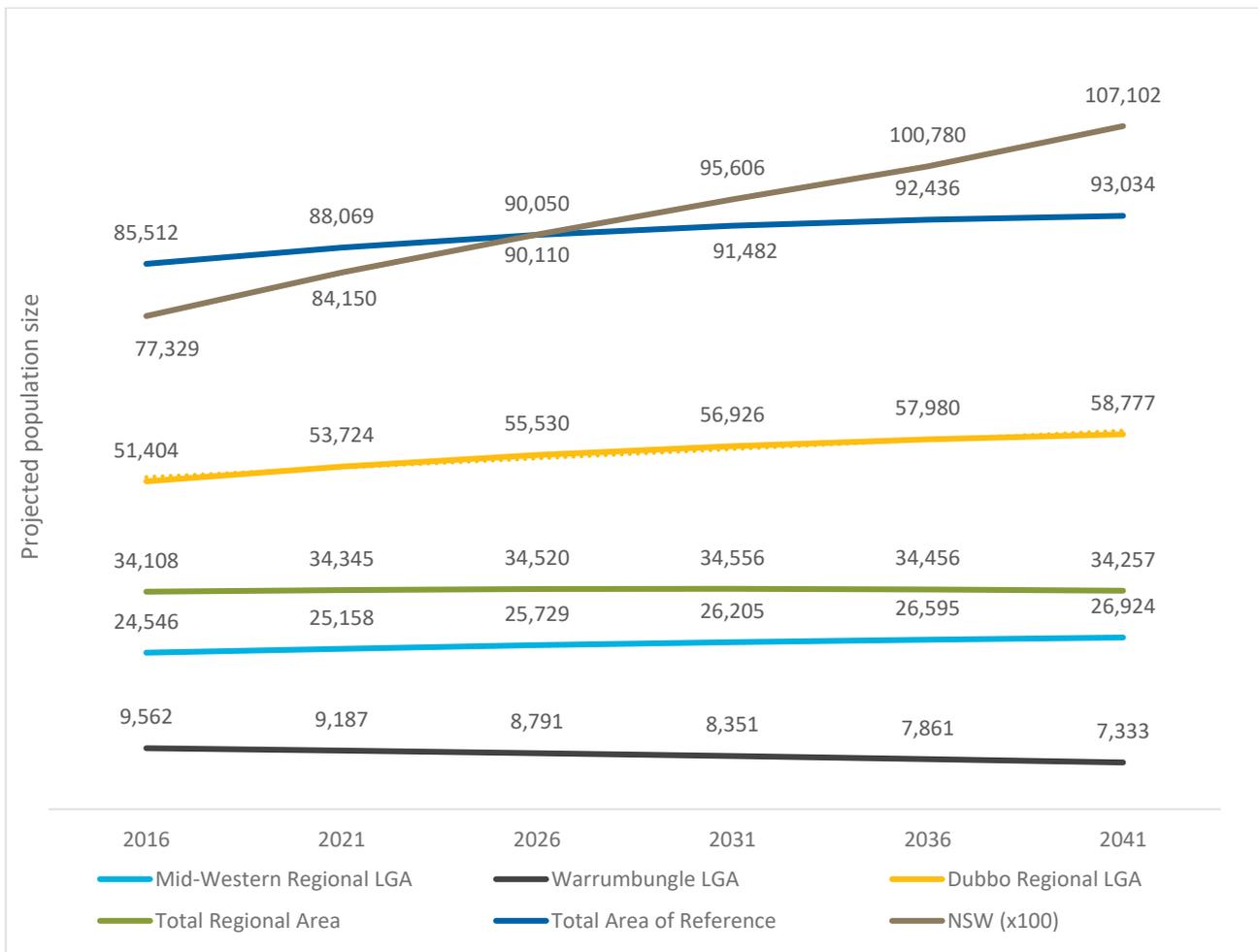
- Mid-Western Regional LGA (ie 25,563) was slightly higher than the projected population (ie 25,158);
- Warrumbungle Shire LGA was slightly lower (ie 9,118) than the projected population (ie 9,187); and
- Dubbo Regional LGA (ie 54,195) was higher than the projected population (ie 53,724).

Table 4.2 Projected population, 2016–2041

Area	2016	2021	2026	2031	2036	2041	Total change 2016–2041	Total % change 2016–2041	Average annual growth rate 2016–2041
Mid-Western LGA	24,546	25,158	25,729	26,205	26,595	26,924	2378	9.7%	0.4%
Warrumbungle LGA	9,562	9,187	8,791	8,351	7,861	7,333	-2,229	-23.3%	-0.9%
Regional Area	34,108	34,345	34,520	34,556	34,456	34,257	149	0.4%	0.0%
Dubbo Regional LGA	51,404	53,724	55,530	56,926	57,980	58,777	7,373	14.3%	0.6%
Area of Reference	85,512	88,069	90,050	91,482	92,436	93,034	7,522	8.8%	0.4%
NSW	7,732,858	8,414,978	9,011,010	9,560,567	10,077,964	10,572,696	2,747,061	36.7%	1.5%

Source: DPIE 2019, NSW 2019 Population Projections: ASGS 2019 LGA projections.

Notes: 1. Population projection data was not available at the SSC level.
 2. The projected population has been determined by using the ABS ERP population count which takes Census counts of people where they usually live (accounting for interstate visitors and removing overseas visitors), adjusts for Census undercount and overcount using the Census Post Enumeration Survey (PES), adds in Australians who are temporarily overseas, and applies further demographic adjustments.



Source: DPIE 2019, NSW 2019 Population Projections: ASGS 2019 LGA projections.

Figure 4.3 Projected population, 2016–2041

4.3 Population by age and sex

The age group distribution and median age for the local area and regional area for 2016 is presented in Table 4.3. The distribution of the population by age and sex is presented in Figure 4.4. In 2016 in the local area the age cohorts with the largest population are the cohorts of 5–14 years (13.7%), 25–34 years (12.9%) and 45–54 years (12.5%). The proportion of persons aged between 45–65 years in the local area (23.5%) is lower than the regional area (27.8%) and the area of reference (26.1%), but similar to NSW (25.0%).

The proportion of population 65 years and over in the local area (18.8%) is lower than the regional area (21.4%), but higher than the area of reference (18.5%) and higher than NSW (16.3%). This has implications for the provision of services and facilities particularly health services, aged care and community transport services.

The proportion of population aged 15–24 in the local area (10.7%) is higher than the regional area (9.8%) but lower than the area of reference (11.4%) and NSW (12.5%).

The age-structure of the population of the local area is also reflected in the median ages of the populations of the component locations. In 2016 the median ages across the local area were: 54 years in Birriwa, 49 years in Dunedoo, 41 years in Gulgong, 47 years in Merotherie, and 37 years in Mudgee compared to 38 years in NSW.

The distribution of males and females in the population of the local area is relatively even (ie 49% male and 50.9% female). In the local area the largest male cohorts are the 5–14 years (14.5%), 25–34 years (13.3%) and 45–54 years (12.9%) cohorts. Amongst females, the largest age cohorts are 25–34 years (14.7%), 35–44 years (13.8%), 45–54 years (13.6%), and 55–64 years (12.4%). However, there is a smaller proportion of the local area population aged 15–24 years for both males and females.

Table 4.3 Population distribution by age cohort, and median age, 2016

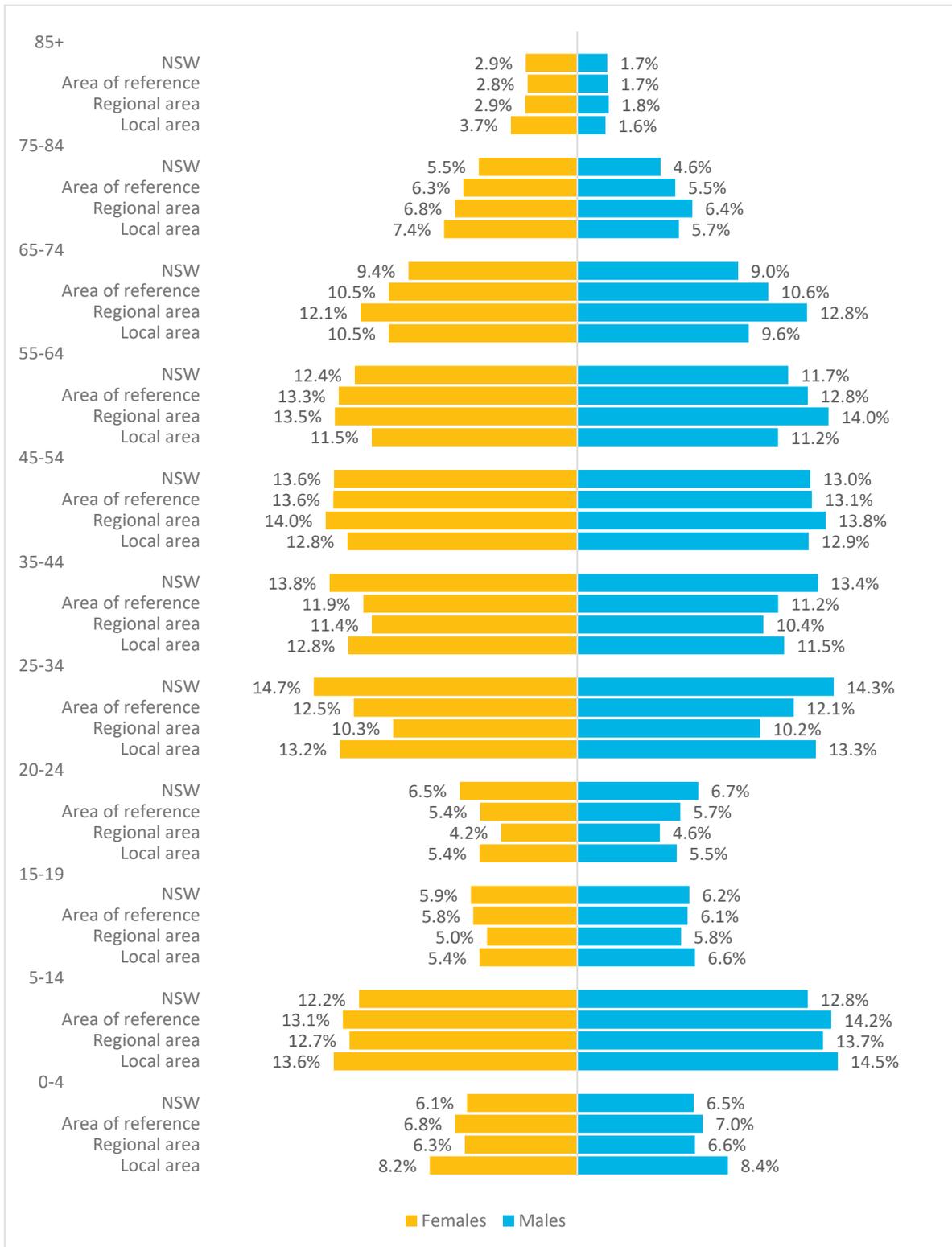
	0–4 years	5–14 years	15–19 years	20–24 years	25–34 years	35–44 years	45–54 years	55–64 years	65–74 years	75–84 years	85 years and older
Birriwa	6.1%	6.1%	6.1%	0.0%	6.1%	0.0%	14.3%	20.4%	36.7%	0.0%	0.0%
Merotherie	12.5%	0.0%	0.0%	0.0%	0.0%	0.0%	20.8%	0.0%	0.0%	0.0%	0.0%
Gulgong	7.9%	14.0%	5.6%	4.5%	10.4%	11.4%	11.6%	13.8%	11.3%	6.3%	1.9%
Dunedoo	5.2%	12.9%	4.8%	6.0%	7.0%	8.3%	13.3%	11.0%	15.3%	11.2%	4.0%
Mudgee	8.4%	13.7%	5.6%	5.5%	14.2%	12.4%	12.6%	10.3%	8.7%	5.9%	2.6%
Local area	8.1%	13.7%	5.5%	5.3%	12.9%	11.8%	12.5%	11.0%	9.8%	6.4%	2.6%
Mid-Western LGA	7.0%	13.3%	5.5%	4.6%	11.1%	11.5%	14.2%	13.1%	11.7%	5.9%	2.0%
Warrumbungle LGA	5.0%	13.0%	5.2%	4.1%	8.1%	9.6%	13.5%	15.5%	14.4%	8.5%	3.3%
Regional area	6.4%	13.2%	5.4%	4.4%	10.3%	11.0%	14.0%	13.8%	12.5%	6.6%	2.3%
Dubbo Regional LGA	7.1%	13.6%	6.2%	6.2%	13.4%	11.8%	12.7%	12.4%	9.1%	5.3%	2.1%
Area of reference total	6.8%	13.5%	5.9%	5.5%	12.1%	11.4%	13.2%	12.9%	10.5%	5.8%	2.2%
NSW	3.3%	12.3%	6.0%	6.5%	14.3%	13.4%	13.1%	11.9%	9.1%	5.0%	2.2%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Table 4.4 **Population median age, 2016**

	Median age of persons 2016
Birriwa	54
Merotherie	47
Gulgong	41
Dunedoo	49
Mudgee	37
Local area	–
Mid-Western LGA	42
Warrumbungle LGA	49
Regional area	–
Dubbo Regional LGA	37
Area of reference total	–
NSW	38

Source: ABS 2016, Census of Population and Housing: General Community Profiles.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure 4.4 Population distribution by Sex, 2016

4.4 Aboriginal and Torres Strait Islander population

At the time of the 2016 Census, 6.5% of the total population within the local area identified as Aboriginal and/or Torres Strait Islander people, compared to 6.6% and 11.9% for the regional area and area of reference respectively. Within the local area the communities of Gulgong and Dunedoo had the highest proportion of population who identify as Aboriginal and/or Torres Strait Islander persons (ie 7.7% in each community).

The proportion of population who identify as Aboriginal and/or Torres Strait Islander persons in all areas of interest is larger than the proportion in NSW (3.0%). The proportion of people who identify as Aboriginal and/or Torres Strait Islander in the area of reference (11.9%) is significantly larger than the NSW figure. Within the area of reference, Dubbo Regional LGA has the largest proportion of population identifying as Aboriginal and/or Torres Strait Islander (15.5%). The proportion of Aboriginal and/or Torres Strait Islander population in the local area and regional area is presented in Table 4.5.

Table 4.5 Aboriginal and Torres Strait Islander population, 2016

Location	Aboriginal and Torres Strait Islander population	Aboriginal and Torres Strait Islander population % ¹
Birriwa	3	6.1%
Merotherie	0	0.0%
Gulgong	194	7.7%
Dunedoo	94	7.7%
Mudgee	673	6.2%
Local area	964	6.5%
Mid-Western LGA	1307	5.4%
Warrumbungle LGA	917	9.8%
Regional area total	2,224	6.6%
Dubbo Regional LGA	7739	15.5%
Area of reference total	9,963	11.9%
NSW	216,170	2.9%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

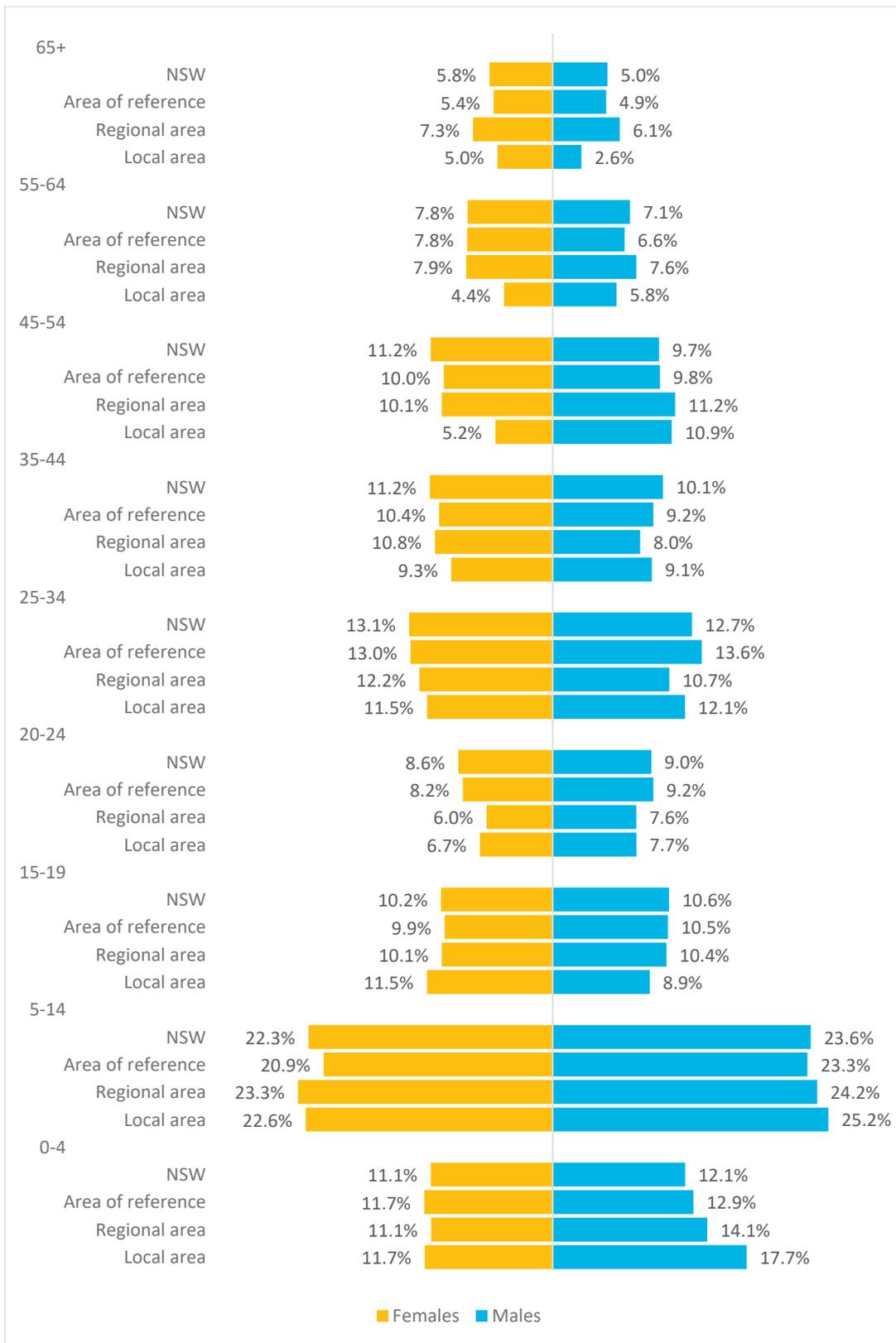
Notes: 1. As a percentage of total population.

Population distribution by age and sex for all people who identify as Aboriginal and/or Torres Strait Islander within the area of social influence is presented in Figure 4.5.

Within the local area, the population distribution by sex for people who identify as Aboriginal and/or Torres Strait is (52.5% males and 47% females) compared to the regional area (52.5% males and 47.0% females), the area of reference (50.7% and 49.3% females) and NSW (49.7% males and 50.3% females).

The Aboriginal and/or Torres Strait Islander population in the local area and the regional area is relatively youthful with 24.6% and 10.4% respectively of the population aged 5–14 years. Compared to the total population of the local area and NSW, there is a much smaller proportion of persons aged 55 years and older who identify as Aboriginal and/or Torres Strait Islander. However, total population in the regional area is slightly above the NSW trend for persons over 55 years and older.

The smaller proportion of Aboriginal and/or Torres Strait Islander population aged 65 years and older may be due to a number of factors including premature death or outmigration as people seek services and facilities (eg age care) not readily available in the locality. However, the smaller proportion of older people aligns with the lower life expectancy among Indigenous Australian's nationally that is particularly acute in Indigenous males (AIHW 2019), with much of this gap is explained by the relationships between increased socio-economic disadvantage, worsened mental health outcomes, and related health risk behaviours, including greater proportions of smoking and alcohol use (AHMAC 2017).



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure 4.5 Population distribution of Aboriginal and/or Torres Strait Islander persons, 2016

4.5 Family composition

Family composition differs between the communities of the local area. Family composition in Gulgong and Mudgee is similar and generally analogous with the local area and regional area, but somewhat different to NSW. Within the local area Dunedoo has a smaller proportion of couple families (33.3%) compared to Gulgong (40.1%) and Mudgee (43.0%) and a correspondingly higher proportion of families without children (49.7% compared to 40.5% and 37.4% respectively). The proportion of single parent families in Gulgong (18.1%), Mudgee (18%) and the local area (17.7%) is higher than Dunedoo (15.0%) and NSW (16.0%). Consideration of family composition together with employment status and household income can assist in evaluating overall community wellbeing. Family composition is shown in Table 4.6.

Table 4.6 Family composition %, 2016

	Couple families with children	Families without children	One parent families with children	Other families
Birriwa ¹	n/a	n/a	n/a	n/a
Merotherie ¹	n/a	n/a	n/a	n/a
Gulgong	40.1%	40.5%	18.1%	1.0%
Dunedoo	33.3%	49.7%	15.0%	1.4%
Mudgee	43.0%	37.4%	18.0%	1.5%
Local area	41.8%	39.1%	17.7%	1.4%
Mid-Western LGA	40.9%	42.3%	15.6%	1.3%
Warrumbungle LGA	32.6%	49.3%	16.3%	1.6%
Regional area total	38.6%	44.3%	15.8%	1.4%
Dubbo Regional LGA	40.2%	38.4%	19.6%	1.7%
Area of reference total	39.6%	40.8%	18.1%	1.6%
NSW	45.7%	36.6%	16.0%	1.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

1. Data not available due to the small population size and the need to protect the confidentiality of data.

4.6 Population mobility

Population mobility is a measure of migration within a population. The ABS measures population mobility through length of residency at the same address, measured as one year ago and five years ago. A high proportion of population living at the same address five years ago shows relative stability in a community.

Residential mobility is driven by a range of factors including housing and location choice, tenure, labour market related decisions as well as household composition. Renters are three times more likely to move as owners, while a person who is unemployed has a 20% change of moving compared to an employed person (James A et al 2021).

Population mobility across the local area is higher than the regional area and NSW. In the local area 15.9% and 41.4% of the population reported living at a different address one year ago and five years ago respectively compared to 12.8% and 34.7% in the regional area, 14.5% and 39.0% in NSW. Within the local area Mudgee has the highest population mobility (17.5% different address one year ago and 45.3% different address five years ago). This indicates a more transient population which may reflect the high employment share of the health and mining industry sectors (Section 9). Within the local area Dunedoo has the lowest population mobility (8.1% different address one year ago and 25% different address five years ago). This suggests that Dunedoo has a relatively stable population which is consistent with long-term rural communities with a strong rural identity. Population mobility is shown in Table 4.7.

Table 4.7 Population mobility %, 2016

	Proportion living at a different address one year ago %	Proportion living at a different address five years ago %	Same address 5 years ago %
Birriwa	6.1%	18.0%	62.0%
Merotherie	0.0%	0.0%	45.5%
Gulgong	13.3%	34.0%	53.3%
Dunedoo	8.1%	25.0%	57.2%
Mudgee	17.5%	45.3%	44.2%
Local area	15.9%	41.4%	46.9%
Mid-Western LGA	13.8%	37.2%	51.0%
Warrumbungle LGA	10.0%	28.3%	59.1%
Regional area total	12.8%	34.7%	53.3%
Dubbo Regional LGA	14.8%	37.7%	51.7%
Area of reference total	14.0%	36.5%	52.3%
NSW	14.5%	39.0%	53.8%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

4.7 Socio-economic advantage and disadvantage

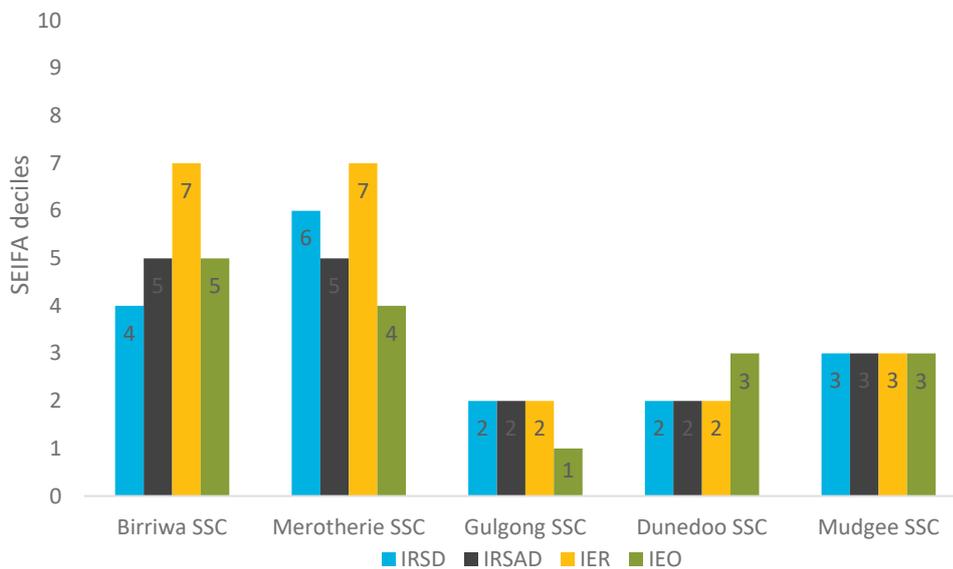
The level of disadvantage or advantage in the population is indicated in the Socio-Economic Indexes for Areas (SEIFA). SEIFA is a suite of four summary measures that were created from Census data, including:

- the Index of Relative Socio-Economic Disadvantage (IRSD);
- the Index of Relative Socio-Economic Advantage and Disadvantage (IRSAD);
- the Index of Education and Occupation (IEO); and
- the Index of Economic Resources (IER).

Each index is a summary of a different subset of Census variables and focuses on a different aspect of socio-economic advantage and disadvantage. Low rankings are deemed most disadvantaged and high rankings least disadvantaged within a decile ranking system where the lowest 10% of areas are given a decile number of 1 and the highest 10% of areas are given a decile number of 10. For example, an SSC with a ranking of 1 SSC is in the bottom 10% of all SSCs and experiences considerable disadvantage. The rankings of the communities and LGAs within the area of social influence for each of the four summary measures are presented in Figure 4.6 and Figure 4.7.

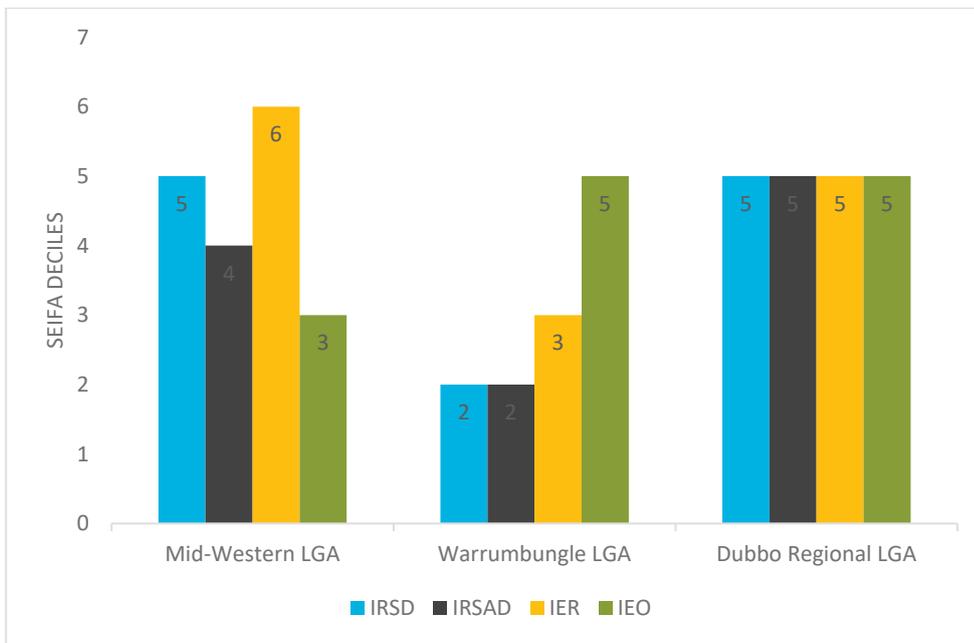
2016 SEIFA data shows some variation in socio-economic advantage and disadvantage between communities within the local area. Decile rankings for all reported SEIFA measures in Birriwa and Merotherie are higher than SEIFA rankings for Gulgong, Dunedoo and Mudgee, and similar to the broader Mid-Western Regional LGA. This suggests that people in Birriwa and Merotherie do not particularly lack disadvantage, are neither relatively advantaged or disadvantaged, have medium access to economic resources and have a mid-level of education and skills relative to other areas. In comparison the SEIFA rankings show that people in Gulgong and Dunedoo are disadvantaged, have low access to economic resources and have a low level of education and skills relative to other areas. This means that compared to other suburbs across NSW, there are likely a lower proportion of households with high income (see Section 7.4), comparatively fewer people with qualifications, and comparatively fewer people in skilled occupations (see Section 7.7.2) in the local area, regional area and area of reference, as well as a higher proportion of households with low incomes, or a higher proportion of people in low-skilled occupations.

Within the area of reference, the Mid-Western LGA has roughly similar rankings to Dubbo Regional LGA, and both LGAs have higher rankings than the Warrumbungle LGA. The 2016 SEIFA rankings show that people in the Warrumbungle LGA are relatively disadvantaged, have low access to economic resources relative to other areas, but have a similar level of education and skills as the Mid-Western Regional LGA but lower than Dubbo Regional LGA. Overall, the Dubbo Regional LGA shows the least level of disadvantage of the LGAs of the area of reference. This is surprising given the high proportion of Aboriginal and/or Torres Strait Islander population compared to NSW (see Section 4.4).



Source: ABS 2016, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA).

Figure 4.6 SEIFA deciles for the local area, 2016



Source: ABS 2016, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA).

Figure 4.7 SEIFA deciles for the area of reference, 2016

4.8 Cultural diversity

The local area and regional area have a lower level of cultural diversity compared to NSW. Rates of cultural diversity are also comparable across the local area, regional area and area of reference. In 2016, 82.1% of the local area population was Australian born. Australian-born persons also constitute a much higher proportion of the population in the regional area (82.1%) and area of reference (82.9%) compared to NSW (65.5%). The local area and regional area also have a much higher proportion of intergenerational Australians, with 73.6% of people in the local area and 74.4% of people in the regional area and area of reference with both parents born in Australia, compared to 45.4% across NSW.

A small proportion of households in the local area (2.7%), regional area (3.6%) and area of reference (3.6%) speak a non-English language at home compared to 26.5% in NSW. The low proportion of migrants in the local area and regional area is representative of the trend of migrants within Australia to settle in major cities over smaller regional areas, which can be driven by a greater availability of support services for newly arrived migrants, job opportunities, education opportunities, well-established transportation and service infrastructure, and long-term multicultural histories of major cities with existing migrant communities (Australian Chamber of Commerce and Industry 2019). Cultural diversity in the area of social influence is presented in Table 4.8.

Table 4.8 Country of birth, 2016

	Born in Australia	Both parents born in Australia	English only spoken at home	Households where a non-English language is spoken
Birriwa	69.4%	71.4%	81.6%	0.0%
Merotherie	50.0%	45.8%	37.5%	12.5%
Gulgong	82.8%	74.1%	87.3%	1.9%
Dunedoo	76.1%	71.9%	83.3%	1.6%
Mudgee	82.8%	73.8%	88.4%	3.0%
Local area total	82.1%	73.6%	87.7%	2.7%
Regional area total	82.9%	74.4%	86.7%	3.6%
Area of reference total	82.9.0%	74.4%	86.7%	3.6%
NSW	65.5%	45.4%	68.5%	26.5%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

4.9 Vulnerable groups

4.9.1 Disability

The ABS provides data on the prevalence of disability in a population using the variable core activity need for assistance. This variable records the number of people with a profound or severe core activity limitation who are defined as needing help or assistance in one or more of the three core activities of self-care, mobility and communication because of a long-term health condition (lasting 6 months or longer), a disability (lasting 6 months or longer), or old age. The prevalence of disability in the local area population (5.4%) is analogous with NSW (5.4%) but lower than the regional area (5.9%) and area of reference (5.8%). Within the local area Birriwa (8.2%) has a significantly greater need for assistance than other communities. This is likely attributable to the small population size in the community and the relatively high medium age when compared to the other communities in the local area. Core activity need for assistance in the area of social influence is demonstrated in Table 4.9.

Table 4.9 Core activity need for assistance, 2016

	Has need for assistance	Does not have need for assistance
Birriwa	8.2%	63.3%
Merotherie	0.0%	41.7%
Gulgong	5.3%	82.6%
Dunedoo	5.0%	78.5%
Mudgee	5.5%	85.6%
Local area	5.4%	84.4%
Mid-Western LGA	5.3%	84.0%
Warrumbungle LGA	7.3%	81.1%
Regional area total	5.9%	83.2%
Dubbo Regional LGA	5.7%	84.4%
Area of reference total	5.8%	83.9%
NSW	5.4%	87.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

4.9.2 Homelessness

Rates of homelessness across Australia are reported in the 2016 ABS Census. The ABS statistical definition of homelessness is “when a person does not have suitable accommodation alternatives and their current living arrangement: is in a dwelling that is inadequate; has no tenure, or if their initial tenure is short and not extendable; or does not allow them to have control of, and access to space for social relations” (ABS 2017).

The Australian human rights commission (AHRC) are an independent third party which investigates complaints about discrimination and human rights breaches explained,

the causes of homelessness are numerous and complex. Homelessness can be caused by poverty, unemployment or by a shortage of affordable housing, or it can be triggered by family breakdown, mental illness, sexual assault, addiction, financial difficulty, gambling or social isolation. Domestic violence is the single biggest cause of homelessness in Australia (AHRC) (nd).

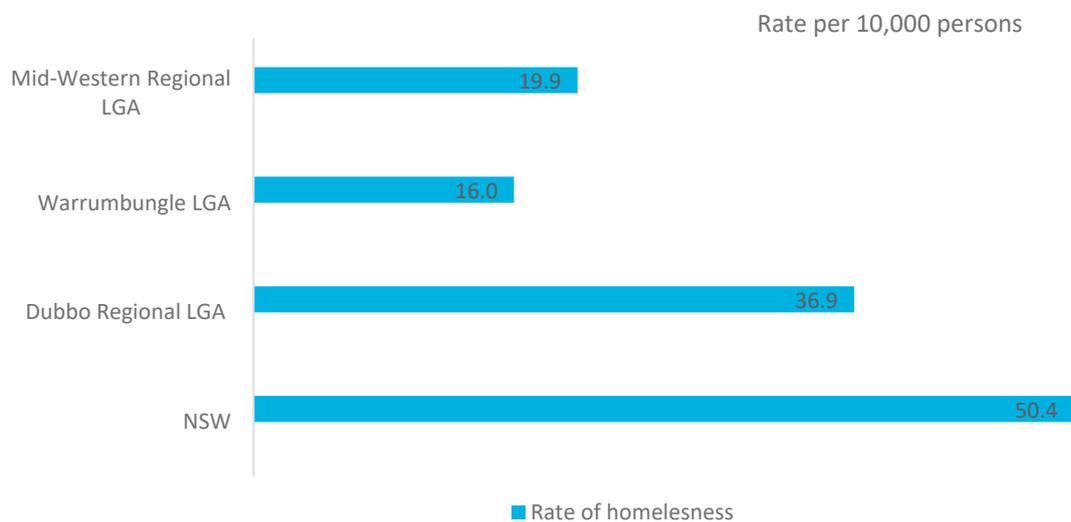
Homelessness can lead to health problems including poor nutrition, depression, substance abuse, poor dental health, and mental health conditions (AHRC 2021). For homeless persons, hardships with finances, transport, identification, Medicare, and difficulty with appointment maintenance/treatment plans make accessing health care services more difficult than the average person (AHRC 2021). As such, homeless persons are at greater risk of being negatively affected by potential impacts on livelihoods and health and wellbeing.

Rates of homelessness in the area of social influence are presented in Figure 4.8 for the 2016 ABS Census period. Rates of homeless are not available for the local area but are available at the LGA level. Homelessness is measured at a rate per 10,000 persons. In 2016 rates of homelessness across the LGAs of the regional area and area of reference were lower than rates of homelessness across NSW, however the rate of homelessness in the Dubbo Regional LGA was markedly higher than the Mid-Western Regional and Warrumbungle LGAs.

Analysis of trend data for the period 2006 to 2016 shows an increasing prevalence of homelessness across NSW (ie an increase from 33.9 persons per 10,000 of population to 50.4 person per 10,000 population). Between 2011 and 2016 the total number of homeless persons in the Dubbo Regional LGA increased by 44% (ie from 128 persons to 185 persons) compared to a reduction in homelessness in the Mid-Western Regional LGA (ie from 53 persons to 52 persons) and relative stability in the Warrumbungle LGAs (ie 13 persons in 2011 and 2016).

The rate of homelessness in the Dubbo Regional LGA in 2016, and the increase in the number of homeless people between 2011 and 2016 may be attributable to the prevalence of disadvantage in the LGA (Section 4.5), the size of the Aboriginal and/or Torres Strait Islander population (ie 15.5%), and the number of low income households and low income rental households in the LGA (NSW Government Communities & Justice (ud)).

Since the conduct of the 2016 census there has been a further tightening of the housing market (ie low rental vacancy rates and increasing rental values) across many regional NSW communities including the centres of Dubbo and Mudgee (Section 7). The context of COVID-19 creates additional risk of housing instability and homeless for persons experiencing financial hardship. COVID-19 has facilitated increased migration from urban centres to more regional and rural areas of Australia (Anglicare 2021). This has contributed to increased rents and lower rental availability (particularly affordable housing) in regional areas of Australia, including the Midwestern Regional LGA.



Source: ABS 2016, 2049.0 – Census of Population and Housing: Estimating Homelessness.

Figure 4.8 Rates of homelessness per 10,000 persons, 2016

5 Community culture, values, and aspirations

5.1 Mid-Western Regional Council

The community of the Mid-Western Regional LGA values the friendly community, the country lifestyle, beautiful natural environment, the range of parks and facilities for all ages, activities for youth, ongoing improvements to the transport networks and new job opportunities (SIA Interview Program; MWRC, 2017). The community values the diversity of industry including mining, tourism, viticulture and agriculture and growth towards a modern and prosperous economy. During consultation in 2017 to inform a review of the community strategic plan, the community identified the following allocation of resources between the five key themes of the community strategic plan:

- 27% to looking after our community;
- 24% to connecting to our region;
- 19% to protecting our natural environment;
- 19% to building a strong local economy; and
- 11% to good government (MWRC 2017).

Gulgong is a small rural community with a strong heritage and a unique character. SIA interview participants described the Gulgong community as ‘friendly’, ‘caring and safe’ and as a ‘sporting community’, with ‘wonderful clubs and strong community spirit’ (2022 SIA interview program).

5.2 Warrumbungle Shire Council

The Warrumbungle LGA is recognised for its natural assets encompassing lively towns and villages where communities thrive. The community values the landscape, community and diversity, a diverse economy, mobility and accessibility, and collaboration and creativity. The vision for the new 2022–2037 community strategic plan for the Warrumbungle LGA community is a peaceful and sustainable way of life built by a strong community. The Warrumbungle LGA community is a strong, vibrant community that will build, promote and grow to create a flourishing economy (WSC 2022).

Dunedoo is a friendly rural community with traditional rural values and long-standing community connections. People can rely on one another for support. Creating jobs to retain young people and encourage young people back to the local area is important to the community. Participants in SIA interviews described the Dunedoo community as ‘a strong and tight knit community’ with ‘tremendous community spirit’, a ‘very safe area’ and ‘a great place to bring up children’ (2022 SIA interview program).

5.3 Indigenous history

Information about the socio-cultural structure of Aboriginal society prior to European contact largely comes from ethno-historic accounts made by Europeans. These accounts and observations were made after massive social disruption due to disease and displacement. As a result, this information is often contentious, particularly in relation to language area boundaries

Aboriginal and/or Torres Strait Islander persons throughout Australia have experienced trauma due to the violence and loss of culture associated with colonisation, and subsequent settler policies including the forced removal of children, known as the Stolen Generations (Australians Together 2020). This trauma can be passed down from the first generation of survivors to future generations in the process of intergenerational trauma. According to Healing Foundation (n.d), those experiencing intergenerational trauma:

May experience difficulties with attachment, disconnection from their extended families and culture and high levels of stress from family and community members who are dealing with the impacts of trauma. This can create developmental issues for children, who are particularly susceptible to distress at a young age. This creates a cycle of trauma, where the impact is passed from one generation to the next.

Within Australia, intergenerational trauma mainly affects the children, grandchildren and future generations of the Stolen Generations. Intergeneration trauma is often associated with violence, harmful substance use, and mental health issues amongst Aboriginal and/or Torres Strait Islander populations (Healing Foundation n.d).

A brief summary of the presence of Aboriginal people in the regional area is provided below and drawn from the *Birriwa Solar Farm and Battery Project Aboriginal Cultural Heritage Assessment Report* (OzArk 2022) (EIS Appendix H).

The Dunedoo, Gulgong, Mudgee and surrounding area is the traditional land of the Wiradjuri peoples. The project area is located at the north-eastern extent of Wiradjuri territory. The Wiradjuri tribal group is one of the largest language groups within NSW extending across the districts of Mudgee, Bathurst, Dubbo, Parkes, West Wyalong, Forbes, Orange, Junee, Cowra, Young, Holbrook, Wagga Wagga, Narrandera, Griffith, and Mossgiel (Tindale 1974). Within the Wiradjuri region, the presence of Aboriginal people has been dated to 40,000 years ago (Hope 1981 as cited in Haglund 1985). A spread east into the mountains is thought to have occurred between 14,000 to 12,000 years ago.

Oral tradition records the presence of over 20 clans within the broader Bathurst–Mudgee region, organised according to matrilineal descent (Navin Officer 2005: 48). Clans were made up of several fairly independent groups, of up to 20 members, in friendly contact with each other, moving separately for much of the year over a shared territory (Pearson 1981; Haglund 1985).

Early British explorers and settlers noted considerable variation in the numbers of Aboriginal people that would gather for food procurement activities during different seasons of the year. This seasonality was most obvious in the case of gatherings along major rivers, and it has been suggested that during dry periods the water holes remaining in the major rivers would become focal points for the usually scattered groups (Haglund 1985: 5).

Concerning the Mudgee/Gulgong area, Haglund (1985: 3) notes that the distribution of known sites cannot be seen as accurately reflecting past Aboriginal land use or site location patterns because of site loss since colonial settlement. Those sites known to exist, however, do fit within the general pattern for the various resource zones discerned by Koettig (1985) and Pearson (1981).

5.4 Non-Indigenous history

A brief history of the Mid-Western Region is documented in the *Birriwa Solar Farm and Battery Project Historic Heritage Assessment Report* (Ozark 2022). A summary is presented below.

Early European exploration of the region occurred in the 1820s. One of the first land holders and cattle runs in the area was owned by the sons and grandsons of William Cox, who had built the road across the Blue Mountains (ABD 2020). Their cattle run was called 'Guntawang' and was established 1822, 8 km south-west of the present town site of Gulgong. The original run in the Dunedoo area was leased by the Johnstone family from 1874 called the 'Bolaro Run' which included the original homestead located near where the current silos are located in Dunedoo.

The Gulgong goldfield was gazetted in 1866 but initial finds were negligible. One of Rouse's shepherds, Tom Saunders, uncovered a large find on the future town site (at Red Hill) on April 14, 1870, thereby sparking a major goldrush.

There was spectacular growth in Gulgong during the 1870s, with the mines around Gulgong producing twice as much gold as the Meroo field produced over half a century in 1872 (DUAP 1996). When the town was gazetted in 1872 there were reputedly 20,000 people in the area.

Gulgong became a municipality in 1876 although the gold had already begun to dwindle. By 1881 the population was 1,212 and the boom years were over. From that point, wheat and wool production, boosted by the arrival of the railway in 1909, sustained the town.

The current day township of Gulgong is well known for its historic streetscape and association with gold mining. The township has approximately 130 National Trust listed buildings, as well as Australia's oldest operating opera house (the Prince of Wales Opera House), and many museums relating to the gold rush and pioneer history of the town.

6 Social infrastructure

6.1 Education

6.1.1 Educational institutions

i Primary and secondary

There are five primary schools, four secondary schools, two combined schools, in the local area. Of these, six are government schools and three are non-government schools. The schools with the largest enrolments are in Mudgee. Residents of the local area can access schooling in the regional area with minimal travel required. Information on primary and secondary schools in the local area is presented in Table 6.1.

Table 6.1 Schools in the local area, 2022

Area	School	Sector	Type	Year range	Student enrolments	Full-time equivalent teaching staff
Local area						
Gulgong	All Hallows Catholic Primary School	Non-Government	Primary	K–6	102	10.1
Gulgong	Gulgong Public School	Government	Primary	K–6	315	20.5
Gulgong	Gulgong High School	Government	Secondary	7–12	302	32.3
Dunedoo	Dunedoo Central School	Government	Combined	K–12	166	18.5
Dunedoo	St Michaels Catholic Primary School	Non-Government	Primary	K–6	34	4.2
Mudgee	Cudgegong Valley Public School	Government	Primary	K–6	546	30.3
Mudgee	Mudgee Public School;	Government	Primary	K–6	670	41.5
Mudgee	Mudgee High School	Government	Secondary	7–12	815	66.8
Mudgee	St Matthews Catholic School	Non-government	Combined	K–12	974	75.5

Source: ACARA 2021.

ii Tertiary

The only tertiary education institution with campuses in the local area and regional area is TAFE NSW. TAFE campuses are located in Mudgee and Dunedoo in the local area, and also Coonabarabran and Gilgandra in the broader regional area (Warrumbungle LGA) (Table 6.2). Charles Sturt University has a campus in Dubbo offering a wide range of undergraduate and postgraduate study programs, including Indigenous study programs and courses (Charles Sturt University 2022). The University of Sydney, School of Rural Health has a campus in Dubbo at which Sydney Medical School students are able to pursue a placement aimed towards developing medical skills relevant to rural, regional, and remote regions of Australia (University of Sydney 2022). A summary of the tertiary institutions within the local area is provided in Table 6.2.

Table 6.2 Tertiary institutions in the Area of reference, 2022

Location	Institute	Education and training courses
Dunedoo	Dunedoo TAFE	TAFE NSW Dunedoo offers innovative and relevant training to equip students with real world skills to readily enter the local workforce. This campus offers general education courses and trade programs tailored to the community’s needs, such as carpentry, animal care, logistics, engineering and building.
Coonabarabran	Coonabarabran TAFE	TAFE NSW Coonabarabran delivers a broad range of certificate level from short courses to the diploma level in management and leadership courses to aged care, children’s services, disability work, community services, hospitality, information technology, construction.
Gilgandra	Gilgandra TAFE	TAFE NSW Gilgandra provides foundational programs in vocational access and general education, together with a range of trade and industry specific courses for all levels.
Mudgee	Mudgee TAFE	TAFE NSW Mudgee delivers a broad range of certificate level general education and trade programs in aged care, children’s services, disability work, community services, hospitality, construction, English for Speakers of other Languages (ESOL), numeracy and literacy.
Dubbo	Dubbo TAFE	<p>TAFE NSW Dubbo specialises in agriculture, heavy and light vehicles, hairdressing and beauty therapy, construction and nursing courses, housed over two campuses (ie Myall Street and Narromine Road).</p> <p>The Myall St Campus offers general education, building and construction, business and management, fine arts, hairdressing and beauty, hospitality, automotive, metal fabrication and welding courses. The campus also houses the Yarradamarra Centre for Aboriginal programs such as performing arts and languages. This campus also offers courses in aged care, children’s services, nursing, welfare and health including Aboriginal health.</p> <p>The Narromine Rd Campus offers courses in agriculture, animal studies, conservation and land management, horticulture, wool classing, and heavy and light transport.</p>
Dubbo	School of Rural Health	The rural clinical school of the Sydney Medical School with locations in both Dubbo and Orange. Aims to contribute to the development of the rural medical workforce by providing training in an environment that delivers medical graduates and doctors with the aptitude, knowledge, and skills to provide quality care for rural, regional and remote Australia.
Dubbo	Charles Sturt University	The university offers a range of university courses.

Source: TAFE NSW 2022, Western College 2019, University of Sydney 2022, Charles Sturt University 2022

6.1.2 Attendance rates at educational institutions

Education institution attendance in the area of social influence, as a percentage of total attendees, is demonstrated in Table 6.3. At the time of the 2016 census, there were 4,571 persons attending an educational institution in the local area (preschool, infants/primary, secondary, technical, or further educational institution, university or other tertiary institution, and other type of educational institution). The largest proportion of persons attending an educational institution in the local area were attending primary school (28.9%), followed by secondary school (17.7%). The local and regional area attendance rates at primary and secondary education institutions are similar to NSW. Attendance rates at further education institutions, particularly attendance rates at university institutions are substantially lower in the local and regional area compared to NSW. This is consistent with the limited availability of further education institutions in the regional area and the proximity to nearby facilities. Local and regional area attendees at university (ie 5.0% and 5.6% respectively) are likely engaged in on-line learning.

Table 6.3 Education institution attendance, 2016

	Preschool	Infants/primary	Secondary	Technical or further educational institution	University or other tertiary institution	Other type of educational institution
Birriwa	0.0%	13.6%	0.0%	0.0%	0.0%	0.0%
Merotherie	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Gulgong	6.9%	27.0%	17.4%	6.7%	4.3%	0.7%
Dunedoo	4.4%	21.8%	17.9%	7.1%	3.0%	0.7%
Mudgee	6.1%	30.4%	17.9%	7.8%	5.5%	1.0%
Local area total	6.0%	28.9%	17.7%	7.5%	5.0%	1.3%
Mid-Western LGA	5.7%	28.1%	18.2%	6.6%	4.7%	1.2%
Warrumbungle LGA	4.9%	25.5%	19.2%	5.4%	4.5%	1.1%
Regional area total	5.4%	27.3%	18.4%	6.2%	4.7%	1.2%
Dubbo Regional LGA	6.7%	27.7%	19.4%	7.4%	6.2%	1.5%
Area of reference total	6.2%	27.6%	19.0%	6.9%	5.6%	1.4%
NSW	5.7%	26.1%	20.1%	6.2%	16.2%	2.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

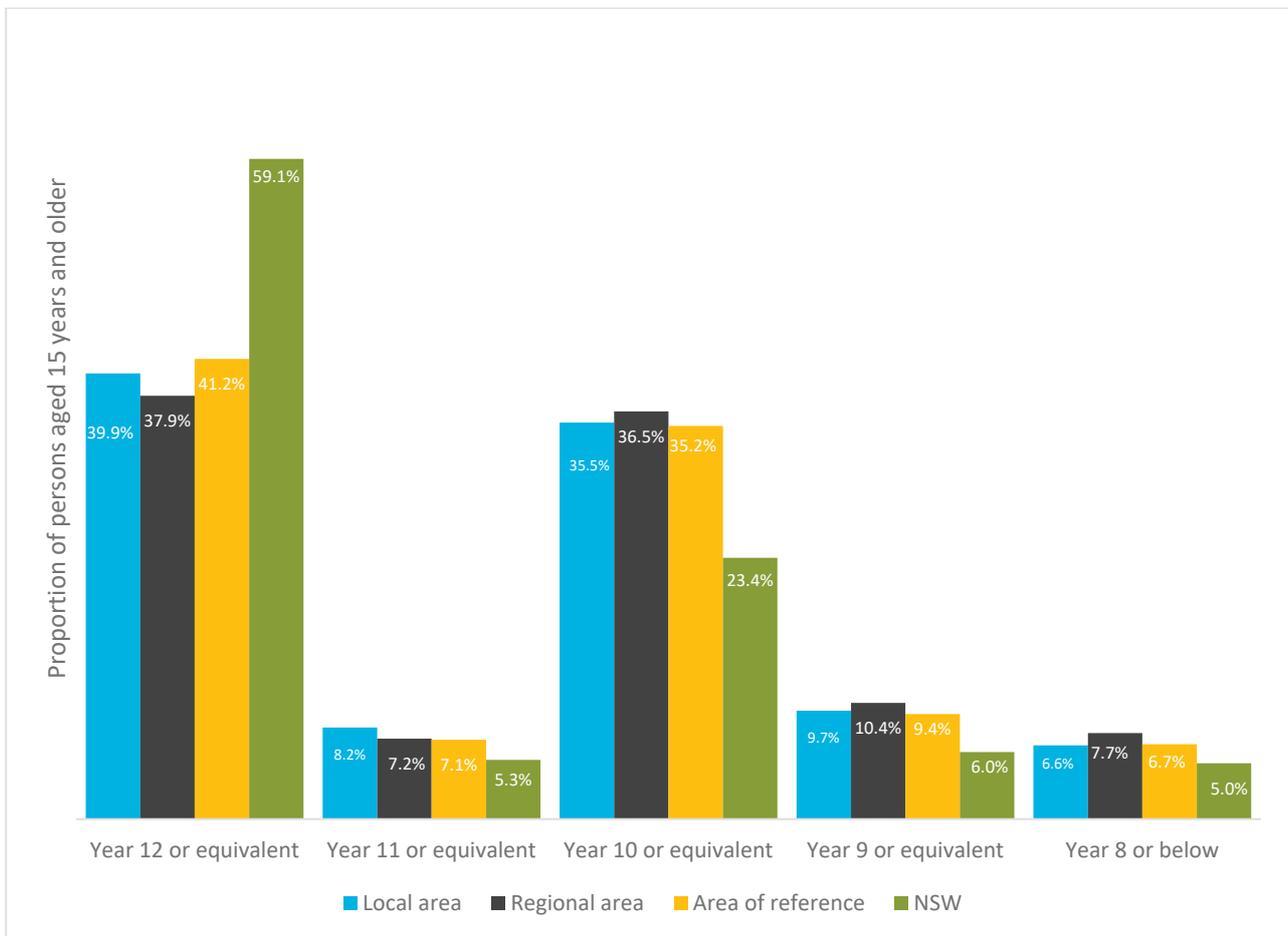
6.1.3 Educational attainment

Educational attainment (ie the highest level of schooling completed) in the local area is similar to the regional area and the area of reference, however all three areas of interest experience lower levels of educational attainment compared to NSW (Table 6.4 and Figure 6.1). The local area has a slightly higher proportion of persons who have completed Year 12 or equivalent (39.9%) compared to the regional area (37.9%) but a lower proportion than the area of reference (41.5%) and NSW (59.1%). Within the local area Mudgee has the highest proportion of persons who have completed Year 12 or equivalent (41.9%) followed by Dunedoo (36.1%) and Gulgong (33.2%). These completion rates remain well below the NSW rate (59.1%). In general, people who have completed Year 12 are more likely to continue with further education or training and have a more successful transition into the workforce (ABS 2011)).

Table 6.4 Highest level of schooling completed for persons 15 years and over, 2016

	Year 12 or equivalent	Year 11 or equivalent	Year 10 or equivalent	Year 9 or equivalent	Year 8 or equivalent
Birriwa	26.7%	0.0%	56.7%	10.0%	23.3%
Merotherie	30.8%	0.0%	30.8%	0.0%	0.0%
Gulgong	33.2%	7.6%	38.0%	13.3%	7.3%
Dunedoo	36.1%	7.3%	34.5%	13.1%	10.6%
Mudgee	41.9%	8.5%	34.9%	8.6%	5.9%
Local area	39.9%	8.2%	35.5%	9.7%	6.6%
Mid-Western LGA	38.8%	7.5%	36.4%	9.8%	7.1%
Warrumbungle LGA	35.4%	6.5%	36.6%	11.8%	9.4%
Regional area	37.9%	7.2%	36.5%	10.4%	7.7%
Dubbo LGA	43.5%	7.0%	34.4%	8.8%	6.0%
Area of reference	41.5%	7.1%	35.2%	9.4%	6.7%
NSW	59.1%	5.3%	23.4%	6.0%	5.0%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure 6.1 Highest level of schooling completed for persons 15 years and older, 2016

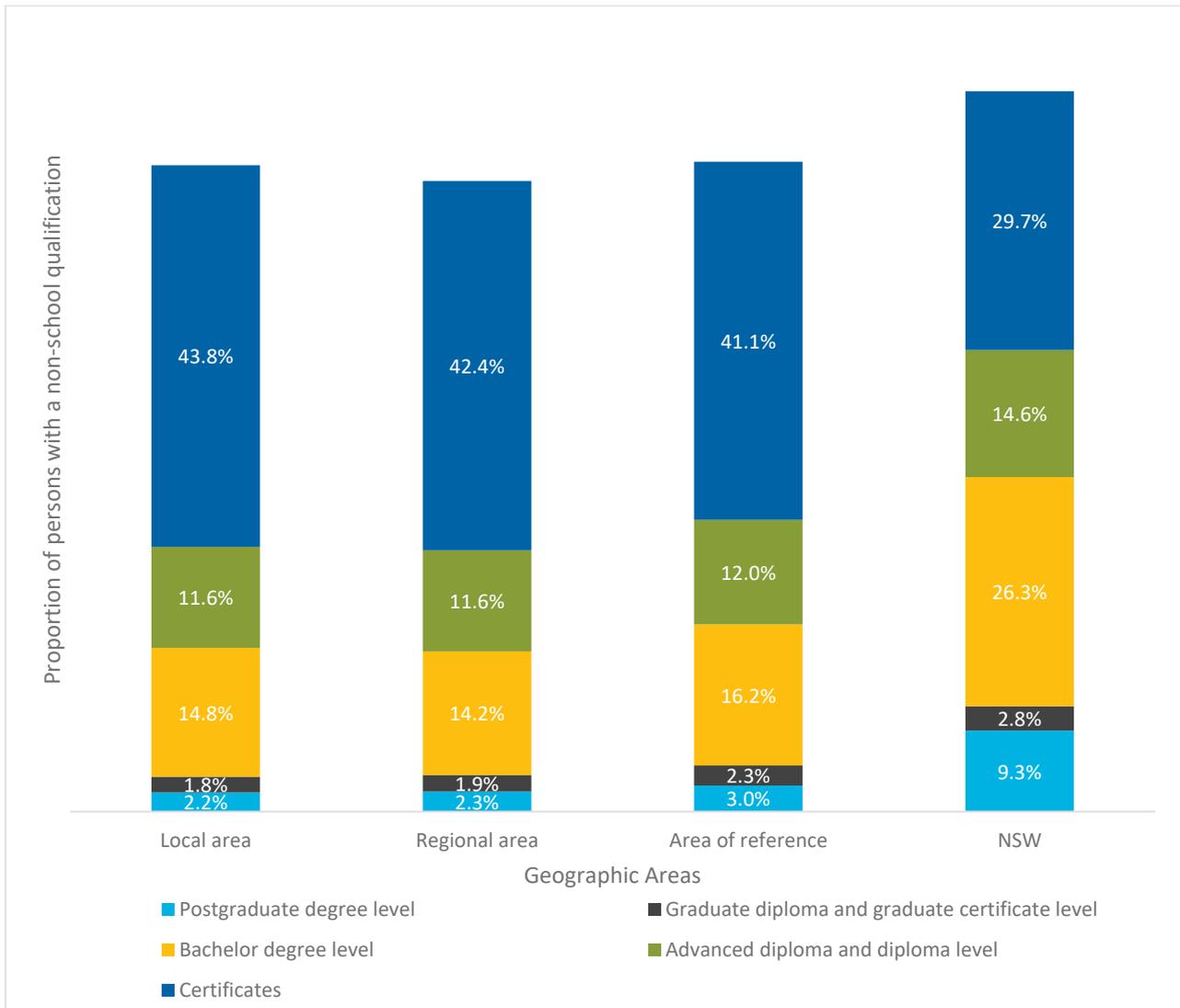
Non-school qualifications in the local area, regional area and area of reference are significantly lower than NSW for all types of qualifications, except for certificate level qualifications. Certificate level qualifications in the local area (43.8%), regional area (41.1%), and area of reference (41.1%) are much higher than in NSW (29.7%) and comprise the largest proportion of non-school qualifications held by people over 15 years.

The prevalence of certificate level qualifications in the local and regional area reflects a combination of access to further education institutions and the dominant regional employment sectors (ie agriculture, mining and health care and social assistance) which in turn inform the dominant occupation types (ie technicians and trades workers and machinery operators and drivers). These occupations typically require a certificate level qualification or above. The pattern of non-school qualifications in the area of social influence is also consistent with the higher proportion of person attending post-school alternative educational institutions (Table 6.3). Non-school qualifications in the area of social influence are presented in Table 6.5 and Figure 6.2.

Table 6.5 Proportion of persons over 15 years with a non-school qualification, 2016

	Postgraduate degree level	Graduate diploma and graduate certificate level	Bachelor degree level	Advanced diploma and diploma level	Certificates
Birriwa	0.0%	0.0%	0.0%	28.0%	28.0%
Merotherie	0.0%	0.0%	0.0%	0.0%	20.0%
Gulgong	1.5%	1.0%	10.2%	11.0%	47.2%
Dunedoo	1.6%	1.0%	11.4%	10.7%	33.3%
Mudgee	2.4%	2.1%	16.2%	11.8%	44.3%
Local area	2.2%	1.8%	14.8%	11.6%	43.8%
Mid-Western LGA	2.3%	1.9%	14.4%	11.7%	43.8%
Warrumbungle LGA	2.3%	1.8%	13.6%	11.1%	38.6%
Regional area totals	3.0%	2.3%	16.2%	12.0%	41.1%
Dubbo Regional LGA	3.5%	2.5%	17.5%	12.3%	40.2%
Area of reference totals	3.0%	2.3%	16.2%	12.0%	41.1%
NSW	9.3%	2.8%	26.3%	14.6%	29.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure 6.2 Proportion of persons over 15 with a non-school qualification, 2016

6.2 Health

The local area is located within the northern network of the Western NSW Local Health District (LHD).

6.2.1 Hospital

The Western NSW LHD looks after all public hospitals and healthcare facilities provisions in the area of social influence.



Source: NSW Health 2022

Figure 6.3 Western NSW LHD

Mudgee Hospital (part of the Mudgee Hospital and Health Service [HHS]) is the only procedural hospital in the northern network and provides emergency, acute medical, surgical, maternity and subacute inpatient services as well as a range of primary, ambulatory and community health services. The hospital has 51 beds including 28 acute general medical and surgical beds. Mudgee HHS is the closest hospital to the local area. Gulgong Multipurpose Service (MPS) and Dunedoo MPS are smaller hospitals in the northern network. These MPS provide integrated acute and subacute inpatient services, emergency, allied health, primary and community health services, health related services and residential aged care under one organisational structure as agreed by the State and Commonwealth.

Gulgong MPS has four inpatient beds, six aged care beds, an emergency department and a primary and community health centre (Gulgong Community Health Centre). Gulgong MPS is also supported by many allied health services.

Dunedoo MPS encompasses the towns and villages of Elong Elong, Mendooran, Neilrex, Cobbora, Birriwa, Uarbry and Leadville and all districts associated with these locations. The Dunedoo MPS is a 30-bed facility comprising of 25 residential aged care beds, five acute beds and 24 hour Emergency Department. Medical support is provided in emergency situations via Virtual Rural Generalist Service (VRGS).

Dubbo hospital is the main referral hospital for the northern network of the Western NSW LHD. Dubbo hospital has up to 200 beds, a 24 hour emergency department, and offers a range of hospital services, including an acute renal dialysis unit, alcohol and drug unit, coronary care unit, diabetes unit, intensive care unit, maintenance renal dialysis unit, neonatal intensive care unit, obstetric services, oncology unit, paediatric service, and psychiatric unit, well as an Aboriginal Health Chronic Care Service and Aboriginal Welfare Service out of their facility. Dubbo hospital and health service is currently undergoing significant redevelopment with the recent opening of the Western Cancer Centre Dubbo, a comprehensive cancer care service.

The details of the closest hospitals and MPSs to the local area are presented in Table 6.6.

Table 6.6 Hospitals and multipurpose services in the local area, 2022

Hospital	Location	Type	Number of beds
Dunedoo Multipurpose Service	Dunedoo	Public	<50
Gulgong Multipurpose Service	Gulgong	Public	<50
Mudgee Hospital and Health Service	Mudgee	Public	51

Source: AIHW 2022, MyHospitals.

Note: There are other MPS located outside the local area but within the regional area.

Table 6.7 presents a summary of admissions to Mudgee Hospital for the period 2016–2020. During the period 2015 to 2020 the total number of patients admitted to Mudgee Hospital declined by 5.0% (ie 143 admissions) despite an overall increase in resident population during this period. While, most of all the hospital stays in Mudgee Hospital are attributed to medical emergencies and medical (non) emergencies. The most common cause of admission to the hospital between 2016–2020 was medical (emergency) followed by medical (non-emergency). The low admissions for the other admissions categories, particularly mental health, suggest that people within the local area access more specialised care outside of the local area.

During the five years to 2020 admissions peaked in 2017–2018 at 3,123 admissions. The admission categories that experienced notable increases in admissions during this period were medical and other acute emergencies and non-emergencies, and rehabilitation. The increase in admissions during 2017–2018 could be attributed to the presence of several major construction projects in the regional area at that time.

Table 6.7 Number of admissions to Mudgee Hospital, 2016–2020

Admission category	2015–2016	2016–2017	2017–2018	2018–2019	2019–2020
Childbirth	230	227	240	216	226
Surgical (emergency)	11	11	22	18	8
Surgical (non-emergency)	540	537	446	395	385
Medical (emergency)	978	1,036	1,047	921	839
Medical (non-emergency)	609	694	725	718	606
Other acute (emergency)	7	6	9	9	10
Other acute (non-emergency)	442	519	575	628	512
Mental health	0	0	0	0	0
Rehabilitation	7	7	30	23	40
Palliative	24	16	25	28	40
Other subacute and non-acute	<5	12	<5	8	39
Total	2,848	3,065	3,123	2,964	2,705

Source: AIHW 2022, Hospitals.

- Notes:
1. Medical is defined as stays to hospital that do not require surgery.
 2. Surgical is defined as stays to hospital that require surgery (ie physical medical intervention).
 3. Other acute care is defined as stays that have neither a surgical nor a medical Australian Refined Diagnosis Related Group.
 4. Surgical, medical and other acute care stays are further divided into 'emergency' and 'other', based on the recorded urgency of admission ie whether admission was considered necessary within 24 hours or not.

6.2.2 Primary health

i General practitioner and health service provision

In the local area there are five general practitioner (GP) services which primarily offer standard GP services. The MPSs located in Gulgong and Dunedoo, and the Mudgee HHS also offer a range of health related services to the local area and broader regional area. The MPSs and the Mudgee HHS provide services relating to community health, Aboriginal health, mental health, maternal, child and family health, aged care and special services. GP and health services in the local area are summarised in Table 6.8.

Table 6.8 General practitioner and health services in the local area, 2022

Local Area	GP services	Community health services	Indigenous health services	Mental health services	Maternal, child, and family health services	Aged care services	Other specialist services
Birriwa	✗	✗	✗	✗	✗	✗	✗
Merotherie	✗	✗	✗	✗	✗	✗	✗
Gulgong	✓	✓	✗	✓	✓	✓	✓
Dunedoo	✓	✓	✗	✓	✓	✓	✓
Mudgee	✓	✓	✓	✓	✓	✓	✓

Source: Healthdirect 2021.

6.3 Emergency services

There are three police stations, three ambulance stations, and three fire and rescue stations in the local area. The local area also has a local State Emergency Service (SES) unit and is home to the SES Western Zone Headquarters. The project site is in the Cudgegong District of the NSW Rural Fire Service (RFS) and adjoins the Castlereagh District. Within the local area RFS brigades are located in Birriwa, Gulgong, Mudgee and Dunedoo. The Cudgegong District is the primary combat agency for bush and grass fire incidents in the Mid-Western Regional LGA.

In addition to the listed emergency services, the Ambulance Service of NSW Western Regional Office and the Orana-Mid Western Police District office are located in Mudgee. The range of and number of available emergency services in the local area is shown in Table 6.9. Additional emergency services are located in the broader regional area and area of reference.

Table 6.9 Emergency services in the local area, 2022

	Police station	Ambulance station	Fire and rescue station	Rural fire service brigades	State Emergency Service
Local area	3	3	3	4	1
Regional area	6	6	5	4	1
Area of reference	7	7	7	6	2

Source: police.nsw.gov.au; ambulance.nsw.gov.au; fire.nsw.gov.au; rfs.nsw.gov.au; ses.nsw.gov.au

6.4 Transport infrastructure

Transportation in the local area is facilitated through the provision of three movement networks: a public transport network, a bike/walk network, and a road network.

6.4.1 Public transport

Public transport services within the local area are limited to bus transport. The nearest and accessible train station is located in Lithgow.

There is no public transport service within the towns of Gulgong or Dunedoo.

Ogden's Coaches operate the Mudgee interlink, a series of bus routes around the Mudgee township. Mudgee Community Transport, funded by Transport for NSW, provides a transport service for eligible seniors, pensioners, those with accessibility needs or those who have limited access to public transport. The service is especially designed to help residents access medical appointments, participate in social activities, complete shopping and maintain independent living at home.

Transport NSW intercity bus services provide daily services between communities of the local area and Lithgow with onward rail connections to Sydney. There is no direct intercity bus service between the local area and Dubbo. NSW Transport operate a daily return train service between Sydney Central Station and Dubbo, via Lithgow. Sid Foggs operates a regular return service between Newcastle and Dubbo which stops in Dunedoo.

School bus services operate in the local area and are provided principally by Ogden's Coaches and the East End Bus Service. These services connect with educational institutions in Gulgong and Mudgee. The East End Bus Service provides a school bus service (the Blue Springs Route and Tucklan Route) in the vicinity of the project area (East End Bus Service 2022). There is also a privately owned school bus service called Hogden's Bus service, that operates a service along Barneys Reef Road, Birriwa Bus Route South and Birriwa Bus Route North providing student transport to local schools in Dunedoo.

There is one taxi service in Mudgee, Mudgee radio cabs as well as a limited Uber service. Both the uber and taxi service also service Gulgong. Satellite Taxis operate in Dunedoo.

6.4.2 Road network

The project is located immediately east of the village of Birriwa on the Castlereagh Highway (B55) and south of the Golden Highway (B84). The towns of Gulgong and Mudgee are both located on the Castlereagh Highway, part of the Great Inland Way which links Sydney and Cairns. Dunedoo is located at the junction of the Castlereagh Highway and Golden Highway. The Golden Highway connects Newcastle in the east with Dubbo in the west.

6.4.3 Air

Mudgee airport is the only commercial airport located in the local area. A larger commercial airport is located at Dubbo. Mudgee Airport is owned and managed by the MWRC. As of March 2022, FlyPelican operates weekly return flights from Mudgee to Sydney (Mid-Western Regional Council 2022).

The Dubbo airport consists of two sealed runways, a taxiway, an RPT apron, and a passenger terminal. There are five airline companies offering flights to destinations throughout Australia with daily flights provided by QantasLink between Sydney and Dubbo, Fly Pelican between Dubbo and Newcastle and Ballina, Link Airways to Brisbane and Melbourne, Rex Regional Express to Broken Hill and Sydney and Air Link to Walgett, Bourke and Lightning (Dubbo Regional Airport, 2021).

The nearest major domestic and international airports are Sydney Airport and Newcastle Airport which are both approximately 4.5 hours' drive (367 km and 374 km respectively) from the local area.

6.4.4 Modes of travel

Based on the 2016 Census the predominant mode of travel to work in the local area is by car, either as the driver or as a passenger (73.9%), which is slightly higher than the NSW average (64.6%) but lower than the regional area average (68.5%).

A substantially lower proportion of people travel to work by public transport in the regional area (0.5%) compared to NSW (16.0%). The pattern of travel reflects the availability of public transport in the local area. Modes of travel to work in the area of social influence are summarised in Table 6.10.

Table 6.10 Modes of travel, 2016

	By car (as driver, as passenger)	By public transport (train, bus, ferry, tram)
Local area total	73.9%	0.1%
Regional area total	68.5%	0.4%
Area of reference total	74.5%	0.5%
NSW	64.6%	16.0%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

6.5 Community services

A summary of the community services available in the local area is presented in Table 6.11. Services are concentrated in the three centres of Dunedoo, Gulgong and Mudgee, with the majority of services provided in Mudgee consistent with the town's population size. Many community services in the local area are provided by the respective local councils (ie MWRC and WSC). These services include childcare services, public health, cultural development, Aboriginal and Torres Strait Islander services, youth services, and social planning (Mid-Western 2022, Warrumbungle LGA 2022, Ask Izzy 2020).

There are also numerous multifaceted service provision organisations (eg Salvation Army, Lifeline, Anglicare, St Vincent de Paul Society) with services in the local area. These organisations provide a range of services for various demographics, including programs and services for youth, seniors, homeless persons, and specialised Aboriginal and Torres Strait Islander services, among others.

Table 6.11 Community services in the local and regional areas, 2021

	Local area	Regional area
Aboriginal services	✓	✓
Child and family services	✓	✓
Youth services	✓	✓
Housing and homelessness services	✓	✓
Employment services	✓	✓
Disability services	✓	✓
Aged care services	✓	✓
Women's services	✓	✓
Arts and cultural facilities	✓	✓
Recreation services	✓	✓

Source: My Community Directory 2021; Healthdirect 2021; Ask Izzy 2021

6.5.1 Aboriginal community services

There are multiple providers of services for Aboriginal and/or Torres Strait Islanders in the local area. Service providers offer a wide range of services including health, housing and accommodation services, child and family services, elder services, and other support services.

The most comprehensive Aboriginal services in the local area are available through the Mudgee Community Health centre and provided by Western NSW LHD. Services offered include health services, mental health and counselling services, health education services, and Aboriginal support services. The Gulgong Community Health Centre also provides Aboriginal health services. Hearing Australia provides specific hearing services for Aboriginal people.

The Mudgee Local Aboriginal Land Council provides information, support, advocacy and referral for Aboriginal people who live in the local community as well as delivering cultural programs, heritage assessments and cultural tours. Gulgong community health also provides a range of services with Aboriginal mental health workers available for the community.

6.5.2 Child and family services

A range of child and family services is available in the local and regional areas, with services primarily provided by the Western NSW LHD. In the local area these services are primarily provided through the Dunedoo, Gulgong and Mudgee Community Health Centres (CHC).

Dunedoo CHC is located at the Dunedoo MPS and provide a women's health clinic with a community nurse service who can refer community members onto other specialised services when required, early childhood health services for infants and children zero to five and their families, dietetics service, physiotherapy, community mental health service.

WSC offers a fortnightly service called connect five program that supports isolated families with young children, particularly zero to five who do not have access to other early childhood services such as preschool and childcare.

Gulgong CHCs provide early childhood health centre, sexual assault service, allied health services: occupational therapy and physiotherapy, alcohol and other drugs (AOD) counselling, generalist counselling, community nursing and community mental health services.

Mudgee CHC provides, allied health services: paediatric speech pathology, child and adolescent community mental health service, allied health services: diabetes education, child protection counselling service (CPCS), women's health nurse, child and family health service, community nursing, early childhood health clinic, McGrath foundation breast care nurse and social worker services.

Child and family services are also provided by the MWRC and a number of multifaceted organisations. The benevolent society, central-western region in Mudgee provides case management continuity of support, brighter futures early intervention program and kids in focus programs. The MWRC provides family and children's services (which includes childcare, kindergartens, parenting education and support, immunisation and infant and childhood health). DCJ community services (formerly FACS), central and far west district, Mudgee community services centre (CSC) in Mudgee also offers out-of-home Care (OOHC), child protection intervention and case management, adoption and permanent care services, Child protection helpline and satellite sites and early intervention programs.

6.5.3 Youth community services

Within the local area, youth community services are located at Dunedoo, Gulgong and Mudgee. The WSC offers annual youth week activities and events in Dunedoo as well as a youth development program focused encouraging and engaging with youth across the communities, activities include things like regional youth leadership program focused on building resilience and leadership where the youth from Dunedoo high school attend with other high schools. The MWRC offers a youth support service with youth workers who provide information, assistance, and referral to appropriate services for children and young people. The MWRC offer various programs that encourage participation of young people in a wide range of recreational activities and development of leadership skills. The Mudgee CHC employs a youth worker and clinical psychologist to provide counselling support services for children and young people 12–18 years old. Also located in Mudgee, Barnardos Western NSW provides a 'Reconnect' program for youth aged 12–18 which provides support for young people who are becoming disconnected from their families, school and/or work and are at risk of becoming homeless.

Employment services provider VERTO located in Gulgong provides an outreach service (open on a fortnightly basis). Verto is also located in Mudgee and provides intensive, pre-employment support for young people 15–21 years old to improve their work-readiness and help them into education or work, including apprenticeships and traineeships.

6.5.4 Housing and homelessness services

Within the Mid-Western Regional LGA there are two housing and homelessness services – Barnardo's and Housing Plus. Services offered by these organisations include tenancy management, Aboriginal housing services, family accommodation, crisis accommodation, transitional accommodation, community housing, and specialist homelessness services. Housing plus specifically provides affordable rental accommodation for families and individuals on low to moderate incomes. Barnardo's offer a specialised case management and housing and homelessness support services specifically for youth, including crisis and short-term accommodation, as well as intensive support, early intervention and referral service.

6.5.5 Employment services

There are seven identified employment service providers in the local area, including five located in Mudgee, one in Gulgong and one in Dunedoo. The services vary by location and range from providing the Jobactive program, a service which provides employment placement and training for unemployed young people and adults, individually tailored job plans, assistance looking for work, resume writing, interview preparation, case management and wage subsidies. Other available services from the seven identified providers include career transition assistance, disability employment services, financial counselling, the 'ParentsNext' program, and skills checkpoint programs.

6.5.6 Disability services

There are a range of disability services and disability service providers within the local area. The majority of services are offered in Mudgee. Services range from disability employment services, social support groups and recreational activities, transition to work programs, school leaver employment support (SLES) programs, disability case management and coordination support, day programs for adults with disabilities, coordination and support of the National Disability Insurance Scheme (NDIS), accommodation and home support services, and transition assistance programs.

6.5.7 Aged care services

Within the local area there are eight identified providers of age care services operating in Dunedoo, Gulgong and Mudgee. The available services include home care (which is also available for persons with disabilities), domestic assistance, low and high-level care accommodation (which includes dementia specific care), residential respite care, and independent living units for people aged 55 years and older. Both the Dunedoo and Gulgong MPSs each provide a 25-bed residential aged care service. The majority of aged care services in the local area are concentrated in and around Mudgee and offer community transport, Commonwealth home support program (CHSP), meals on wheels, weekly senior programs and home care packages. The University of the Third age provides adult and community education, particularly for persons who are retired and elderly.

6.5.8 Women's services

There are three branches of the Country Women's Association (CWA) located within the local area: Gulgong CWA, Mudgee CWA and Dunedoo CWA. These services provide support for personal growth and the opportunity to pursue and address key social issues for women within these areas. There are also a range of women's services offered through the Dunedoo, Gulgong and Mudgee CHCs.

6.6 Arts and cultural community facilities

There are a range of arts and cultural community facilities across the local area, with facilities concentrated in the communities of Dunedoo, Gulgong and Mudgee. The following arts and cultural community facilities are located in the local area: art galleries and installations, museums and heritage sites, library, hall, and conference/meeting rooms. Most of these facilities are available in Gulgong and Mudgee area. This is a theatre and cinema in Mudgee.

6.7 Recreation services

Within the local area there are many recreational services and facilities, including parks and reserves, as well as a variety of sporting facilities (eg ovals, aquatic centres/swimming pools, netball courts, soccer fields, indoor courts, golf courses, bowling greens, skate parks, motocross, and racing facilities). Many of the sporting facilities are located in Mudgee. The Mudgee Glen Willow regional sports complex has a capacity of 10,000 people and hosts many large sporting games such as the NRL and A-League matches.

There is also a variety of national parks that support a range of outdoor pursuits including fishing, bird watching, kayaking, caving, canoeing, hiking, and cycling.

Part of the Central West Cycle Trail is in the Mid-Western Regional LGA and Warrumbungle LGA. Section 2 of the cycle trail connects Gulgong with Dunedoo via Birriwa Bus Route South and the township of Birriwa.

6.8 Regional events

Within the local area the townships of Dunedoo, Gulgong and Mudgee, each hold an annual local agricultural show Other well established local and regional annual events include:

- Henry Lawson Festival held in Gulgong on the June long weekend;
- Mudgee Classic a cycling event that attracts 2,000 people;
- Mudgee food and wine month that consist of a range of events attracting visitors to the area;
- the Wildflower music festival in Mudgee; and
- Mudgee small farm field days.

Coonabarabran, and Mudgee also hold a country and picnic race day that attracts large crowds to the events that support the progress and development of community and picnic days supporting regional and rural communities (NSW Country and picnic racing 2022).

7 Workforce and income

The labour market characteristics of the social area of influence are described with reference to the following indicators:

- Labour force: defined as the total number of persons who are employed or unemployed in a reference period.
- Unemployment rate: the unemployment rate is the number of unemployed people (people aged 15 years and over) expressed as a percentage of the total labour force.
- Persons not in the labour force: people who are not in the labour force are those who are aged 15 years or older and who were neither employed nor unemployed in a reference period. This can include people who are permanently unable to work, retired, full-time students, and discouraged workers.
- Participation rate: the total number of employed and unemployed people in a reference period expressed as a percentage of the population aged 15 years and over.

The presented labour market information draws on:

- ABS labour market information for the 2006, 2011 and 2016 census periods.
- Data from the National Skills Commission (NSC) Labour Market Insights portal. This data is the most up-to-date labour market information for the area of social influence. However, this data is only available for geographic areas at or greater than Statistical Area 2 (ie LGA, employment region and state level) and is released at quarterly intervals. The latest available data is from the December 2021 quarter.

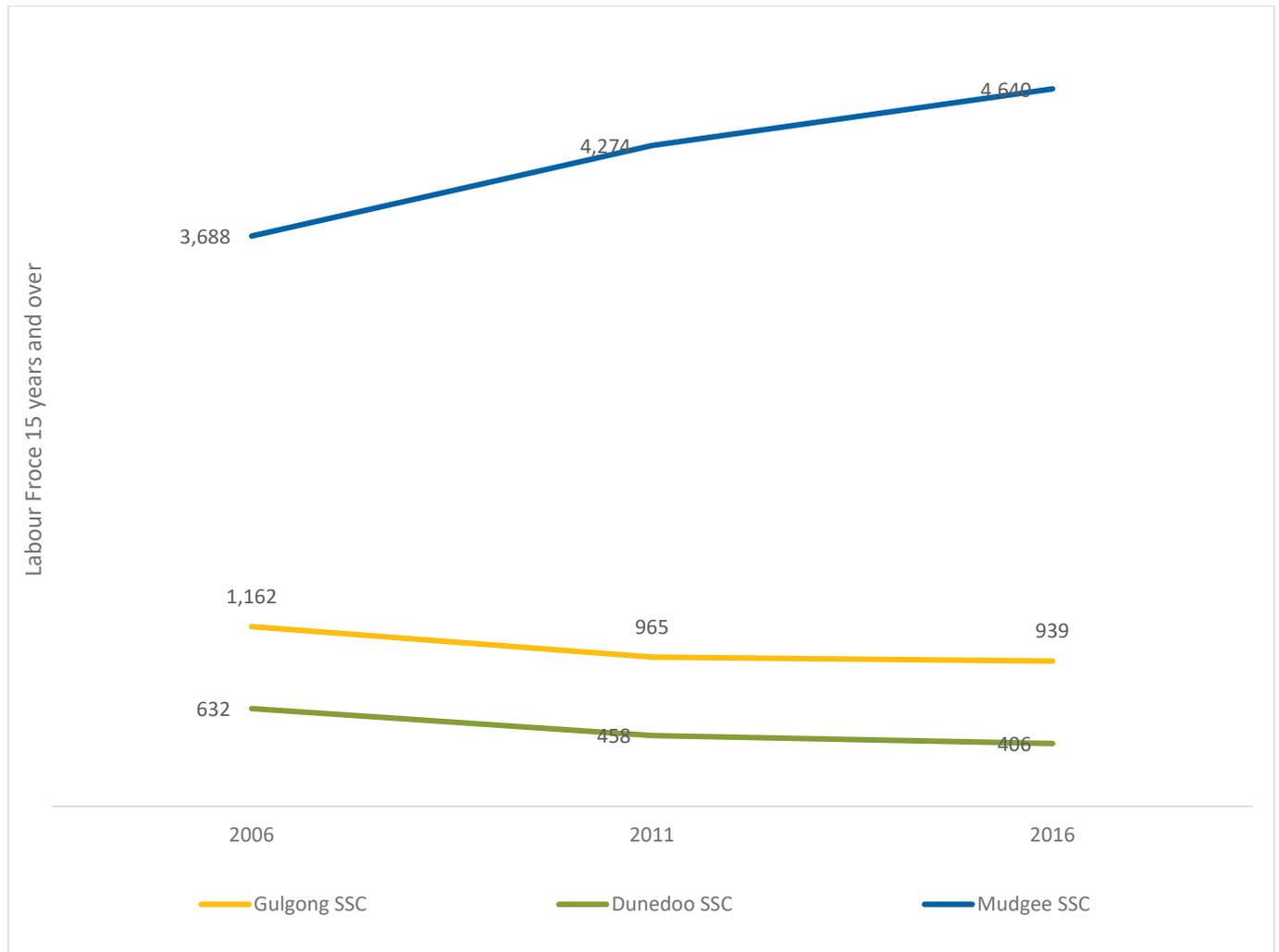
7.1 Labour force

Figure 7.1 shows labour force change in the local area between 2006 and 2016 based on ABS data. Figure 7.2 shows labour force size in the local area, regional area and area of reference. The 2016 estimated labour force of the local area was 5,985 people, with the largest labour pool located in Mudgee (4,640 people). Both Gulgong and Dunedoo experienced a decline in labour between 2006 and 2016. This decline can be attributed to the parallel decline in overall population (Section 4.1) and the presence of an aging population. Between 2006 and 2016 the labour force of Mudgee increased by 25.8% (952 people). In 2016, the Mudgee labour force represented 85.6% of the labour force of the local area and 47.9% of the Mid-Western Regional LGA. Between 2006 and 2016 Mudgee's share of the Mid-Western Regional LGA labour force increased (ie from 43.1% in 2006 to 45.6% in 2011 and 47.9% in 2016). In 2016 the labour force of the local area represented 42.1% of the regional area labour force.

Within the regional area, Mid-Western Regional LGA had the largest share of labour (9,689 people or 74.4% of the total regional area labour force). Whilst the labour force of the regional area increased between 2006 and 2016, the Warrumbungle LGA labour force declined by 396 people in this period, consistent with the population decline experienced in the LGA (Section 4.1).

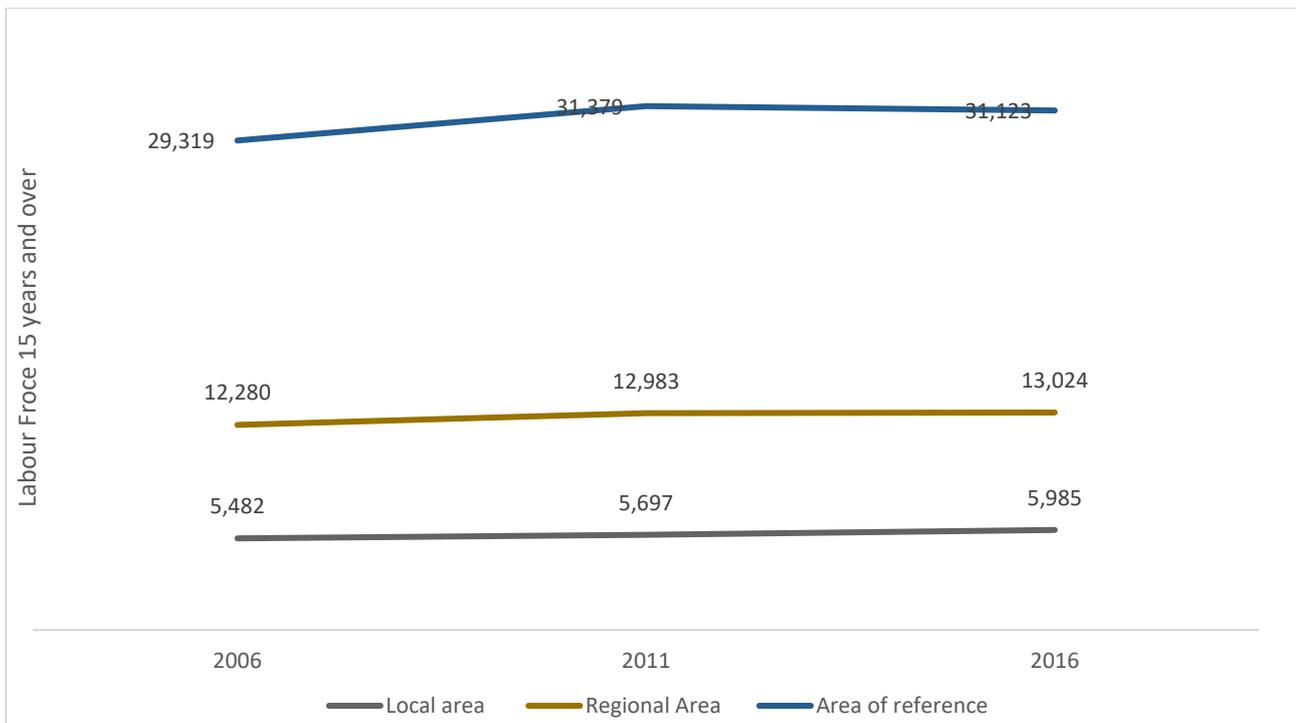
In 2016 the labour force of the area of reference was 31,123. The largest labour force in the area of reference is located in the Dubbo Regional LGA. However, of the three component LGAs, only the Mid-Western Regional LGA experienced steady labour force growth between 2006 and 2016. The labour force of the Dubbo Regional LGA increased between 2006 and 2011 but contracted between 2011 and 2016.

Analysis of labour force trends for the period 2006 to 2016 shows a peak in labour force size in the local area and area of reference in 2011 before some contraction in 2016. In contrast, between 2006 and 2016 the regional area experienced a steady increase in labour force size. The labour force growth was entirely due to growth in the labour force of the Mid-Western Regional LGA, attributable to the significant expansion of the mining industry sector during this period and parallel resident population growth.



Source: ABS 2016, Census of Population and Housing: General Community Profiles

Figure 7.1 Labour force size in the local area

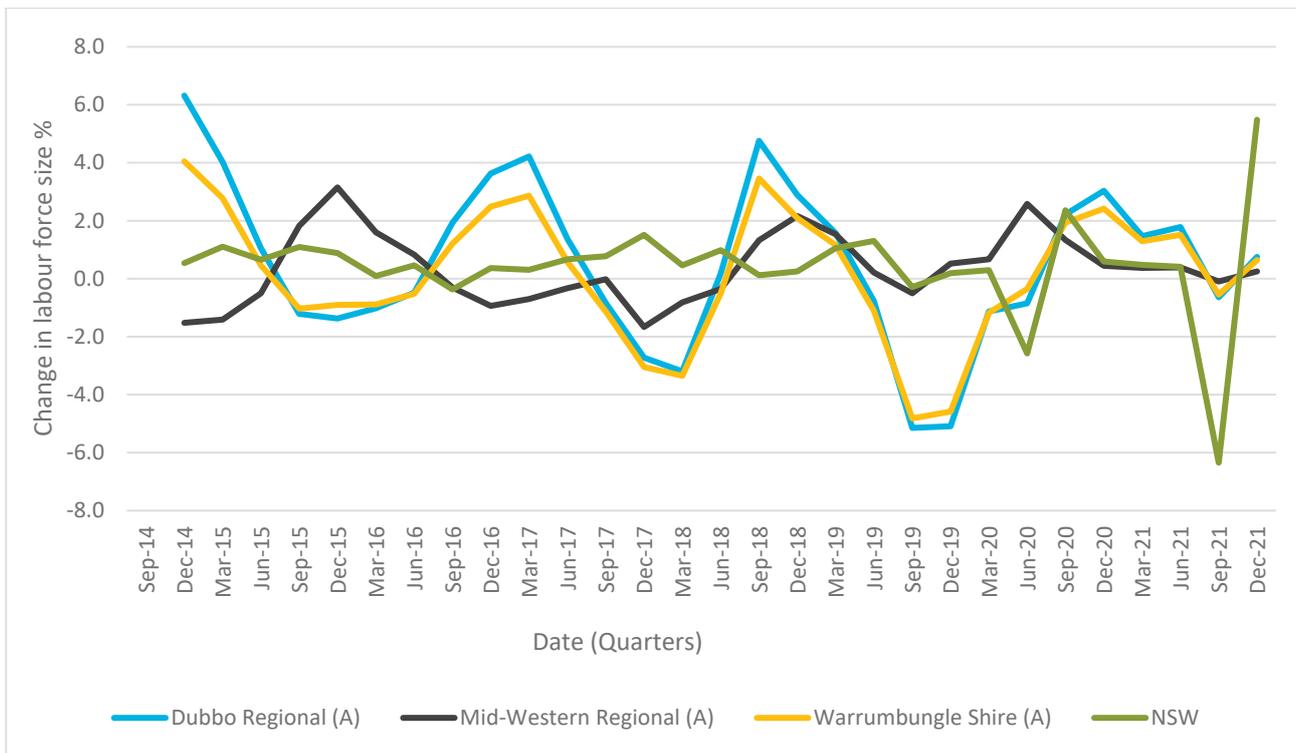


Source: ABS 2016, Census of Population and Housing: General Community Profiles

Figure 7.2 Labour force size in the local area, regional area and area of reference

Figure 7.2 and Figure 7.3 shows quarterly change in labour force size across the LGAs of the area of reference based on recent data from the NSC. There is a strong alignment of labour conditions across the LGAs of Warrumbungle and Dubbo Regional, with substantial fluctuation in labour force size across the reference period. In contrast the Mid-Western Regional LGA shows a different trend with a smaller fluctuation in labour force size. This suggests labour market conditions in the Mid-Western Regional LGA are influenced by a different set of factors to the Warrumbungle and Dubbo Regional LGAs.

All LGAs of interest and NSW experienced a contraction in labour force from September 2020, with NSW experiencing a significant contraction in September 2021. This labour force contraction can be attributed to the impact of the COVID-19 pandemic. The NSC (2022) notes that the labour market's adjustment to the COVID-19 pandemic is not fully reflected in changes in the current level of unemployment and the unemployment rate. The December quarter 2021 SALM estimates capture the period following the end of the Delta lockdowns in large parts of the country but prior to the Omicron outbreak. Given both the large number of people who left the labour force at different times during the pandemic, and the lag from the smoothing process, care should be exercised when interpreting SALM data from the June quarter 2020 onwards (NSC 2022).



Source: National Skills Commission (2022) SALM Smoother LGA Datafiles (ASGS 2021) December Quarter 2021

Figure 7.3 Change in labour force size, 2014–2021

7.2 Employment and unemployment

Unemployment and labour force participation rates for the local area, regional area and area of reference are presented in Table 7.1 and Table 7.2 with data sourced from the ABS. Care should be taken when interpreting data for the areas of Birriwa and Merotherie due to the small population sizes, rounding errors and a need to ensure data confidentiality.

At the time the 2016 census the unemployment rate across the local area (6.5%) was lower than the unemployment rate in the regional area (6.9%) and higher than the area of reference (6.2%) and NSW 6.3%. Within the local area there is some variation in the employment rate. The unemployment rates in the larger communities of Gulgong (8.6%) and Dunedoo (8.6%) are higher than the NSW rate, in comparison to Mudgee (5.8%) which has a lower than unemployment rate. In the regional area both the Mid-Western Regional LGA (6.5%) and the Warrumbungle LGA (7.9%) had higher unemployment rates than NSW. In contrast the Dubbo Regional LGA (5.9%) had an unemployment rate lower than NSW.

In 2016 youth unemployment in the local area (13.2%) was lower than the regional area (14.7%), similar to the area of reference (13.0%) and NSW (13.6%). Within the local area Gulgong and Dunedoo demonstrate considerably higher levels of youth unemployment (19.9% and 17.9% respectively) compared to Mudgee (11.7%) the regional area (14.7%) and NSW (13.6%).

Table 7.1 Unemployment and labour force participation rates, 2016

	Unemployment rate	Youth unemployment rate	Labour force participation rate (15 years and older)
Birriwa	14.3%	NA	52.5%
Merotherie	0.0%	NA	45.5%
Gulgong	8.6%	19.9%	52.4%
Dunedoo	8.6%	17.9%	44.7%
Mudgee	5.8%	11.7%	57.9%
Local area total	6.5%	13.2%	55.8%
Mid-Western LGA	6.5%	13.3%	54.1%
Warrumbungle LGA	7.9%	19.8%	47.0%
Regional area total	6.9%	14.7%	52.1%
Dubbo Regional LGA	5.9%	12.3%	59.3%
Area of reference	6.2%	13.0%	56.4%
NSW	6.3%	13.6%	59.2%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Note: Youth unemployment rate is calculated as a percentage of total labour force aged 15–24 years.

Unemployment and labour force participation rates by sex are presented in Table 7.2.

Table 7.2 Unemployment and labour force participation rates by Sex, 2016

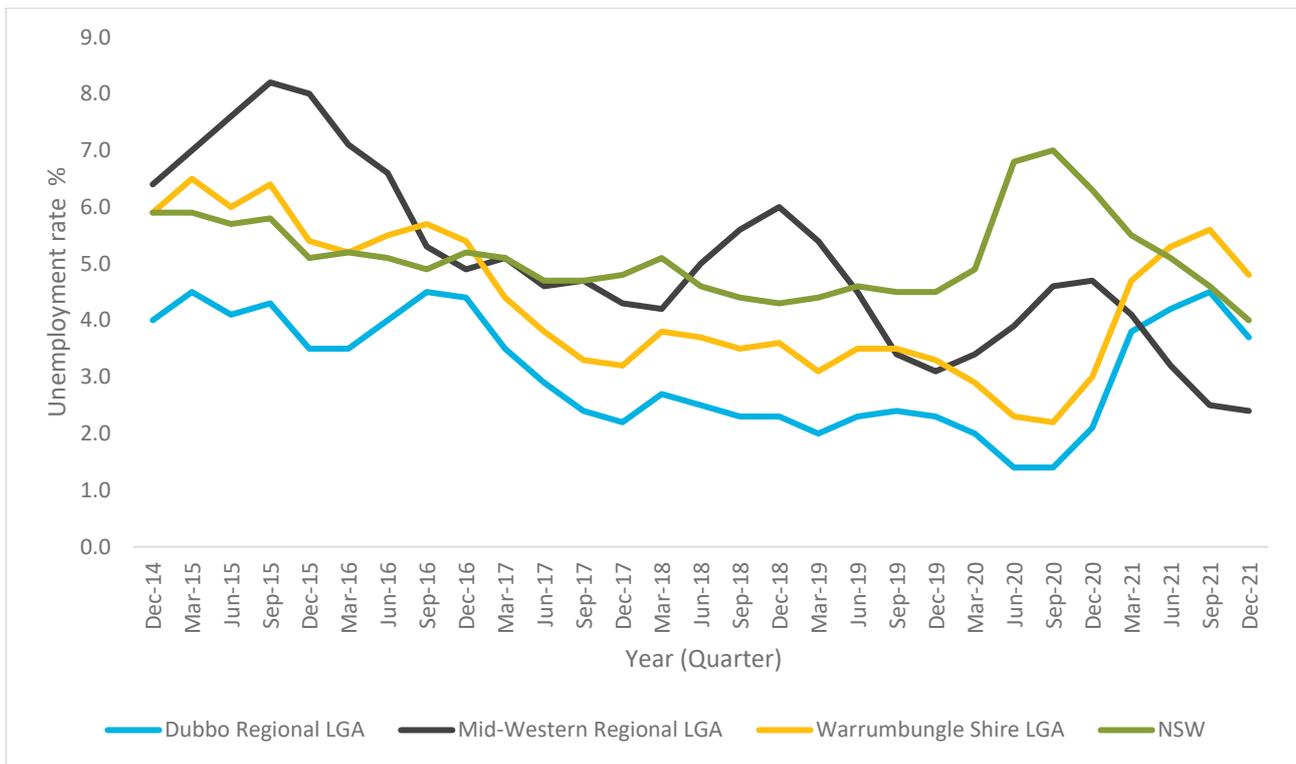
	Unemployment rate		Youth unemployment rate		Labour force participation rate (15 years and older)	
	Male	Female	Male	Female	Male	Female
Birriwa	33.3%	0.0%	--	--	37.5%	38.9%
Merotherie	0.0%	0.0%	--	--	50.0%	100.0%
Gulgong	8.2%	10.5%	19.7%	16.9%	58.1%	46.6
Dunedoo	8.3%	7.7%	21.9%	15.8%	48.7%	41.8%
Mudgee	5.8%	6.1%	13.9%	8.9%	64.6%	51.9%
Local area total	6.3%	7.0%	15.2%	10.4%	61.9%	50.1%
Mid-Western LGA	6.6%	6.3%	14.8%	11.8%	59.0%	49.3%
Warrumbungle LGA	8.8%	7.2%	25.5%	10.8%	49.8%	44.1%
Regional area total	7.2%	6.6%	17.1%	11.6%	64.4%	47.8%
Dubbo Regional LGA	6.1%	5.6%	13.4%	11.5%	62.4%	56.3%
Area of reference	6.5%	6.0%	17.1%	11.6%	59.9%	52.9%
NSW	6.3%	6.2%	14.7%	12.6%	63.8%	54.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Note: Youth unemployment rate is calculated as a percentage of total labour force aged 15–24 years.

Figure 7.4 presents unemployment trends for the area of reference (component LGAs) and NSW for the period 2014–2021 based on NSC data. All areas of interest show a similar trend of decreasing unemployment rates across the reference period. Current unemployment rates across all areas of interest are similar to or lower than NSW (4.0%) (ie 2.4% in Mid-Western Regional LGA, 3.7% in Dubbo Regional LGA, and 4.8% in Warrumbungle LGA). These unemployment rates are also substantially lower than the 2016 unemployment rates presented in Table 7.1.

The impact of the COVID-19 pandemic is evident in the increased unemployment rate in Mid-Western Regional LGA (4.6%) and NSW (8.0%) in September 2020 and in the Warrumbungle and Dubbo Regional LGAs in September 2021 (5.6% and 4.6% respectively). Unemployment rates across both the Warrumbungle and Dubbo Regional LGAs show similar trends.



Source: National Skills Commission (2022) SALM Smoother LGA Datafiles (ASGS 2021) December Quarter 2021

Figure 7.4 Unemployment rate 2014–2021

7.2.1 Jobactive caseload data

Current unemployment in the regional area can be further analysed with reference to Jobactive caseload data from the Australian Government (2022). Jobactive is the Australian Government’s employment service. Caseload data by Jobactive service provider is available for the LGAs of the local area (Table 7.3). There are three primary providers of Jobactive in these LGAs (ie Joblink Plus, Sureway Employment and Training Pty Ltd and Verto Ltd). In February 2022 there were 851 people registered with Jobactive providers in the local area. The majority (53.3%) of the caseload were females aged 15 years and older. Approximately 34.5% (293 people) of the caseload were mature aged people (ie people aged 50 years or older) and 15.4% were Indigenous people aged 15 years and older.

Table 7.3 shows Jobactive caseload data by provider for the local area.

Table 7.3 Jobactive caseload data by provider and site – February 2022

Provider	Total jobactive caseload (15+)	Female (15+)	Youth (15–24)	Mature age (50+)	Indigenous (15+)	PWD (15+)	Refugee
Joblink Plus							
Gulgong	21	<10	<10	10	<10	<10	<10
Dunedoo	39	17	<10	15	<10	<10	<10
Mudgee	255	141	44	84	52	90	<10
Sureway Employment and Training Pty Ltd							
Mudgee	296	152	56	94	49	61	0
Verto Ltd							
Gulgong	17	10	<10	<10	<10	<10	0
Mudgee	223	134	20	90	30	64	0

Source: Australian Government (2022)

Notes: PWD – People with Disability

A transition to work employment service (a program specific for participants aged between 15 and 24 years) is offered by OTEC limited in Mudgee. In February 2022 there were 58 people registered with the program including 25 females aged 15 years and a total of 25 people who identified as Indigenous. Table 7.4 shows caseload data for the transition to work program in the local area.

Table 7.4 Transition to work caseload by provider and site – February 2022

Provider	Total jobactive caseload (15+)	Female (15+)	Indigenous (15+)	PWD (15+)	Refugee
OTEC Limited					
Mudgee	58	23	25	<10	0
Job Link Plus					
Dubbo	261	119	192	22	0

Source: Australian Government (2022)

Notes: Transition to Work is an Employment Services program for participants aged between 15 and 24 years old.

7.2.2 Job vacancies

At the national, state (NSW) and Central West employment region (ER) level job vacancies are currently much higher than prior to the COVID-19 pandemic. The NCS compiles a monthly count of online job advertisements (the internet vacancy index [IVI¹]). Job advertisement levels at a national and state (NSW) scale are currently at their highest level since 2006. The April 2022 IVI for NSW shows a 7.6% increase in the IVI since March 2022 and a 68.9% increase on the pre-covid IVI (NSC, 2022a). However, the strongest growth in recruitment activity, compared to pre-COVID-19 levels, is occurring in regional areas (NCS 2022b). In the three-month moving average to April 2022, job advertisements continued to exceed pre-COVID-19 levels across all IVI regions of Australia. Data for the Central West ER is available to March 22 and shows a -1.5% change over the month in the IVI and a 156.6% change in IVI compared to pre-COVID-19 levels (ie March 2020) (NSC 2022b).

At a national and state (NSW) level job advertisements increased across all skill level groups for the fourth consecutive month in April 2022. In NSW advertisements for Skill Level 5 occupations (commensurate with Certificate I or secondary education) experienced the strongest rise, up by 11.5% (or, 1,400 job advertisements), similar to the 12.6% experienced at the national level). In NSW skill Level 2 occupations (commensurate with Advanced Diploma or Diploma) increased by 10.1% or 970 job advertisements) and Skill Level 4 occupations (commensurate with Certificate II or III) increased 8.9% or 2,100 job advertisements). In the Central West ER 27% of job advertisements were for Skill Level 1 occupations (commensurate with Bachelor's degree or higher) and 28% for Skill Level 4 occupations.

The level of recruitment activity nationally remains elevated as compared to pre-COVID-19 levels across all eight major occupational groups. At a national and state (NSW) level job advertisements increased across all broad occupational groupings during April 2022. Within NSW, the strongest increase over the month of April 2022 was observed for sales workers (up by 10.4% or 830 job advertisements), followed by labourers (10.7% or 430 job advertisements) and managers (8.9% or 990 job advertisements). A 7.5% (830 job advertisements) increase was observed in the technicians and trades workers occupation (NSC, 2022b). March 2022 data from the NSC (2022c) for the Central West ER shows a 156.6% increase in online job advertisements since March 2020, with the largest share of advertised jobs for sales assistants, general clerks and child carers.

7.2.3 Recruitment experience

The REOS (NSC 2022c) shows a steady, but fluctuating increase in the number of employers recruiting between June 2020 and April 2022 (ie 27% compared to 60%) in regions outside of the greater capital cities in Australia. In April 2022 62% of employers recruiting outside of greater capital cities in Australia experienced recruitment difficulties. Trend data for the recruitment difficulty rate shows a fluctuating but steady increase in the proportion of employers experiencing recruitment difficulties. NCS national data for December 2021 shows high recruitment rates across all industries (ie 51% of employers were seeking to recruit in Australia) and in the construction industry 52% of employers were seeking to recruit.

¹ The monthly IVI is based on a count of online job advertisements newly lodged on SEEK, CareerOne and Australian JobSearch during the month. Duplicate advertisements are removed before the IVI job advertisements are coded by the National Skills Commission to occupations based on the Australian and New Zealand Standard Classification of Occupations (ANZSCO). The data are seasonally adjusted, trended and then indexed (January 2006 = 100) (NSC 2022b).

REOS (NSC 2022) data for the Central West shows of the recruiting employers, 49% had difficulty recruiting. Employers in the Central West ER were most likely to report the following reasons for recruitment difficulty:

- lack of applicants;
- lack of suitable applicants;
- location, ie remote or regional; and
- COVID-19 (impacting recruitment).

Recruitment methods included online jobs boards and company websites (40%), social media (37%), newspapers (15%), recruitment agencies (15%) and word of mouth (40%).

7.3 Occupation

Table 7.5 presents occupation within the area of social influence in 2016. In 2016 the top three occupations in the local area were technicians and trades workers (17.5%), professionals (13.7%) and machinery operators and drivers (12.9%). This is consistent with the dominant industry of employment in the local area which in 2016 was the mining industry sector (Table 9.1). The occupational characteristics of Gulgong and Mudgee are consistent with the trends across the broader Mid-Western Regional LGA but slightly different to the regional area. The occupational trends in Dunedoo are generally consistent with the Warrumbungle LGA but also slightly different to the regional area. Occupational trends in the regional area differ between the two component LGAs with Warrumbungle having a higher proportion of managers and professionals (40.8%) compared to the Mid-Western Regional LGA (27.7%). Within the Mid-Western Regional LGA, approximately 30% of the labour force are employed in the occupations of machinery operators and drivers, and technicians and trades workers.

Table 7.5 Occupation, 2016

Occupations	Birriwa	Merotherie	Gulgong	Dunedoo	Mudgee	Local area	Mid-Western Regional LGA	Warrumbungle LGA	Dubbo Regional LGA	Regional area totals	Area of reference totals	NSW
Managers	68.8%	0.0%	10.8%	29.3%	10.4%	11.9%	14.6%	26.7%	13.0%	17.7%	14.7%	13.5%
Professionals	0.0%	40.0%	9.7%	11.1%	14.7%	13.7%	13.1%	14.1%	17.5%	13.4%	16.0%	23.6%
Technicians and trades workers	0.0%	0.0%	18.8%	7.6%	18.2%	17.5%	17.2%	10.2%	14.3%	15.4%	14.7%	12.7%
Community and personal service workers	0.0%	0.0%	10.6%	9.9%	10.6%	10.5%	9.8%	11.2%	12.7%	10.1%	11.7%	10.4%
Clerical and administrative workers	0.0%	0.0%	9.3%	8.6%	10.0%	9.7%	10.1%	8.4%	13.0%	9.7%	11.7%	13.8%
Sales workers	0.0%	0.0%	8.6%	6.7%	10.8%	10.1%	9.1%	6.5%	10.7%	8.4%	9.9%	9.2%
Machinery operators and drivers	0.0%	0.0%	16.9%	7.9%	12.6%	12.9%	12.6%	6.5%	6.0%	11.0%	7.9%	6.1%
Labourers	0.0%	0.0%	13.4%	16.7%	11.6%	12.2%	12.0%	14.3%	11.1%	12.6%	11.7%	8.8%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

7.4 Income

Median individual and median household weekly income distribution in the area of social influence is presented in Table 7.6. There is significant variation in individual and household median weekly incomes across the local area and regional area. In 2016, with the exception of Merotherie, all areas of interest (ie communities and LGAs) recorded median income levels below NSW.

Within the local area:

- median weekly individual income was lowest in Birriwa (\$474);
- median weekly household income was lowest in Dunedoo (\$871); and
- median weekly individual and household income was highest in Merotherie (\$849 and \$2115 respectively). This reflects the SEIFA scores within Merotherie, particularly the IER, which suggests slightly higher levels of advantage and low levels of disadvantage related to income compared to other suburbs across NSW (see Section 4).

Median income levels in Gulgong are lower than the Mid-Western Regional LGA median income levels. Median income levels in Mudgee are higher than the Mid-Western Regional LGA median income levels.

Table 7.6 Median weekly income (\$), 2016

	Individual income (\$)	Household income (\$)
Birriwa	474	1,062
Merotherie	849	2,125
Gulgong	523	1,086
Dunedoo	520	871
Mudgee	623	1,256
Local area total	–	–
Mid-Western LGA	547	1,131
Warrumbungle LGA	479	878
Regional area total	–	–
Dubbo Regional LGA	660	1,272
Area of reference	–	–
NSW	664	1,486

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Notes: Median income data for the local area, regional area and area of reference was not available.

8 Housing and accommodation

8.1 Occupied private dwellings

Table 8.1 shows the number of number and proportion of occupied private dwellings in the local area and regional area. The proportion of occupied dwellings in the local area (87.5%), regional area (83.5%) and area of reference (86.8%) is slightly lower compared with the NSW state-wide proportion of 90.1%. This may be associated with rural depopulation and farm amalgamations in the more rural areas, however in the more urban areas (eg Mudgee) it is likely attributable to the prevalence of second homes, holiday homes or Airbnb properties which were vacant at the time the ABS census was conducted. This was confirmed during SIA interviews with key service providers and local MWRC representatives who noted substantial growth in the number of holiday rentals in the local area.

Analysis of trend data for the Mid-Western Regional LGA shows a consistently high proportion of unoccupied private dwellings compared to NSW. The proportion of unoccupied private dwellings across the regional area is notably higher than NSW. In 2016, 17.8% and 15.9% of dwellings in the Warrumbungle LGA and the Mid-Western Regional LGA respectively were unoccupied compared to 9.9% across NSW). Within the Warrumbungle LGA the number of private unoccupied dwellings may reflect the existing trend of population decline and the impact of the property acquisitions for the Cobbora coal mine (Section 4.1).

8.2 Housing type and structure

Housing type and structure is presented in Table 8.1. The local area has similar characteristics to the regional area and area of reference but shows less diversity than NSW. In 2016 the most common housing type and structure within the local area and regional area were separate houses (87.9%, and 92% respectively) and semi-detached, row or terrace houses and townhouses (6.2% and 3.2%).

Table 8.1 Housing type and structure, 2016

	Separate house	Semi-detached, row or terrace house, townhouse	Flat or apartment	Other dwelling	Total private dwellings	Total occupied dwellings
Birriwa	16	0	0	0	19	16
Merotherie	8	0	0	0	8	8
Gulgong	827	44	3	22	1,020	907
Dunedoo	412	0	12	0	555	429
Mudgee	3,437	290	187	60	4,511	3,988
Local area	87.9%	6.2%	3.8%	1.5%	12.3%	87.5%
Mid-Western LGA	8,005	337	219	129	10,426	8,768
Warrumbungle LGA	3,299	50	78	45	4,280	3,517
Regional area totals	92.0%	3.2%	2.4%	1.4%	16.5%	83.5%
Dubbo Regional LGA	14,789	1,054	1,208	339	19,590	17,474
Area of reference total	87.7%	4.8%	5.1%	1.7%	13.2%	86.8%
NSW	66.4%	12.2%	19.9%	0.9%	2,889,057	90.1%

Source: ABS 2016, Census of Population and Housing: General Community Profiles

8.3 Household composition

Household composition in the area of social influence is presented in Table 8.2. Household composition in the local area is similar to the regional area and the area of reference but different to NSW. In 2016 most households were family households in the local area (67.4%), regional area (68.0%) area of reference (69.6%) and NSW (72.1%) (ABS 2016). However, the proportion of family households across the local area, regional area and area of reference is lower than NSW. Within the local area, Dunedoo, Gulgong and Mudgee all had a much higher proportion of lone person households (31.1%) compared to NSW (23.7%). One reason for this may be the number of retired and single people in the local area and the very limited access to retirement home facilities. Increased longevity means people often outlive their partners. In rural areas in particular, connection to place is strong and people often seek to remain in their communities as they age rather than move away. Demographic analysis of the local area (Figure 4.4) showed a larger proportion of females than males in the older age cohorts and analysis of community facilities showed limited access to aged care/retirement facilities.

Table 8.2 Household composition, 2016

Household type	Family households	Group households	Lone person households
Birriwa	68.8%	0.0%	25.0%
Merotherie	100.0%	0.0%	0.0%
Gulgong	66.2%	2.0%	31.1%
Dunedoo	68.5%	1.6%	29.8%
Mudgee	67.5%	3.3%	29.1%
Local area	67.4%	2.9%	29.5%
Mid-Western LGA	68.4%	2.8%	28.9%
Warrumbungle LGA	66.7%	2.0%	31.5%
Regional area	68.0%	2.6%	29.5%
Dubbo Regional LGA	70.6%	3.1%	26.4%
Area of reference	69.6%	2.9%	27.6%
NSW	72.1%	4.2%	23.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

8.4 Tenure

Housing tenure within the area of social influence is presented in Table 8.3. Tenure in the local area reflects the demographics of the population (long term and aging), population mobility and housing market conditions at the time of the census. In 2016 in the local area the majority of dwellings were either owned outright (31.5%) or owned with a mortgage (30.3%), which is generally consistent with NSW (ie 32.2% and 32.3% respectively) but inconsistent with the regional area (ie 40.4% and 28.4% respectively). The higher proportion of home ownership (both outright and with a mortgage) in the regional area can be attributed to the presence of a stable (ie long term; Section 4.6) and aging rural population.

Mudgee (36.5%) and Gulgong (28.2%) have a higher proportion of rental tenure than the Mid-Western Regional LGA (27.4%). Dunedoo (28.2%) has a higher proportion of rental tenure than the Warrumbungle LGA (25.8%). The high rates of rental tenure may be attributable to a number of factors including: the presence of a sizeable health sector and education sector workforces, which cycle through on a contractual basis; the attractiveness of the locations as base locations for workforces associated with the construction of major projects (eg mining, renewable energy and infrastructure) in the regional area; and the overall residential rental costs and rental availability at the time of the 2016 census.

Table 8.3 Tenure (based on total private dwellings), 2016

	Owned outright	Owned with a mortgage	Rented	Other tenure
Birriwa	56.3%	0.0%	18.8%	0.0%
Merotherie	37.5%	0.0%	0.0%	0.0%
Gulgong	37.3%	30.5%	28.2%	0.7%
Dunedoo	49.2%	21.2%	28.7%	1.2%
Mudgee	28.2%	31.5%	36.5%	0.3%
Local area	31.5%	30.3%	34.3%	0.4%
Mid-Western LGA	38.0%	30.6%	27.4%	0.7%
Warrumbungle LGA	46.4%	23.0%	25.8%	1.3%
Regional area total	40.4%	28.4%	26.4%	0.8%
Dubbo Regional LGA	31.4%	33.8%	30.7%	1.2%
Area of reference total	35.1%	31.6%	29.2%	1.1%
NSW	32.2%	32.3%	31.8%	0.9%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

8.5 Mortgage repayment and rent

Mortgage and rent repayments are presented in Table 8.4. In 2016 in the local area, monthly median mortgage repayments and weekly median rent payments were consistently lower than the NSW average. Within the local area monthly mortgage repayments were highest in Mudgee (\$1,773) but still less than NSW (\$1,986). Monthly mortgage repayments in Mudgee were higher than the Mid-Western Regional LGA average (\$1,690). Within the local area monthly mortgage repayments were lowest in Dunedoo (\$967).

In 2016 weekly rent payments in the local area were significantly lower than NSW. Within the local area the highest weekly rents were in Mudgee (\$300). Mortgage and rent repayments lower than the NSW average may suggest lower housing prices, which is indicative of regional areas. Mortgage and rent payments are important factors in considering housing stress.

Table 8.4 Median mortgage repayments and rental payments, 2016

	Monthly mortgage repayments (\$)¹	Weekly rent payments (\$)¹
Birriwa	0	0
Merotherie	0	0
Gulgong	1517	250
Dunedoo	967	175
Mudgee	1733	300
Mid-Western LGA	1690	270
Warrumbungle LGA	923	160
Dubbo Regional LGA	1500	250
NSW	1,986	380

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Notes: 1. Data for the total local area median mortgage repayments and rent payments was not available.

Affordable housing is a key dimension of economic wellbeing. Housing costs, such as rent payments or mortgages, are often the largest regular expense in a household budget. Spending a high proportion of disposable income on housing costs reduces what households can afford to consume and save to support other aspects of their wellbeing (OECD 2020).

Housing stress is considered to occur when households in the lower 40% of income distribution spend more than 30% of their income in housing costs (rents or mortgage repayments) (AHURI 2019). This can mean that local people who are not employed in high-paying jobs may be unable to afford local rents which can be pushed up by higher salaries.

Analysis of rental stress in the local area (Table 8.5) shows that a high proportion of households in Mudgee (14.2%) and Gulgong (12.4%) experience rental stress compared to other communities in the local area, the LGAs of the regional area and the area of reference. In comparison, a smaller proportion of households in the communities of the local area (ie 6.0% Mudgee, 3.0% Dunedoo, and 5.2% Gulgong) experience mortgage stress compared to NSW (7.4%).

Table 8.5 Housing affordability, c2016

	Households where rent payments are greater than or equal to 30% of household income (%) ¹	Households where mortgage payments are greater than or equal to 30% of household income (%) ¹
Birriwa	NA	NA
Merotherie	NA	NA
Gulgong	12.4%	5.2%
Dunedoo	6.9%	3.0%
Mudgee	14.2%	6.0%
Local area	–	–
Mid-Western Regional LGA	10.0%	5.9%
Warrumbungle LGA	6.2%	3.2%
Dubbo Regional LGA	6.2%	3.2%
NSW	12.9%	7.4%

Source: ABS 2016, Quickstats.

Notes: 1. Data for the total local area median mortgage repayments and rent payments was not available.

8.6 Housing and rental market trends

8.6.1 Mortgage repayment and rent trends

Median mortgage repayment and rental payment trend data for the area of social influence is presented in Table 8.6. Data for the smaller areas of Birriwa and Merotherie were unavailable. Combined data for the local area, regional area and area of reference was also not available.

Analysis of trend data for median mortgage repayments in the local and regional area shows higher increases between 2006 and 2016 compared to NSW. Between 2006 and 2016 median mortgage repayments in Gulgong, Mudgee and Dunedoo increased by 51.7%, 45.4% and 39.5% respectively compared to 30.9% across NSW. Median mortgage repayments in the Mid-Western Regional LGA also increased by 56.0% while Warrumbungle LGA increased by 33.2%, however this was lower than the NSW figure.

The growth in mortgage repayments in Mudgee and the Mid-Western Regional LGA as a whole is likely associated with the tightening of the housing market due to a parallel increase in population (the growth rate during this period was above NSW; Figure 4.1) and expansion of the surrounding mining industry sector. Whilst Gulgong experienced a population decline during this period, the expanding mining industry sector in the Mid-Western Regional LGA between 2006 and 2016 would also have impacted housing market conditions in Gulgong. It is unclear why median mortgage repayments in Dunedoo and the broader Warrumbungle LGA increased beyond the NSW median.

Between 2006 and 2016, there was variation in median rent increases across the local area and regional area. Within the local area in the ten years to 2016, median rent increased by 94.4% in Dunedoo, 78.6% in Gulgong and 81.8% in Mudgee. These increases were higher than the median rent increase for the regional area (ie 86.2% Mid-Western Regional LGA and 60.0% Warrumbungle LGA) and NSW (81.0%) for the same period. The factors driving the increase in median rent payments in the local and regional area are the same as for median mortgage repayments (ie a combination of population growth and housing demand fuelled by the expansion of the surrounding mining industry sector).

Table 8.6 Median mortgage repayment and rent growth rates, 2006–2016

	Mortgage repayments trends (change)			Rent payment trends		
	2006–2011	2011–2016	2006–2016	2006–2011	2011–2016	2006–2016
Birriwa	NA	NA	NA	NA	NA	NA
Merotherie	NA	NA	NA	NA	NA	NA
Gulgong	51.7%	0.0%	51.7%	42.9%	25.0%	78.6%
Dunedoo	50.4%	-7.2%	39.5%	11.1%	75.0%	94.4%
Mudgee	45.4%	0.0%	45.4%	45.5%	25.0%	81.8%
Local area total	NA					
Mid-Western LGA	43.2%	9.0%	56.0%	37.9%	35.0%	86.2%
Warrumbungle LGA	25.5%	6.1%	33.2%	20.0%	33.3%	60.0%
Regional area total	NA					
Dubbo Regional LGA	25.8%	0.0%	25.8%	25.0%	25.0%	56.3%
Area of reference	NA					
NSW	31.4%	-0.4%	30.9%	42.9%	26.7%	81.0%

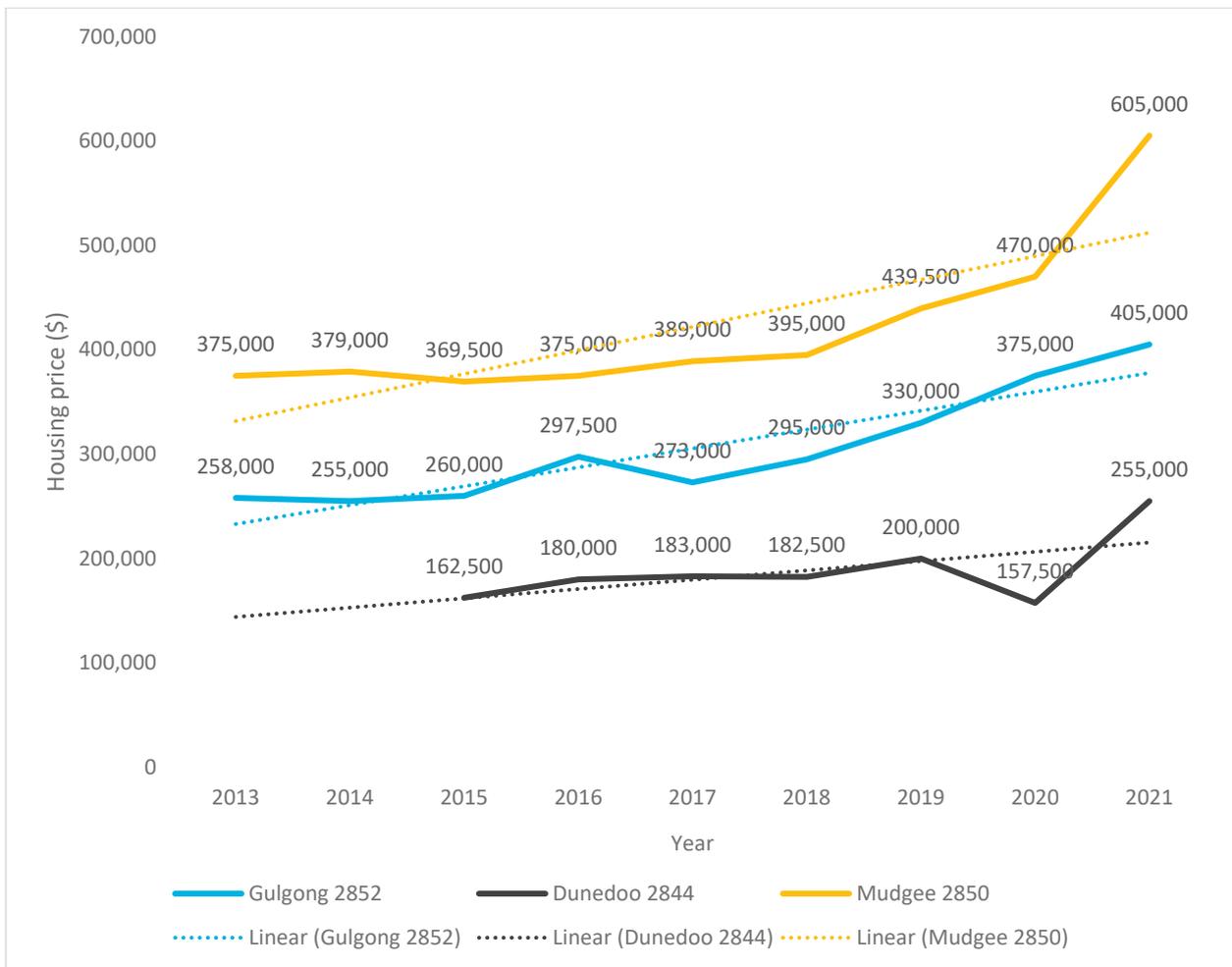
Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Notes: NA – Not available

8.6.2 Median property price

Trends in median property prices for the selected suburbs in the local area are illustrated in Figure 8.1 and Figure 8.2. The data is derived from realestate.com. Housing data is available only for Gulgong, Dunedoo and Mudgee and is based on postcode area. Rental data is only available for Mudgee. Caution should be applied to the interpretation of housing data as single property sales within a small property market (eg Dunedoo) can significantly skew the overall median property price.

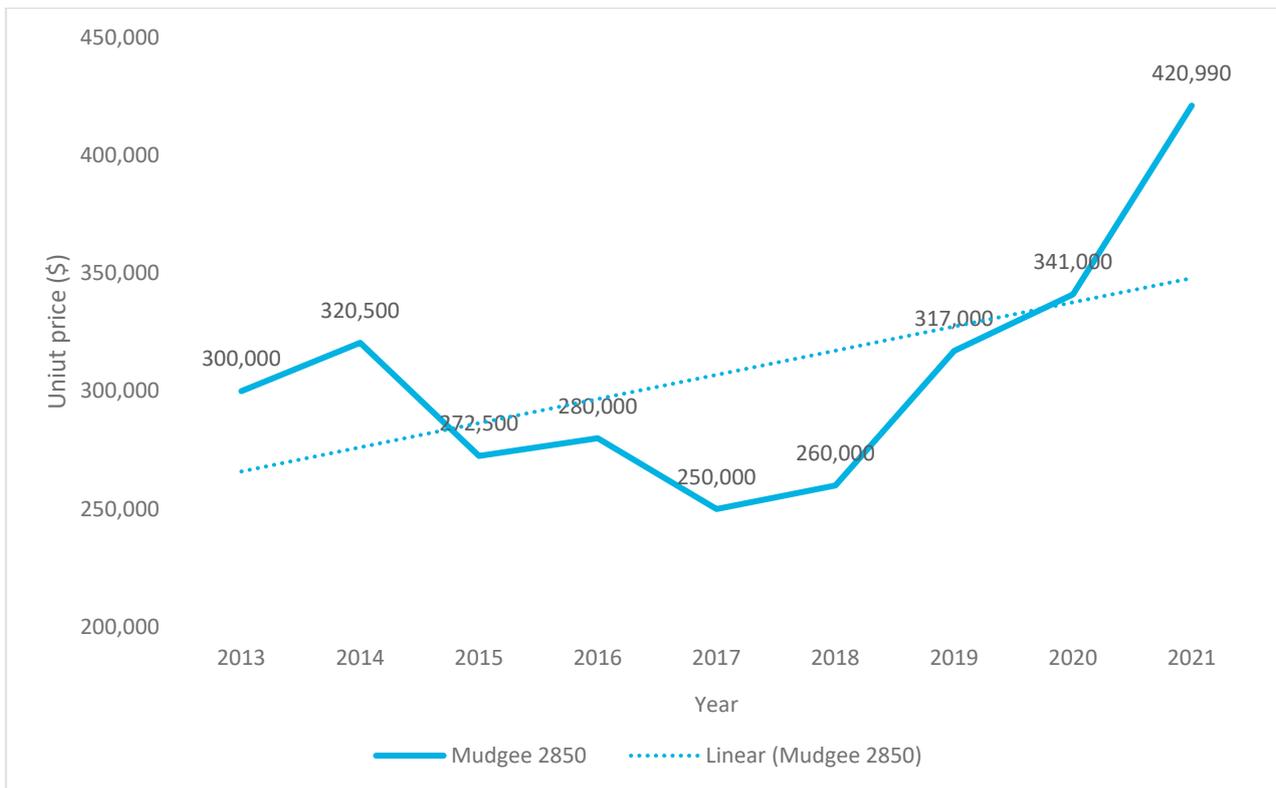
Analysis of trend data for the three communities shows a steady increase in housing prices across the three communities. Within the local area, the most significant increase in median house price occurred in Mudgee between 2018 and 2021 (53.1%), with 28.7% growth between 2020 and 2021. Analysis of trend data for Mudgee and Gulgong suggests the housing market in both communities is likely influenced by similar forces, although it is noted that the sharp increase in property prices in 2016 in Gulgong followed by the sharp decline in 2017 is not reflected in the Mudgee data. The sharp increase in median property price in Gulgong (and also Dunedoo) may be attributable to the sale of one or more high value properties in the location.



Source: realestate.com.au/neighbourhoods

Figure 8.1 Median property price trends for houses, 2013–2021

The median unit price in Mudgee (Figure 8.2) fluctuated between 2013 and 2021, likely in parallel with the release of new developments to the market and demand from the construction industry sector. The increase in median unit price in Mudgee between 2018 and 2021 follows a similar trend to median house price.



Source: realestate.com.au/neighbourhoods

Figure 8.2 Median property price trends for units, 2013–2021

A snapshot of property availability (purchase and rent) in the local area can be derived from analysis of data on realestate.com. On 22 June 2022, there were 193 properties for sale and 51 properties for rent in the local area (REA Group 2022). Most of these properties were located within the suburb of Mudgee (149 properties for sale and 51 properties for rent), and Gulgong (26 properties for sale and 3 properties for rent). Property availability in selected suburbs within the local area is presented in Table 8.7.

Table 8.7 Properties for sale and rent in the local area, 22 June 2022

Suburb	Number of properties for sale	Number of properties for rent
Local area		
Birriwa	0	0
Merotherie	0	0
Gulgong	26	3
Dunedoo	18	3
Mudgee	149	45
Total	193	51

Source: REA Group 2022.

8.6.3 Residential vacancy rates

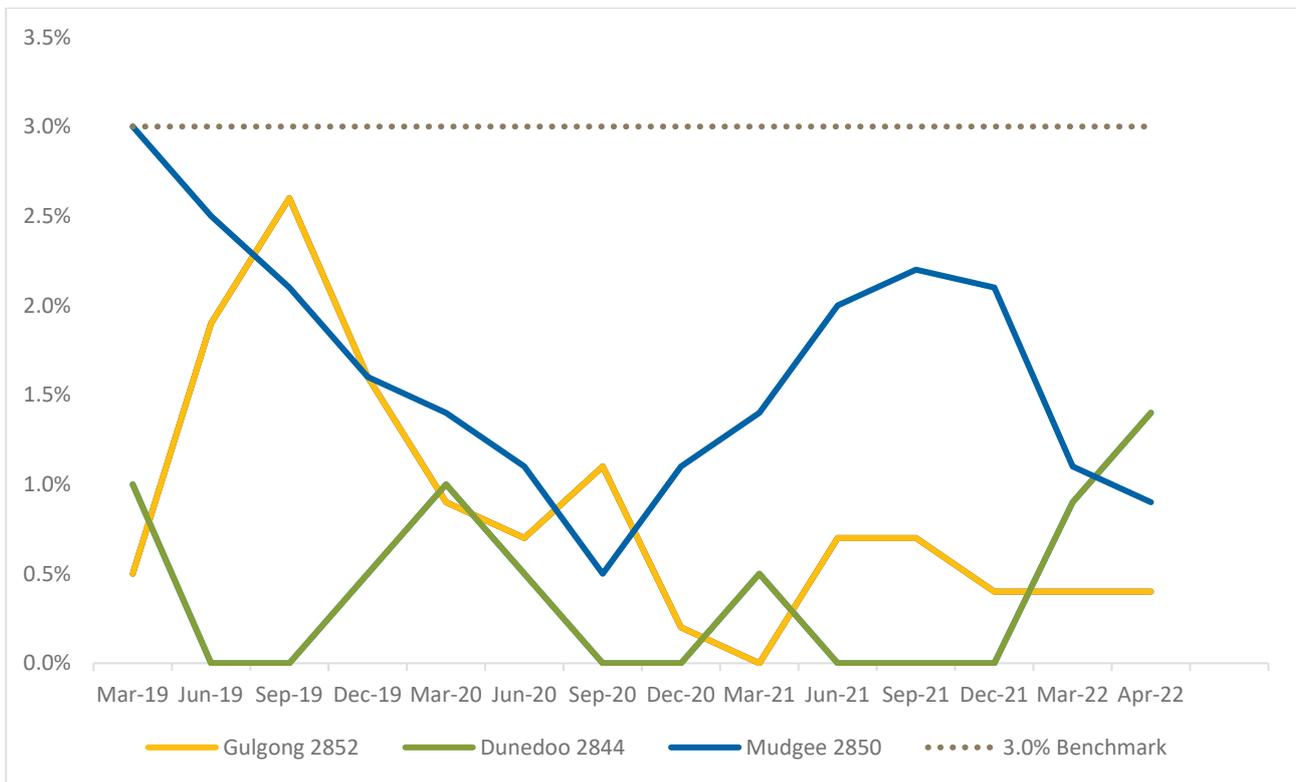
According to Real-estate institute of NSW (REINSW), rental vacancy rates are traditional market indicators that “measure the proportion of residential properties vacant and available for rent at any point in time” (REINSW 2019). A higher vacancy rate indicates that there are a higher proportion of vacant (unoccupied) units, based on the total number of units in an area. Vacancy rates under 3.0% are low and indicate a tight rental market with an undersupply rental option while vacancy rates above 3.0% indicate an oversupply of rental options. A rental market with a vacancy rate of 3.0% is considered at equilibrium (Brewsters Property Group (n.d.)).

The search engine on SQM Research (2020) only provides the option to search by postcode and as such results for the postcode of the two suburbs within the local area (2844) may be skewed by suburbs outside of the local area that share the same postcode.

The residential vacancy rate trends for postcode 2844 Dunedoo, 2852 Gulgong and 2850 Mudgee is presented in Figure 8.3 for the period March 2019 to May 2022. The vacancy rate in the local area during this period was consistently below the 3.0% benchmark, indicating a tight rental market with an undersupply of rental housing during that time. Whilst the data shows considerable fluctuation in rental vacancy rates across the three communities, within Gulgong and Dunedoo overall rental vacancy rates have steadily declined and Mudgee has had a slight increase from 0.9% in April 2022 to 1.2% in May 2022.

In May 2022 there were three rental vacancies in Dunedoo, three in Gulgong and 45 in Mudgee. The findings of SIA interviews conducted with real-estate agents in the local area confirmed the presence of a tight housing market and limited rental availability. SIA interview outcomes suggest the following factors are influencing current housing market conditions in Mudgee and Gulgong and to a lesser extent Dunedoo:

- reduction in available rental stock as properties are purchased as holiday homes or transferred into the short-term stay mark (eg Airbnb);
- demand generated by major projects occurring in or nearby the local area (eg the construction of Wellington Solar Farm and various inland rail projects); and
- an increase in-migration due to the Covid-19 pandemic and the corresponding increase in the attractiveness of regional NSW communities as permanent resident locations.



Source: SQM Research 2021, Residential Vacancy Rates.

Figure 8.3 Residential vacancy rate trends, 2018–2021

8.7 New housing and rental supply

The NSW government releases household projections and corresponding dwelling projections for all LGAs in NSW. Household requirements and population growth forecasts in the LGAs of the regional area and area of reference are presented in Table 8.8.

Forecasts for the LGAs of Mid-Western Regional, and Dubbo Regional suggest an additional 1,949 dwellings and 4,814 dwellings respectively would be required between 2016 and 2041 to meet the projected population growth and shifting patterns in household structure and number (DPIE 2019). Forecasts for Warrumbungle LGA suggest a decrease in 870 dwellings from 2016–2041 in response to decrease in population growth and shifting patterns in household structures and number. Household forecasts for the area of reference suggest an increase of 5,893 required dwellings from 2016–2041.

Table 8.8 Household requirement and population growth forecasts for area of reference, 2016–2041

	2016	2021	2026	2031	2036	2041
Mid-Western Regional LGA						
Total households	10,219	10,649	11,017	11,358	11,664	11,887
Average household size	2.37	2.33	2.30	2.26	2.23	2.21
Required dwellings	11,943	12,446	12,877	13,274	13,633	13,892
Total dwelling change (required new dwellings)		503	431	397	359	259
Warrumbungle LGA						
Total households	4,181	4,102	3,996	3,853	3,667	3,450
Average household size	2.25	2.19	2.15	2.11	2.08	2.05
Required dwellings	4,979	4,886	4,759	4,589	4,367	4,109
Total dwelling change (required new dwellings)		-93	-127	-170	-222	-258
Dubbo Regional LGA						
Total households	19,953	21,073	22,001	22,904	23,691	24,284
Average household size	2.49	2.46	2.43	2.39	2.35	2.32
Required dwellings	22,180	23,425	24,457	25,460	26,335	26,994
Total dwelling change (required new dwellings)		1,245	1,032	1,003	875	659
Area of reference						
Total households	34,353	35,824	37,014	38,115	39,022	39,621
Average household size				NA		
Required dwellings	39,102	40,757	42,093	43,323	44,335	44,995
Total dwelling change (required new dwellings)		1,655	1,336	1,230	1,012	660

Source: DPIE 2019, NSW 2019 Population projections.

- Notes:
1. The projected population has been determined by using the ABS ERP population count which takes Census counts of people where they usually live (accounting for interstate visitors and removing overseas visitors), adjusts for Census undercount and overcount using the Census Post Enumeration Survey (PES), adds in Australians who are temporarily overseas, and applies further demographic adjustments.
 2. Average household size is taken from NSW DPIE 2019 but there is a mathematical discrepancy – average household size is not equal to the total population divided by the total number of households.

Recent growth in housing supply can be estimated from residential building approval figures for the regional area. In the year ending September 2022, there were 12 approvals for new houses and 2 approvals for other residential buildings (equalling a total of 14 new residential building approvals for the year). This represents a significant decrease of 436 total approvals from the previous year. Total residential building approvals in the local area are presented in see Table 8.9.

Table 8.9 Total residential building approvals in LGA, 2012–2022

	2012– 2013	2013– 2014	2014– 2015	2015– 2016	2016– 2017	2017– 2018	2018– 2019	2019– 2020	2020– 2021	2021– 2022 SEP FYTD
Mid-Western Regional LGA										
New houses	78	80	51	14	23	7	14	18	23	10
New other residential	10	44	0	0	0	2	4	4	18	2
Total	90	124	52	17	23	9	19	22	42	13
Warrumbungle LGA										
New houses	13	12	11	5	4	9	8	1	212	2
New other residential	4	0	0	0	0	0	0	0	197	0
Total	17	12	12	5	4	9	8	1	413	2
Regional area total										
New houses	91	92	62	19	27	16	22	19	235	12
New other residential	14	44	0	0	0	2	4	4	215	2
Total	105	136	62	19	27	18	26	23	450	14

Source: ABS 2022, 8731.0 – Building Approvals, Australia.

8.8 Short-term accommodation

The term short-term accommodation refers to accommodation options that are typically provided to visitors or tenants for a short period of time; for example, motels, hotels, serviced apartments, bed and breakfast, self-contained homes, caravan and camping parks. The length of tenancy in these forms of accommodation can often extend to lengthy stays, depending on accommodation availability, price and personal circumstances.

Short-term accommodation providers in the local and regional area service a number of different industry sectors including tourism, mining, renewable energy and agricultural industry sectors. The MWRC estimates there are currently 3,200 rooms of short-stay accommodation in the Mid-Western Regional LGA, with an average occupancy rate of over 80% (2022 SIA interview program).

Within the local area short-term accommodation is concentrated in the larger communities of Dunedoo, Gulgong and Mudgee and consists of a combination of hotels, motels, bed and breakfast accommodation, farm-stay, holiday home rentals (AirBNB) and caravan parks (Table 8.10). The majority of short stay accommodation in the Mid-Western LGA is concentrated in and nearby the town of Mudgee.

The most abundant form of short-term accommodation in the local and regional area is private holiday rentals through platforms such as Airbnb and booking.com. Analysis of short-term accommodation data suggests that in 2022 there are more than 500 active Airbnb rentals in the Mid-Western LGA including an estimated 260 properties in Mudgee and 13 properties in Gulgong. There are an estimated 40 Airbnb properties in the Warrumbungle LGA including nine properties in Dunedoo. The findings of SIA interviews with service providers, real estate agents and the MWRC suggests that the number of Airbnb properties in the Mid-Western LGA has increased substantially in the past three to five years. There is a trend of properties being purchased and transferred out of the stock of private rental or owner-occupied housing and into the short-term accommodation or holiday rental market (2022 SIA interview program).

In 2022 ACEN undertook a survey of short-term accommodation providers in the local area, specifically in the communities of Dunedoo, Gulgong and Mudgee.

Short-term accommodation in the local area is summarised in Table 8.10.

Table 8.10 Tourist accommodation, 2021

Suburb	Hotel/motel	Caravan park	Bed & breakfast	Farm-stay/ homestay	Holiday homes/ Airbnb
Local area					
Birriwa	✘	✘	✘	✘	✔
Merotherie	✘	✘	✘	✘	✘
Gulgong	✔	✔	✔	✔	✔
Dunedoo	✔	✔	✔	✘	✔
Mudgee	✔	✔	✔	✔	✔
Area of reference					
Mid-Western LGA	✔	✔	✔	✔	✔
Warrumbungle LGA	✔	✔	✔	✔	✔
Dubbo Regional LGA	✔	✔	✔	✔	✔

Source: Google Travel 2022, Airbnb 2022

9 Local business and industry

9.1 Industry of employment

The top industries of employment within the local area and regional area are presented in Table 9.1. In 2016 the mining industry sector had the largest employment share in the local area (16.3%), followed by the retail trade industry sector (11.2%) and the health care and social assistance industry sector (10.3%). In comparison the industry sectors with the largest employment share in the regional area in 2016 were mining (11.4%) agriculture, forestry and fishing (13.7%) and other services (13.7%).

Table 9.1 Industry of employment, 2016

Industry	Local area	Regional area	NSW
Agriculture, forestry and fishing	5.2%	13.7%	2.1%
Mining	16.3%	11.4%	0.9%
Manufacturing	3.9%	3.7%	5.8%
Electricity, gas, water and waste services	1.1%	1.0%	0.9%
Construction	7.5%	7.0%	8.4%
Wholesale trade	2.4%	1.9%	3.1%
Retail trade	11.2%	9.8%	9.7%
Accommodation and food services	8.8%	7.2%	7.1%
Transport, postal and warehousing	2.7%	2.9%	4.7%
Information media and telecommunications	1.0%	0.8%	2.2%
Financial and insurance services	1.1%	0.9%	4.9%
Rental, hiring and real estate services	1.2%	1.0%	1.8%
Professional, scientific and technical services	3.0%	3.3%	8.1%
Administrative and support services	2.9%	2.6%	3.5%
Public administration and safety	4.4%	5.3%	6.0%
Education and training	8.1%	8.6%	8.4%
Health care and social assistance	10.3%	10.5%	12.5%
Arts and recreation services	1.2%	1.0%	1.5%
Other services	5.3%	13.7%	3.7%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

9.2 Registered businesses

The number of registered businesses by employment size and turnover range in the regional area is provided in Table 9.2 and Table 9.3. In 2022, there were a total of 3,872 registered businesses within the regional area consisting of 1,182 businesses in Warrumbungle LGA and 2,690 businesses in the Mid-Western Regional LGA. Of registered businesses within the Warrumbungle LGA, 99.2% were classed as small businesses (ie employing fewer than 20 people or non-employed) compared to 98.3% in the Mid-Western Regional LGA.

Business counts for each noted LGA were evenly spread across the referenced turnover ranges. The Mid-Western Regional LGA had a higher proportion of businesses in the \$2M or more turnover range (5.1%) compared to the Warrumbungle LGA (2.5%).

Table 9.2 Registered businesses by employment size in the regional area, 2022

Area	Non-employed	1–19 employees	20–199 employees	200+ employees	Total
Mid-Western Regional LGA	59.6%	38.7%	1.7%	0.0%	2,690
Warrumbungle LGA	64.9%	34.3%	0.5%	0.0%	1,182

Source: ABS 2021, 8165.0—Counts of Australian Businesses, including Entries and Exits, June 2016 to June 2020.

Table 9.3 Registered businesses by turnover range, regional area 2021

Area	\$0 to less than \$50k	\$50k to less than 200k	\$200k to less than \$2m	\$2m or more	Total number
Mid-Western Regional LGA	31%	31.7%	32.4%	5.1%	2,690
Warrumbungle LGA	27.9%	34.3%	35.3%	2.5%	1,182

Source: ABS 2021, 8165.0—Counts of Australian Businesses, including Entries and Exits, June 2016 to June 2020.

Registered businesses by industry sector in the regional area are presented in Table 9.4. In 2016 the industry sector in the Mid-Western Regional LGA and the Warrumbungle LGA with the largest share of registered businesses was the agriculture, forestry, and fishing industry (35.7% and 58.2% respectively). The construction industry sector had the second largest share of registered businesses in the Mid-Western Regional LGA and the Warrumbungle LGA (14.6% and 8.0% respectively). It is notable that despite the strong employment share in the mining industry sector in the Mid-Western LGA, there are few registered businesses in the sector.

Table 9.4 Registered businesses by industry, regional area, 2020

Industry sector	Mid-Western Regional LGA	Warrumbungle LGA
Agriculture, forestry and fishing	35.7%	58.2%
Mining	1.0%	0.0%
Manufacturing	3.9%	2.0%
Electricity, gas, water and waste services	0.2%	0.3%
Construction	14.6%	8.0%
Wholesale trade	2.0%	1.7%
Retail trade	5.4%	4.2%
Accommodation and food services	4.9%	4.5%
Transport, postal and warehousing	3.7%	6.0%
Information media and telecommunications	0.3%	0.3%
Financial and insurance services	2.1%	0.3%
Rental, hiring and real estate services	6.4%	4.0%
Professional, scientific and technical services	6.6%	3.2%
Administrative and support services	3.0%	1.5%
Public administration and safety	0.2%	0.0%
Education and training	0.9%	0.8%
Health Care and Social Assistance	3.2%	2.0%
Arts and recreation services	1.1%	0.4%
Other services	4.9%	3.1%
Total number	2,690	1,182

Source: ABS 2020, 8165.0—Counts of Australian Businesses, including Entries and Exits, June 2016 to June 2020.

Notes: Excludes businesses with industry 'not stated'.

10 Health and community well-being

10.1 Community health

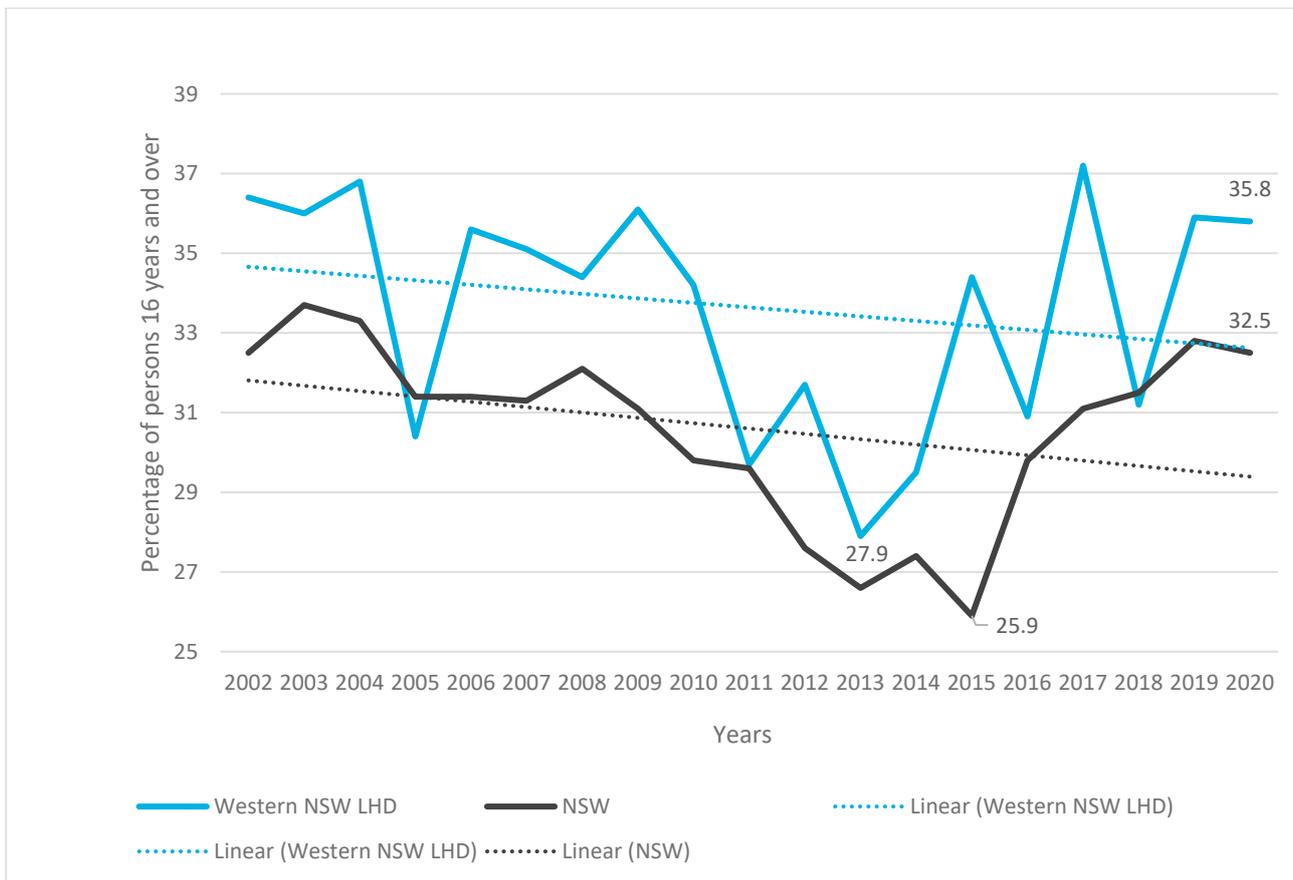
Social determinants of health, described as “the circumstances in which people grow, live, work, age, and the systems put in place to deal with illness...which are shaped by political, social, and economic forces” (AIHW 2020), are measures of the health and wellbeing of a population. These measures include factors such as conditions of employment, provision of social services and support, and socioeconomic position.

Although the local area and regional area have a slightly lower level of unemployment compared to greater NSW, there are greater rates of youth unemployment, relatively more households with low income and fewer people in high-skill occupations compared to the rest of NSW, suggesting higher rates of socio-economic disadvantage. Median individual and median household income levels in the local area and regional area are lower than NSW. Furthermore, the provision of social infrastructure and services particularly health related services is less comprehensive in comparison to more urban regions of NSW, necessitating travel outside of the regional area to access specialist health and community services eg at a referral hospital in Dubbo.

10.1.1 Physical health

Three major health risk factors can be used as indicators of population health: alcohol consumption, smoking, and obesity. Trend data is not available at the LGA level, rather at the LHD level. Health trends through the Western NSW LHD are assumed to reflect trends within the local and regional areas. The proportion of people in the Western NSW LHD and NSW who consumed alcohol at levels considered to be a high risk to health is presented in Figure 10.1 for the period 2002 to 2020.

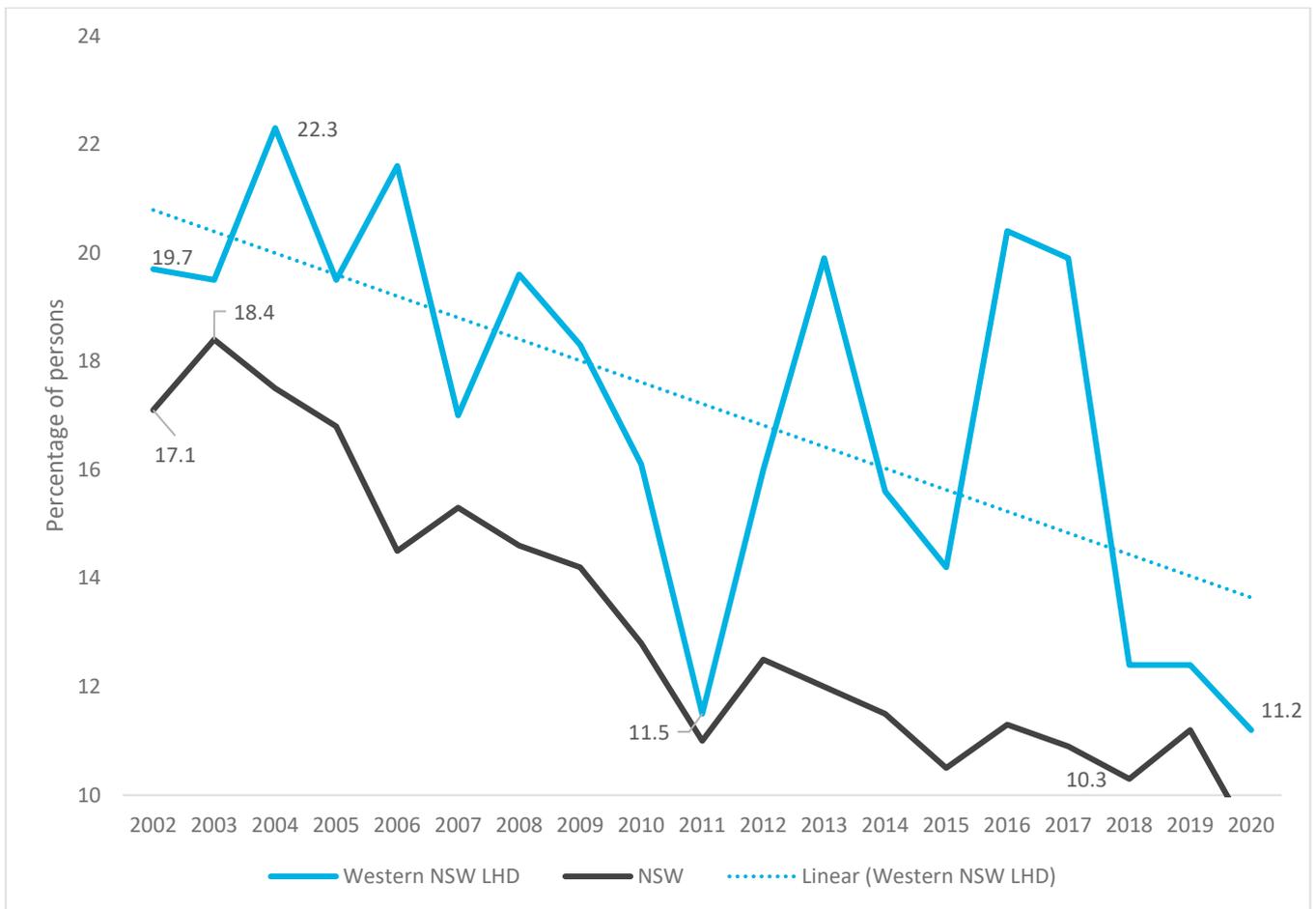
Trends in relation to the number of people who consume alcohol at levels posing a long-term health risk in the Western NSW LHD show greater fluctuation and affect a consistently higher proportion of the population than in NSW. Between 2002 and 2020 in the Western NSW LHD the percentage of persons 16 years and over consuming alcohol at risk levels fluctuated between a low of 27.9% in 2013 to a high of 37.2% in 2018. In comparison in the same reference period in NSW the proportion of persons 16 years and over consuming alcohol at risk levels fluctuated between a high of 32.8% (2019) to a low of 25.9% (2015). In 2020, the percentage of people who consumed alcohol at risk levels in the Western NSW LHD were higher than NSW (35.8% compared to 32.5%).



Source: NSW Health 2020, Health Statistics NSW.

Figure 10.1 Alcohol consumption at levels posing a long-term health risk (proportion of persons aged 16 years and older), 2002–2020

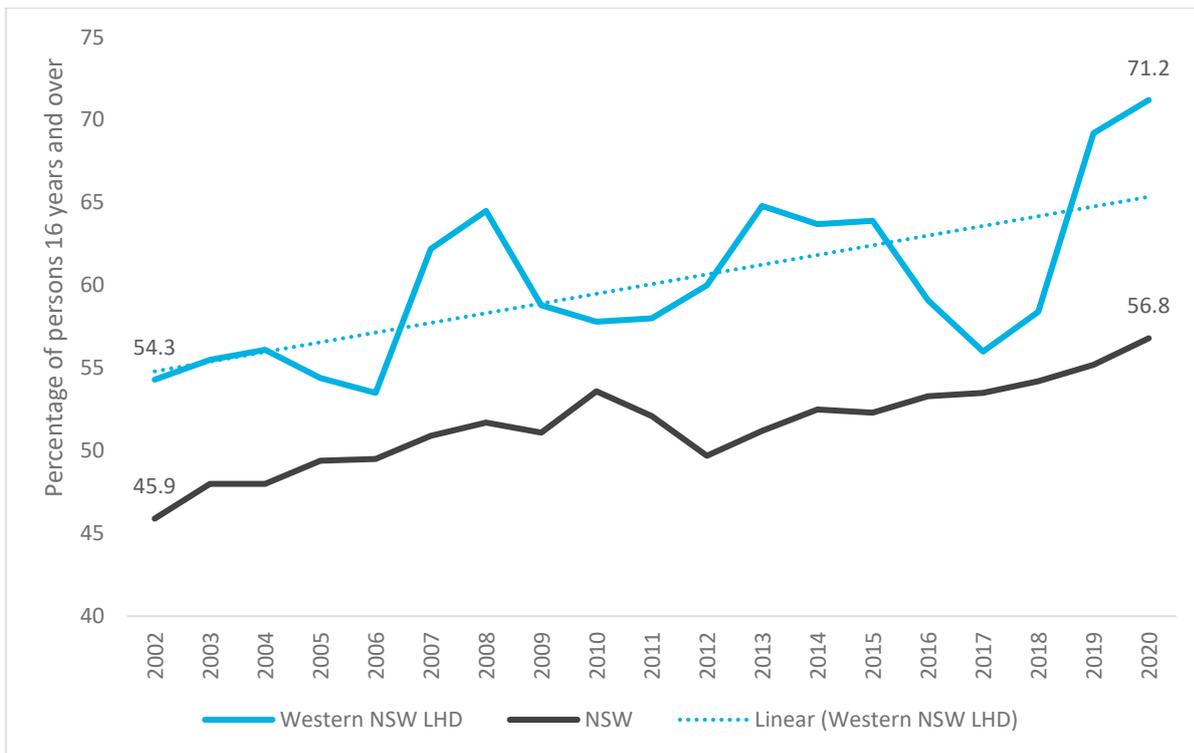
Trend data for daily smoking habits in adults in the Western NSW LHD and NSW is presented in Figure 10.2. Between 2002 and 2020 the proportion of daily smokers in the Western NSW LHD was relatively consistent with NSW. Trend data shows a gradual decrease in the prevalence of smoking in both the Western NSW LHD and NSW, although compared to NSW the Western NSW LHD shows greater variability including peaks in 2004–2006, 2012–2013 and again in 2015–2017.



Source: NSW Health 2020, Health Statistics NSW.

Figure 10.2 Daily smoking in adults (proportion of persons), 2002–2020

Between 2002 and 2020 the proportion of persons aged 16 and over in Western NSW LHD that reported being overweight or obese has been consistently higher than NSW and trending high. This trend is consistent with the NSW trend. In 2020, the percentage of the Western Health LHD reporting as obese peaked at 71.5% to 56.8% in NSW. Overweight and obesity trends for adults in Western NSW LHD are presented in Figure 10.3.



Source: NSW Health 2020, *Health Statistics NSW*.

Figure 10.3 Overweight or obese adults (proportion of persons aged 16 years and older), 2002–2020

10.1.2 Mental health

Information concerning mental health within the local and regional area is available within the Western NSW LHD and Primary Health Network (PHN) levels. The local and regional area are located within the Western NSW PHN, with data concerning patients of mental health services collected by Australian Institute of Health and Welfare (AIHW).

i Access to mental health services

The following data from the PHN demonstrates the number of patients residing within the Western NSW PHN who have claimed non-hospital Medicare-subsidised services, specifically mental health related Allied Health services, General Practitioner (GP) mental health and specialist mental health services (AIHW 2022). The following indicators were used to measure access to mental health care services in the area:

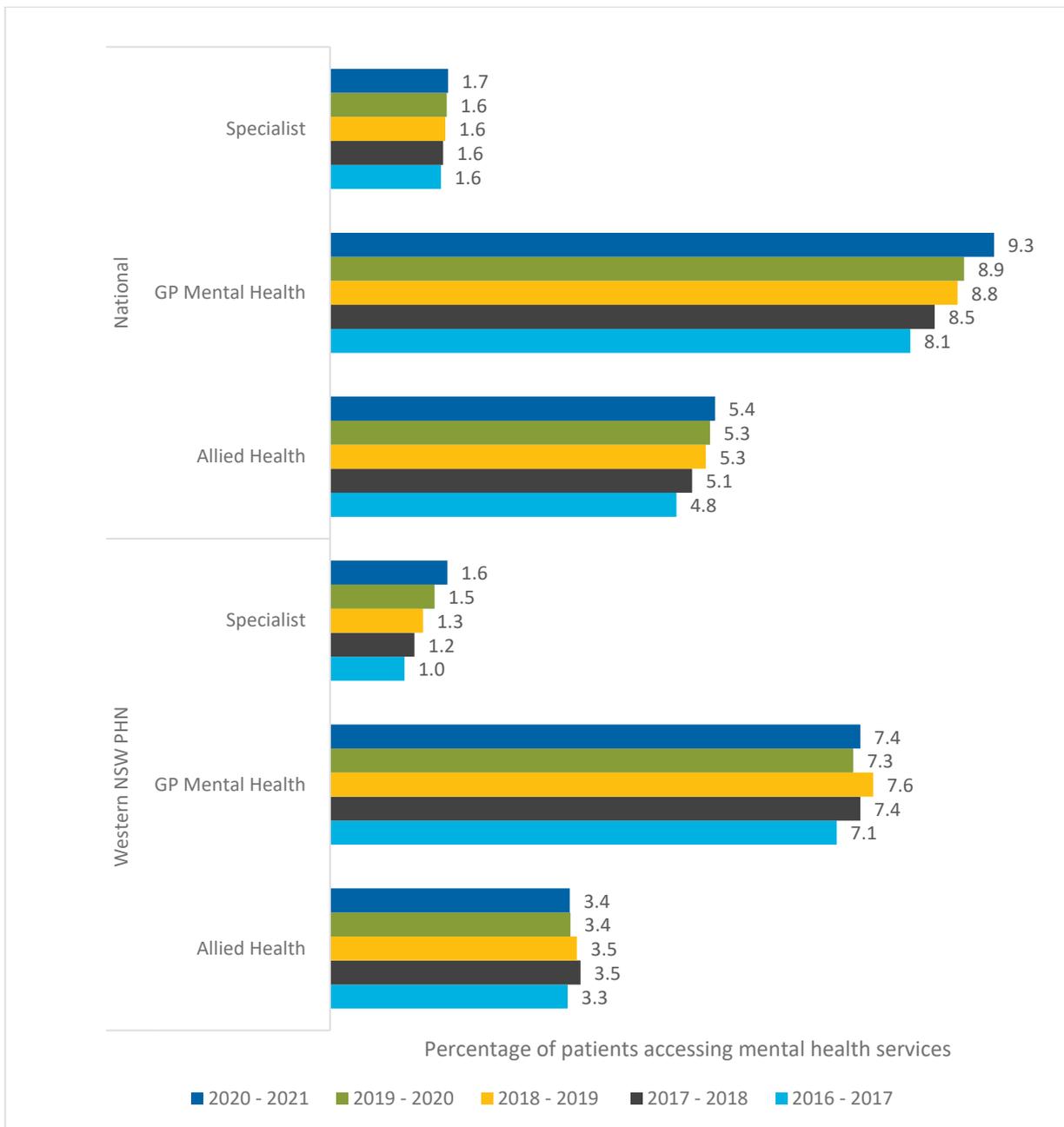
- Level 3 GP mental health – all persons;
- Level 2 allied health subtotal – mental health care – all persons; and
- Level 3 specialist (psychiatry) – all persons.

Figure 10.4 shows the percentage of patients who have accessed mental health services in the Western NSW PHN and NSW for the period 2016 to 2021. Between 2016 and 2021 the majority of patients accessing non-hospital Medicare-subsidised mental health services in the Western NSW PHN and nationally, accessed GP mental health services and allied health services. Only a small percentage of patients in the Western NSW PHN and nationally accessed specialist mental health services during this period.

The proportion of patients accessing GP mental health services in the Western NSW PHN and nationally increased between 2016 and 2021. However, the percentage of patients currently accessing GP mental health services in the Western NSW PHN (7.4%) is below the national rate (9.3%).

The percentage of patients in the Western NSW PHN accessing specialist services increased between 2016 and 2021 from 1.0% to 1.6%. The national trend for this period remained relatively stable at 1.6%. Currently (ie 2021) the percentage of patients accessing specialist mental health services in the Western NSW PHN and nationally is closely aligned at 1.6% and 1.7% respectively.

Trend data for the Western NSW PHN shows a consistently lower proportion of persons accessing allied mental health services compared to national rates. The proportion of persons nationally accessing allied mental health care services between 2016 and 2021 increased from 4.8% in 2016–2017 to 5.4% in 2020–2021. In comparison, the proportion of persons in the Western NSW PHN accessing allied mental health services increased from 3.3% in 2016–2017 to 3.5% in 2018–2019 before decreasing and stabilising at 3.4% from 2019–2020.

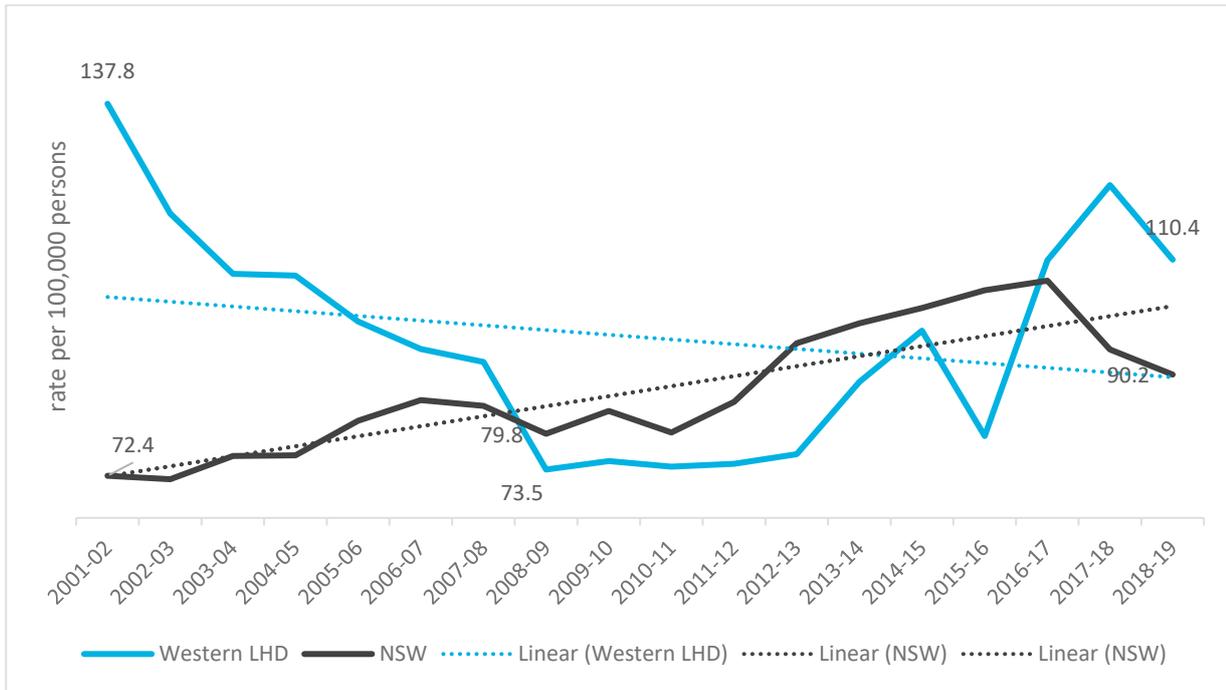


Source: AIHW 2022, Medicare-subsidised services, by PHN area: 2013–14 to 2020–21.

Figure 10.4 Percentage of patients who have claimed non-hospital Medicare-subsidised mental health services in Western NSW PHN and NSW 2016–2021

ii Incidences of self-harm

Data relating to the number of people that have been hospitalised due to self-harm is indicative of very poor and/or poorly managed mental health. Intentional self-harm hospitalisations trends in Western NSW LHD are substantially different to trends across NSW. Trend data for the Western NSW Local Health District (LHD) for the period 2002–2021 shows a steady decline in the rate of intentional self-harm hospitalisations from a peak of 137.8 per 100,000 persons in 2001–2002 to 110.4 per 100,000 in 2020–2021. In contrast, national trend data for the same period shows a steady increase in the rate of intentional self-harm hospitalisations from a low of 72.4 per 100,000 persons in 2001–2002 to 90.2 per 100,000 persons in 2020–2021, with a peak of 106.7 per 100,000 persons in 2016–2017. Data for intentional self-harm hospitalisations is presented in Figure 10.5.



Source: NSW Health 2020, *Health Statistics NSW*.

Figure 10.5 Intentional self-harm hospitalisations (rate per 100,000 persons of all ages), 2001–2019

10.2 Voluntary work

Volunteering rates can give an indication of social cohesion in a community, and willingness of people to help each other out. The volunteering rate in the local area (21.1%) is less than the regional area (23.6%) and the area of reference (21.4%), but well above the NSW (18.1%) average. This suggests above average social cohesion and/or willingness to help others. The proportion of persons who volunteered in the area of social influence is presented in Table 10.1.

Table 10.1 **Volunteering rates, 2016**

Location	Did voluntary work through an organisation or group (last 12 months)
Birriwa	32.5%
Merotherie	13.6%
Gulgong	20.8%
Dunedoo	29.1%
Mudgee	20.2%
Local area	21.1%
Mid-Western LGA	21.7%
Warrumbungle LGA	28.4%
Regional area	23.6%
Dubbo Regional LGA	19.9%
Area of reference	21.4%
NSW	18.1%

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

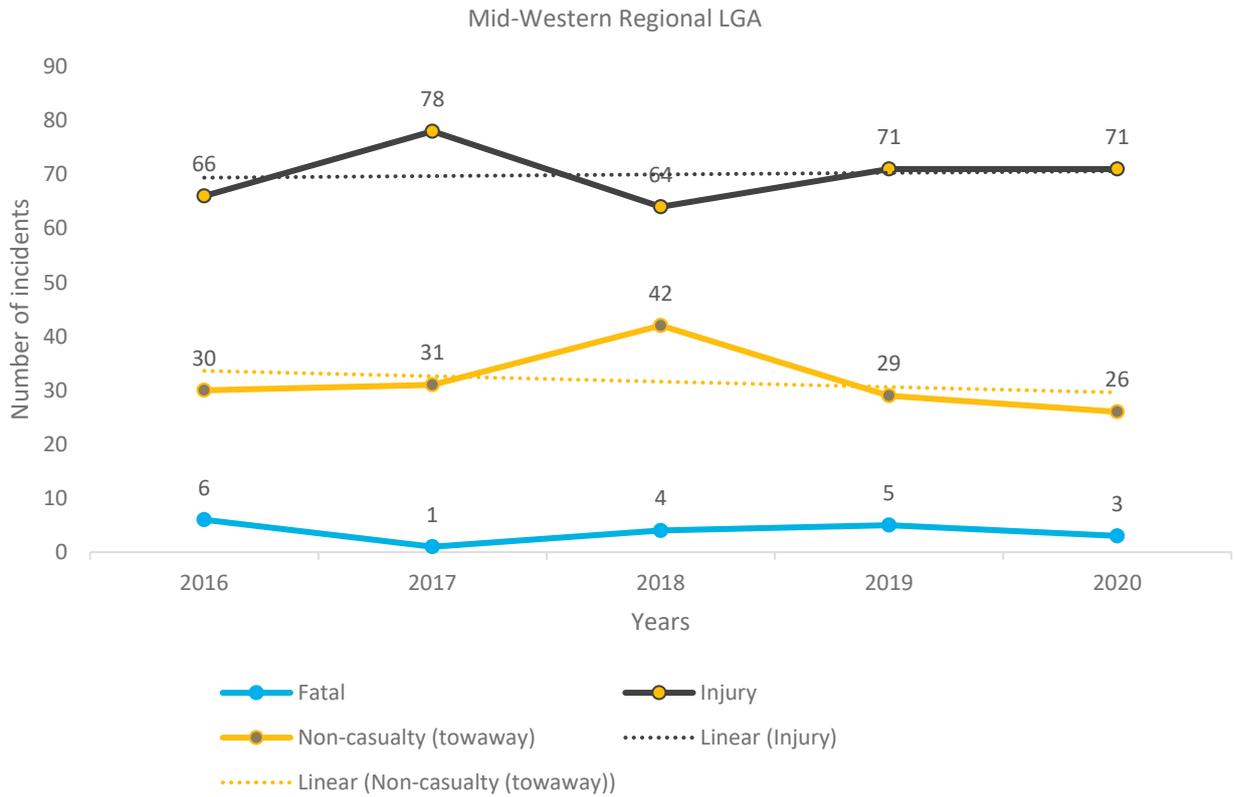
10.3 Road incidents

Road incident (crash) trend data is available at the LGA level and presented for the LGAs of Mid-Western Regional, Warrumbungle and Dubbo Regional for the following indicators:

- fatal incidents;
- incidents causing injury; and
- incidents requiring a tow-away and no casualties.

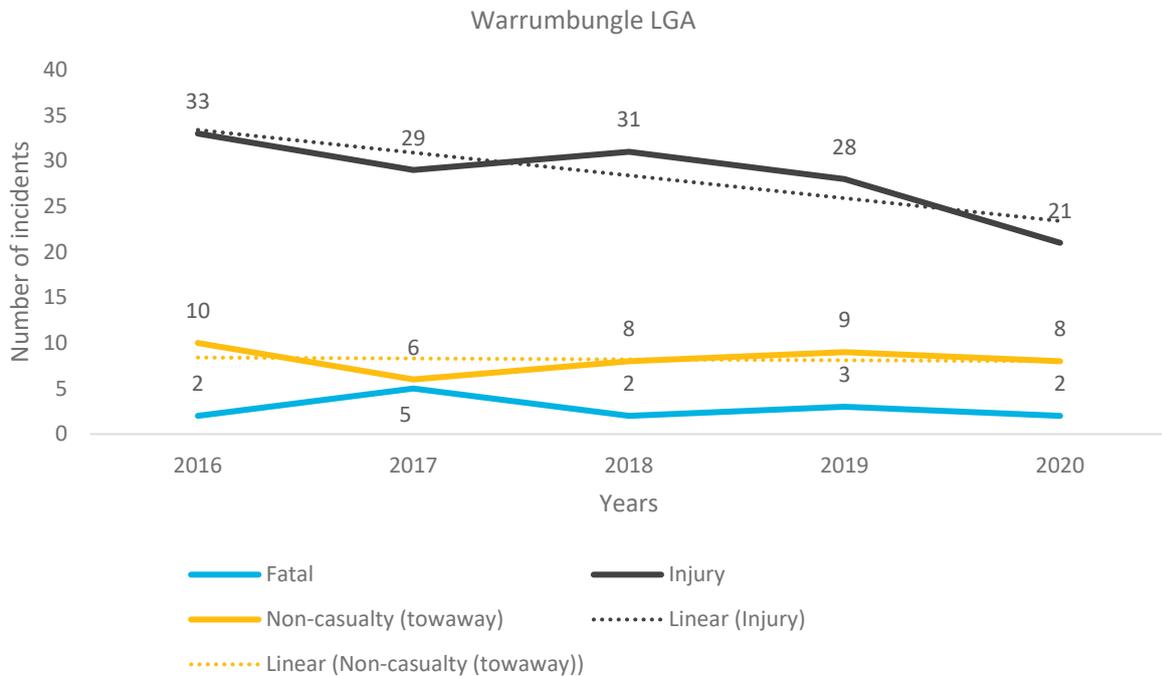
Between 2016 and 2020 the number of fatal or non-casualty road incidents in the Mid-Western Regional LGA declined (ie from 6 incidents to 3 incidents, and from 30 incidents to 26 incidents respectively). However, the number of road incidents causing injury increased during this period from 66 incidents in 2016 to 71 incidents in 2020. In comparison the number of road incidents in the LGAs of Warrumbungle and Dubbo Regional decreased across all reported indicators for the period 2016 to 2020.

Crash trends for the LGAs of Mid-Western Regional, Warrumbungle and Dubbo are presented in Figure 10.8.



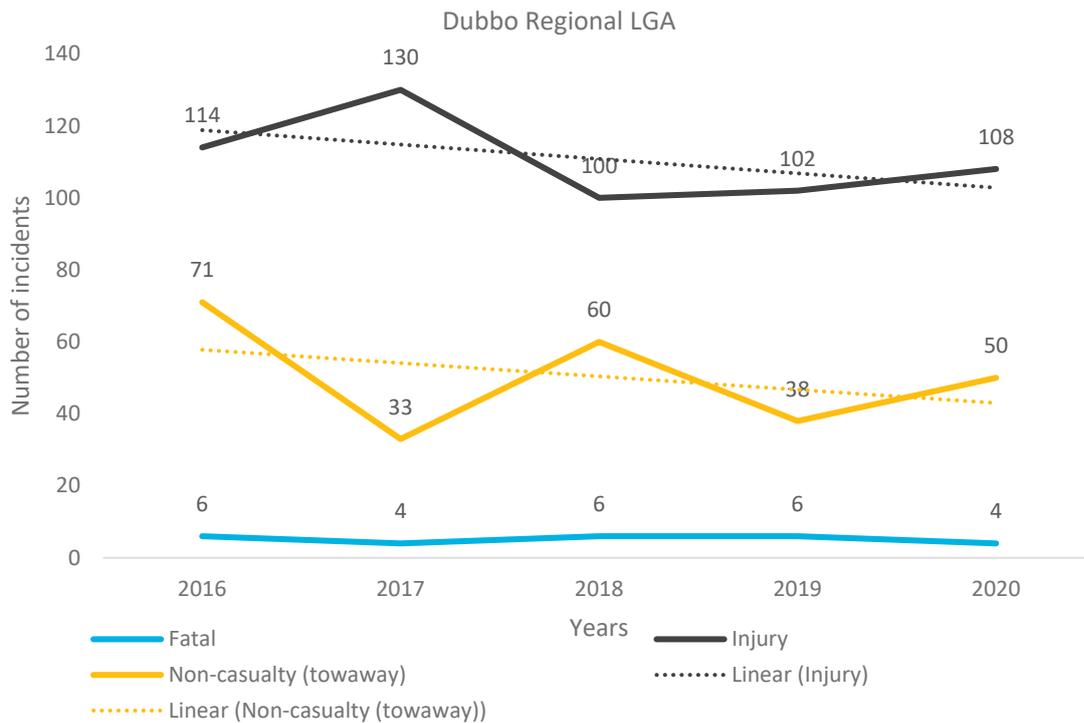
Source: TfNSW 2022, *Interactive Crash Statistics*.

Figure 10.6 Crash trends in Mid-Western Regional LGA, 2016–2020



Source: TfNSW 2022, *Interactive Crash Statistics*.

Figure 10.7 Crash trends in Warrumbungle LGA, 2016–2020



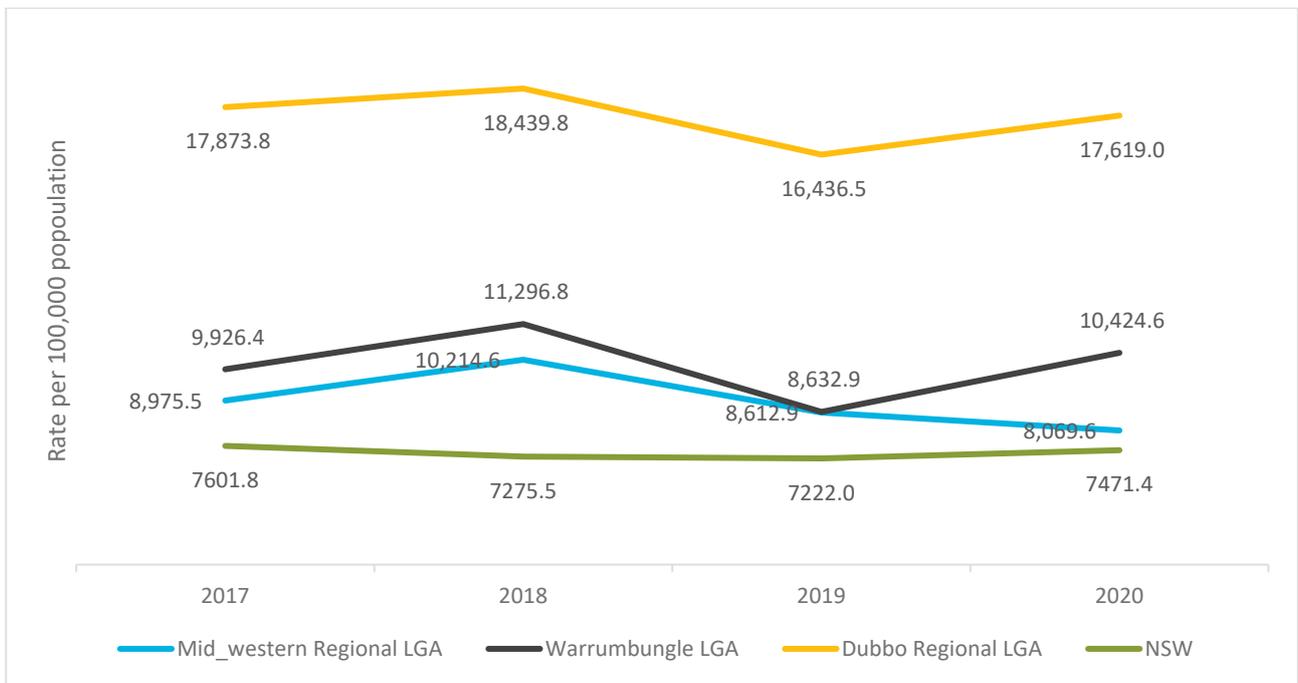
Source: TfNSW 2022, *Interactive Crash Statistics*.

Figure 10.8 Crash trends in Dubbo Regional LGA, 2016–2020

10.4 Community safety and crime

Data describing the incidence of crime in the regional area and NSW is presented in Figure 10.9 and sourced from the NSW Bureau of Crime Statistics and Research (BOCSAR). BOCSAR is a statistical and research agency within the Department of Communities and Justice. Data is only available at the LGA level.

Since 2016, the rate of total offences (per 100,000 people) in each of the LGAs of interest has been higher than the NSW average. In 2020, the rate of total offences (per 100,000 people) in Mid-Western Regional LGA was 8,069.6 compared to 10,424.6 in the Warrumbungle LGA and 7,471.4 in NSW.



Source: BOCSAR 2021 — NSW Local Government Area excel crime tables.

Notes: Total excludes transport regulatory offences.

Figure 10.9 Total offences rates per 100,000 population, 2016–2020

Table 10.2 and Figure 10.10 to Figure 10.12 show recorded offences (rate per 100,000 population) in the regional area and NSW. Recorded offence categories that have consistently had the highest rates in the Mid-Western Regional LGA and Warrumbungle LGA include theft, other offences, drug offences against Justice procedures and assault. Overall, offence rates in the regional area are higher than NSW, with the Warrumbungle LGA generally experiencing the highest recorded offence rates per 100,000 population.

Table 10.2 Crime trends, 2016–2020

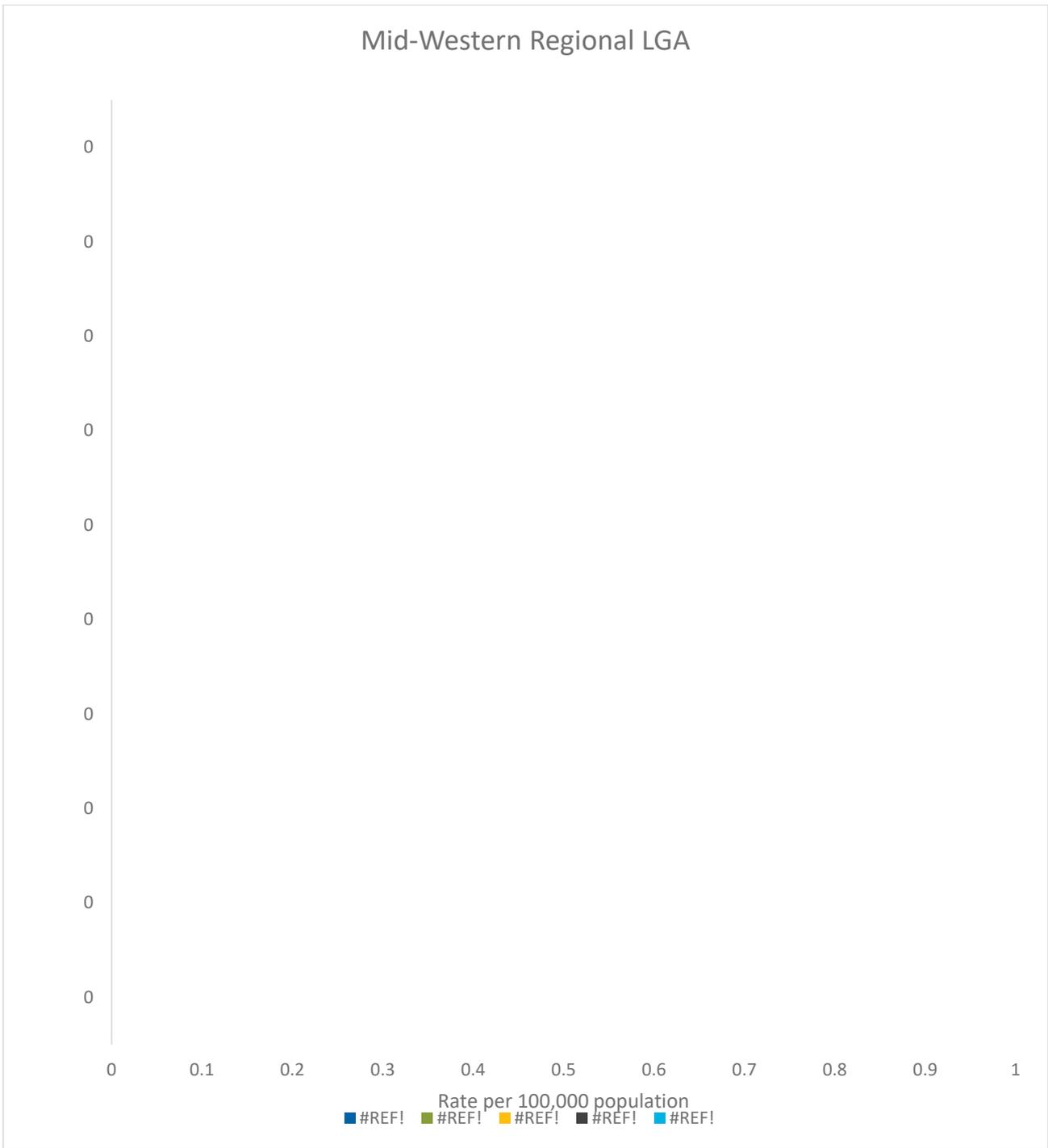
Offence category	Rate per 100,000 population				
	Jan – Dec 2016	Jan – Dec 2017	Jan – Dec 2018	Jan – Dec 2019	Jan – Dec 2020
Mid-Western Regional LGA					
Assault	950.6	1,013.7	1,176.3	1,048.6	1,107.7
Homicide	4.0	0.0	4.0	3.2	0.0
Robbery	4.0	12.0	11.9	7.9	3.9
Sexual offences	277.9	199.5	308.9	370.6	413.9
Theft	2,348.2	2,067.3	2,035.8	2,057.8	1,502.0
Malicious damage to property	1,023.1	1,209.2	918.9	839.7	745.1
Against justice procedures	882.1	961.8	1,156.5	1,293.0	942.2
Disorderly conduct	584.0	566.7	562.4	394.2	291.7
Drug offences	688.8	925.9	1,885.3	520.4	587.4
Other offences	1,921.3	2,019.4	2,154.6	2,077.5	2,475.7
Total	8,684.0	8,975.5	10,214.6	8,612.9	8,069.6
Warrumbungle LGA					
Assault	972.9	1,033.1	970.1	923.0	1,075.0
Homicide	0.0	10.7	0.0	0.0	10.9
Robbery	10.6	0.0	10.8	10.9	10.9
Sexual offences	401.9	340.8	258.7	380.1	228.0
Theft	2,464.0	2,460.3	2,835.0	2,323.8	2,703.9
Malicious damage to property	1,025.8	937.3	1,315.1	955.6	977.3
Against justice procedures	687.4	1,118.3	1,315.1	988.2	988.2
Disorderly conduct	549.9	511.2	786.9	390.9	749.3
Drug offences	4.1	1,448.5	1,519.9	553.8	542.9
Other offences	1,766.1	2,066.2	2,285.2	2,106.6	3,138.2
Total	7,882.7	9,926.4	11,296.8	8,632.9	10,424.6
NSW					
Assault	817.7	801.2	803.1	818.2	791.5
Homicide	1.4	1.0	1.3	1.4	1.2
Robbery	30.4	30.9	31.2	31.6	26.2

Table 10.2 Crime trends, 2016–2020

Offence category	Rate per 100,000 population				
	Jan – Dec 2016	Jan – Dec 2017	Jan – Dec 2018	Jan – Dec 2019	Jan – Dec 2020
Sexual offences	158.8	174.9	174.6	182.4	185.6
Theft	3,030.9	2,855.2	2,803.8	2,796.6	2,204.9
Malicious damage to property	812.3	777.7	734.2	706.7	658.3
Against justice procedures	851.3	814.3	828.2	921.4	981.7
Disorderly conduct	282.2	260.3	247.9	251.0	228.5
Drug offences	609.9	580.3	600.3	652.0	641.1
Other offences	1,003.6	980.1	1,006.2	1,059.6	1,183.8
Total	7,598.5	7,275.9	7,230.8	7,420.9	6,902.8

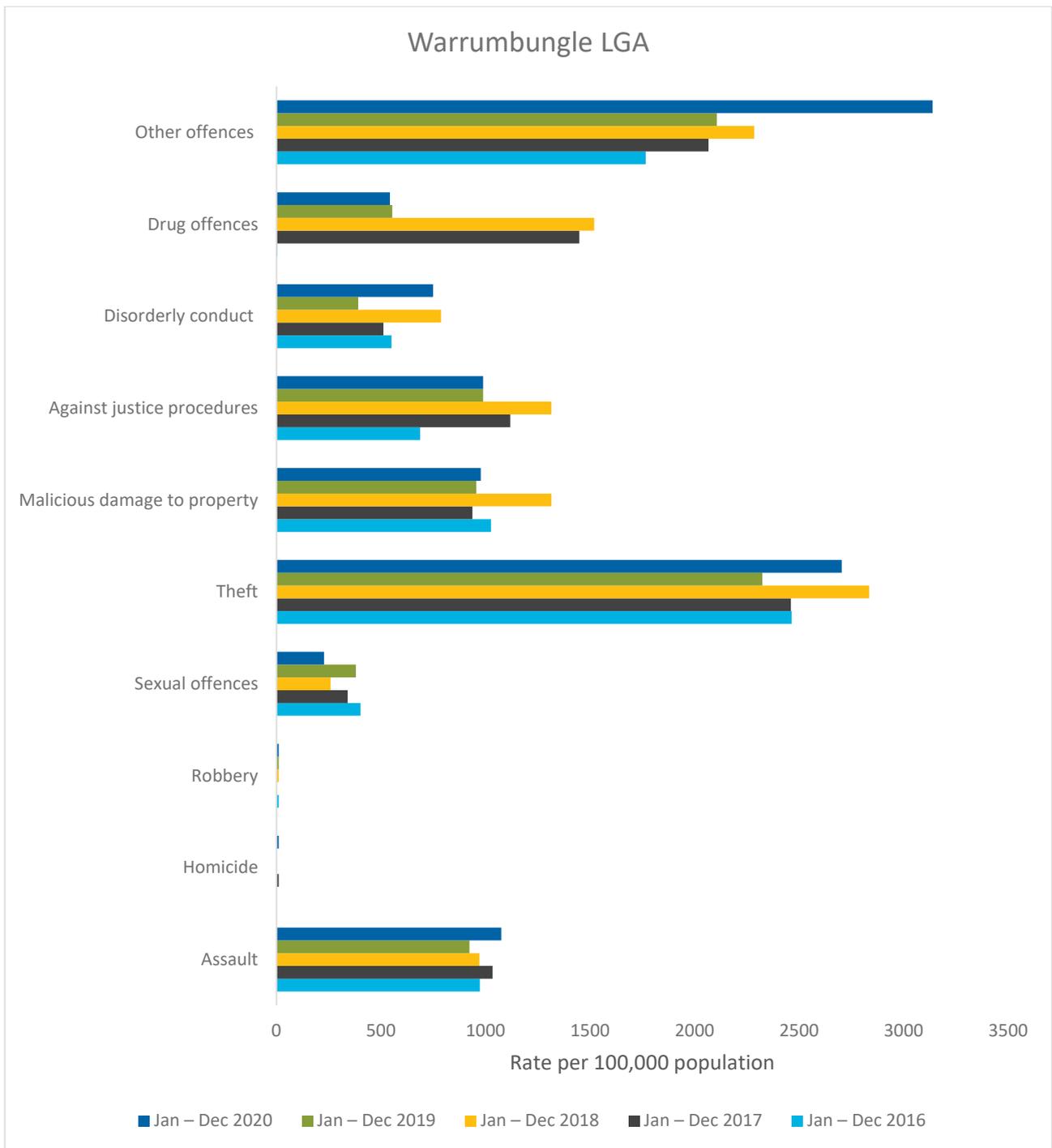
Source: BOCSAR 2022 — NSW Local Government Area excel crime tables.

Notes: Total excludes transport regulatory offences.



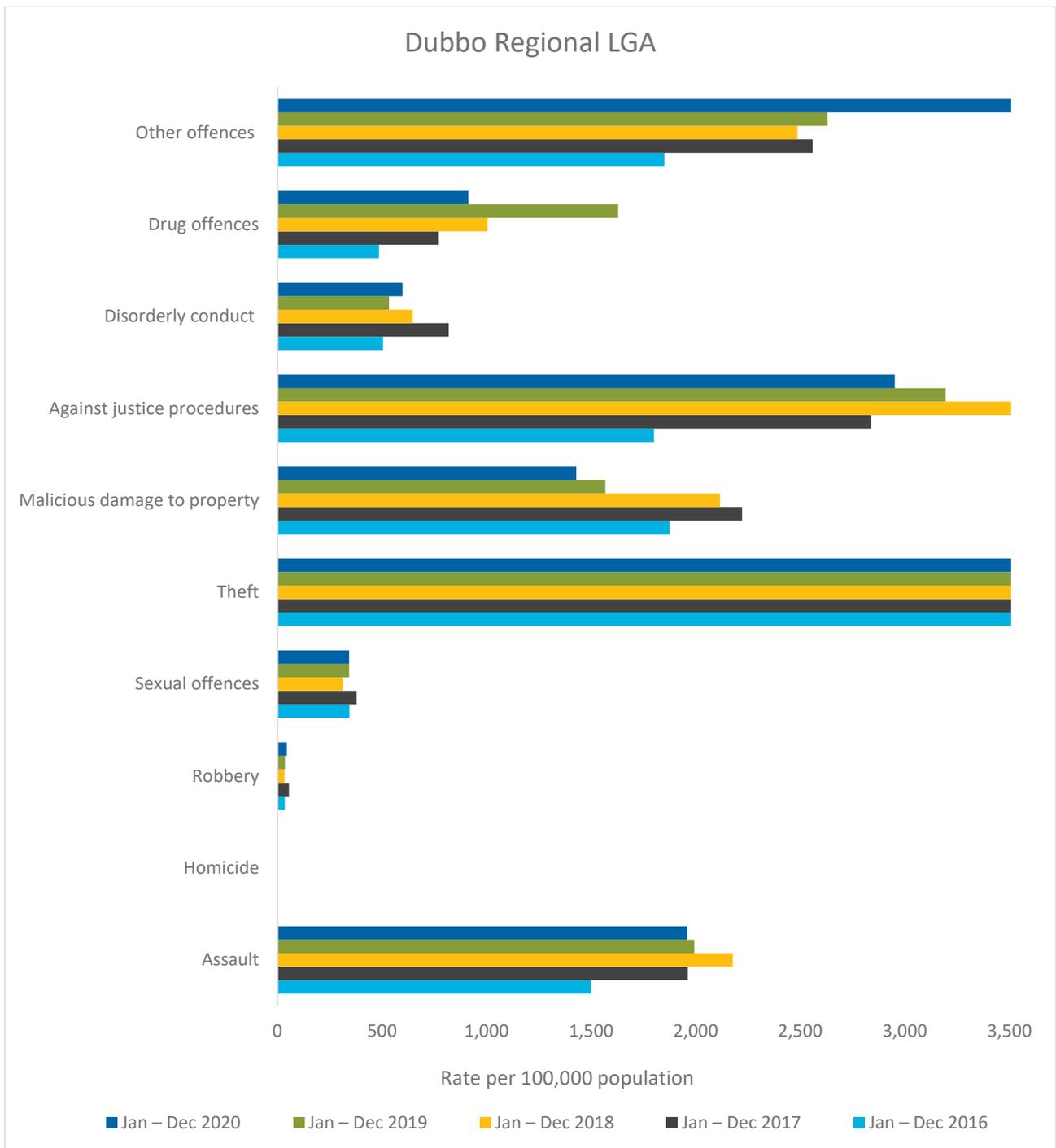
Source: NSW Department of Justice 2020, Bureau of Crime Statistics and Research— NSW Local Government Area excel crime tables.

Figure 10.10 Offences rates per 100,000 population in Mid-Western Regional LGA, 2016–2020



Source: NSW Department of Justice 2020, Bureau of Crime Statistics and Research— NSW Local Government Area excel crime tables.

Figure 10.11 Offences rates per 100,000 population in Warrumbungle LGA, 2016–2020



Source: NSW Department of Justice 2020, Bureau of Crime Statistics and Research— NSW Local Government Area excel crime tables.

Figure 10.12 Offences rates per 100,000 population in Dubbo Regional LGA, 2016–2020

11 Community strengths and vulnerabilities

A summary of the key strengths and vulnerabilities within the community based on the existing social conditions is provided in Table 11.1.

Table 11.1 Community strengths and vulnerabilities

Vulnerabilities	Themes	Strengths
<p>Tight labour market with low unemployment and youth unemployment rates.</p> <p>Ageing population.</p> <p>Retention of young people in local population.</p>	 <p>WORKFORCE</p>	<p>Access to education and training opportunities.</p> <p>Growing labour force.</p> <p>Sizeable indigenous population.</p> <p>Proximity to larger regional centres ie Dubbo.</p>
<p>Limited capacity in short-term accommodation options.</p> <p>Competing industry sector demands for short-term accommodation.</p> <p>Cumulative accommodation demands from multiple project developments.</p>	 <p>ACCOMMODATION</p>	<p>Diversity in short-term accommodation options.</p>
<p>Limited capacity in the current private rental market.</p> <p>Limited access to emergency accommodation for vulnerable groups.</p> <p>Size of private rental market and loss of private rental properties to short-term accommodation and holiday rental market.</p> <p>Presence of low-income households seeking access to affordable housing.</p>	 <p>HOUSING</p>	<p>Approval and delivery of housing developments.</p>
<p>Existing agricultural industry is at risk from significant land use change due to mining and renewable energy projects.</p>	 <p>BUSINESS</p>	<p>Industry diversity (ie rapidly growing tourism industry sector and renewable energy sector together with existing mining and agricultural sectors).</p>
<p>None identified</p>	 <p>PROCUREMENT</p>	<p>Capacity and capability of business sector to participate in small and large scale procurement.</p>
<p>Small size of communities increases vulnerability to structural changes and changes in cohesion due to influx of temporary workforces associated with major projects in the region.</p> <p>Sizeable indigenous population.</p> <p>Aging population.</p>	 <p>COMMUNITY</p>	<p>Safe.</p> <p>Strong and supportive community network.</p> <p>Declining population in smaller regional communities ie Gulgong and Dunedoo.</p>
<p>Rural character and amenity contributes considerably to community lifestyle.</p> <p>Limited regional public transport connections.</p> <p>Regional road conditions.</p>	 <p>LIFESTYLE</p>	<p>Access to education and training opportunities.</p> <p>Access to the three rural supplies store and cattle sale yards in Dunedoo.</p>

Acronyms

Acronym	Full
ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum, Assessment and Reporting Authority
AHRC	Australian Human Rights Commission
AIHW	Australian Institute of Health and Welfare
BOCSAR	Bureau of Crime Statistics and Research
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DPIE	Former NSW Department of Planning, Industry and Environment
DPE	NSW Department of Planning and Environment
EIS	Environmental Impact Statement
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
FYTD	Fiscal year-to-date
GP	General practitioner
IEO	Index of Education and Occupation
IER	Index of Economic Resources
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
LEP	Local Environmental Plan
LGA	Local Government Area
LHD	Local Health District
MP	Member of Parliament
NDIS	National Disability Insurance Scheme
NSW	New South Wales
PES	Post Enumeration Survey
PHN	Primary Health Network
REINSW	Real Estate Institute of New South Wales
SEIFA	Socio-Economic Indexes for Areas
SES	State Emergency Service
SIA	Social impact assessment
SIA Guideline	Social impact assessment guideline 2021
SSC	State Suburb Classification
the project	Birriwa Solar Farm and Battery Project
WHO	World Health Organisation

References

- ABC 2017, What happened to coolah-dunedoos Aboriginal people, viewed 25 March, <https://www.abc.net.au/news/2017-11-09/what-happened-to-coolah-dunedoos-aboriginal-people/90926>
- ABS 2006, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2011, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2011, Australian social trends March 2011: Year 12 Attainment. ABS cat no. 4102.0 Canberra: ABS, Australian Bureau of Statistics.
- ABS 2016a, Census of Population and Housing: General Community Profiles, Australian Bureau of Statistics.
- ABS 2016b, Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA), Australia, 2016, Australian Bureau of Statistics.
- ABS 2016c, Census of Population and Housing: Estimating homelessness, 2016, Australian Bureau of Statistics.
- ABS 2012, 4922.0 - Information Paper - A Statistical Definition of Homelessness, 2012, Australian Bureau of Statistics.
- ABS 2020, 3218.0 – Regional Population Growth, Australia 2019-20, Australian Bureau of Statistics.
- ABS 2020, 8165.0—Counts of Australian Businesses, including Entries and Exits, June 2016 to June 2020, Australian Bureau of Statistics.
- ABS 2022, Regional population 2020-21 financial year, Australian Bureau of Statistics
- ACARA 2021, My school, find a school, Australian Curriculum, Assessment and Reporting Authority, <https://myschool.edu.au/>.
- AgShowsNSW 2020, Shows, viewed 29 April 2022, <https://www.agshowsnsw.org.au/shows/all-shows?view=shows>
- Aboriginal Housing Office 2022, Dubbo, viewed 25 March 2022, <https://www.aho.nsw.gov.au/applicants/era/about/chapters/locations/dubbo>
- AHRC 2021, Homelessness is a human rights issue, Australian Human Rights Commission, <https://humanrights.gov.au/our-work/rights-and-freedoms/publications/homelessness-human-rights-issue#:~:text=These%20include%20depression%2C%20poor%20nutrition,illness%20than%20the%20general%20population.>
- AHRC n.d., Homelessness, Australian Human Rights Commission, <https://humanrights.gov.au/our-work/education/homelessness>
- AHURI 2019, Understanding the 30:40 indicator of housing affordability stress, Australian Housing and Urban Research Institute, <https://www.ahuri.edu.au/policy/ahuri-briefs/3040-indicator>
- AirBnB 2022, Places to stay, viewed 25 March 2022, <https://www.airbnb.com.au/>
- AIHW 2020, Social Determinants of Health, Australian Institute of Health and Welfare, <https://www.aihw.gov.au/reports/australias-health/social-determinants-of-health.>
- AIHW 2021, Healthy Community Indicators, Australian Institute of Health and Welfare, from <https://www.aihw.gov.au/reports-data/indicators/healthy-community-indicators>
- AIHW 2021, Medicare-subsidised GP, allied health and specialist health care across local areas, Australian Institute of Health and Welfare, from <https://www.aihw.gov.au/reports/primary-health-care/medicare-subsidised-health-local-areas-2020-21/contents/about/>

AIHW 2022, Hospitals, Australian Institute of Health and Welfare, <https://www.aihw.gov.au/reports-data/myhospitals>

Anglicare Australia 2021, Rental Affordability Snapshot, <https://www.anglicare.asn.au/wp-content/uploads/2021/05/rental-affordability-snapshot-national-report.pdf>

Ask Izzy 2021, Ask Izzy, <https://askizzy.org.au/>

Australian Chamber of Commerce and Industry 2019, Migration in Regional Australia, https://www.australianchamber.com.au/wp-content/uploads/2019/10/AustralianChamber_Submission-for-Regional-Migration_Final.pdf.

Australian Government (2022) Jobactive caseload cohorts by Employment Region, Provider and Site 28 February 2022 Commonwealth of Australia, viewed 27 April 2022 <https://lmip.gov.au/default.aspx?LMIP/Downloads/EmploymentRegion>

Australian Government (2022) Jobactive caseload Selected Cohorts Time Series 31 December 2021 Commonwealth of Australia, viewed 25 March 2022, <https://lmip.gov.au/default.aspx?LMIP/Downloads/EmploymentRegion>

Australian Institute of Health and Welfare 2021 'Indigenous housing' Australian Government, from <https://www.aihw.gov.au/reports/australias-welfare/indigenous-housing>.

Australians Together 2022, 'The Stolen Generations' from <https://australiantogether.org.au/discover/australian-history/stolen-generations>.

BOCSAR 2021, Local government area excel tables 2021, NSW Bureau of Crime Statistics and Research, https://www.bocsar.nsw.gov.au/Pages/bocsar_datasets/Local-area.aspx

Brewsters Property Group n.d., The value of vacancy rates, <https://brewsters.com.au/vacancy-rates/>.

Charles Sturt University 2022, 'Our University', <https://about.csu.edu.au/our-university>

DPIE 2019, NSW 2019 Population Projections: ASGS 2019 LGA projections, Department of Planning, Industry and Environment, NSW Government, <https://www.planning.nsw.gov.au/Research-and-Demography/Population-projections/Projections>.

DPIE 2021a, Social Impact Assessment Guideline for State Significant Projects, Department of Planning, Industry and Environment, NSW Government.

DPIE 2021b, Technical Supplement: Social Impact Assessment Guideline for State Significant Projects, NSW Department of Planning, Industry and Environment.

DPIE 2021c, Undertaking Engagement Guidelines for State Significant Projects, NSW Department of Planning, Industry and Environment.

DPIE 2021d, Draft Central West and Orana Regional Plan 2041, viewed 25 March 2022, <https://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/Central-West-and-Orana>

DUAP 1996 NSW Heritage Office and the Department of Urban Affairs and Planning. 1996. Regional Histories of NSW. NSW Government Press.

Dubbo Regional Airport, 2021, 'About the airport', from <https://www.dubboairport.com.au/Home/About-the-Airport/about>

Dubbo Regional Council 2022, Councillors, viewed 25 March 2022, <https://www.dubbo.nsw.gov.au/About-Council/Who-We-Are/councillors>

Dubbo Regional Council 2022, Dubbo Regional, viewed 25 March 2022, <https://www.yourcouncil.nsw.gov.au/council-data/dubbo-regional-1632188804/>

Eastend Bus Service 2022, School Services, viewed 25 March, <https://eastendbusservice.com.au/school-services/>

Google Travel 2022, Travel, viewed 25 March 2022, <https://www.google.com/travel/>

Healing Foundation n.d, 'Intergenerational Trauma', from <https://healingfoundation.org.au/intergenerational-trauma/>

Healthdirect Australia 2021, National Health Services Directory, <https://about.healthdirect.gov.au/nhsd>.

Haglund 1985, Assessment of the Prehistoric Heritage in the Mudgee Shire.

Innis Michelle 2015, Coal mining's promise falls through for Dunedoo, Sydney Morning Herald October 16, 2015 <https://www.smh.com.au/business/companies/coal-minings-promise-falls-through-for-dunedoo-20151016-gkb0zz.html>

Informed decisions, 2016, 'Forecasting the future of NSW: How will regional population growth play out in the future?' id consulting, from <https://blog.id.com.au/2016/population-forecasting/forecasting-the-future-nsw-regional-growth/>

Infrastructure NSW 2018 Building Momentum: State Infrastructure Strategy 2018-2038, Infrastructure NSW, from https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf

Infrastructure NSW 2018 Building Momentum: State Infrastructure Strategy 2018-2038, Infrastructure NSW, from https://insw-sis.visualise.today/documents/INSW_2018SIS_BuildingMomentum.pdf

James, A., Rowley, S., Davies, A., Ong ViforJ, R. and Singh, R (2021) Population growth and mobility in Australia: implications for housing and urban development policies AHURI Final report No 365, Australian Housing and Urban Research Institute Limited. Melbourne Population growth and mobility in Australia: implications for housing and urban development policies (ahuri.edu.au) doi:10.18408/ahuri8122101.

National Skills Commission 2021, Australian Jobs Report, from <https://www.nationalskillscommission.gov.au/australian-jobs-report>

National Skills Commission 2022, National Skills Commission (2022) SALM Smoother LGA Datafiles (ASGS 2021) December Quarter 2021, from <https://www.nationalskillscommission.gov.au/topics/small-area-labour-markets%20accessed%2027%20April%202022>

NSW ALC 2021, Land Councils, NSW Aboriginal Land Council, https://alc.org.au/land_council/

NSW Ambulance 2021, List of all stations, NSW Ambulance, https://www.ambulance.nsw.gov.au/__data/assets/pdf_file/0008/509264/NSWAmbulanceStationList-2019.pdf

NSW Country and Picnic racing, About Us, viewed 28 April 2022, <https://www.nswcountryandpicnicracing.com.au/sample-page/>

NSW Fire and Rescue 2021, Find a fire station, NSW Fire and Rescue, from <https://www.fire.nsw.gov.au/page.php?id=9205>

NSW Government Communities & Justice (ud) Central West and Orana Region - What's the Housing Demand? Department of Families

NSW Government 2013, Warrumbungle Local Environmental Plan 2013, viewed 25 April 2022, <https://legislation.nsw.gov.au/view/html/inforce/current/epi-2013-0670>

NSW Government 2018, A 20-Year Economic Vision for Regional NSW' NSW Government, from <https://static1.squarespace.com/static/59ae4a2a6f4ca38d47990cd8/t/5d63391c30af730001d228a3/1566783815503/20-Year-Vision-for-RNSW-accessible.pdf>

NSW Government 2021, A 20-Year Economic Vision for Regional NSW' NSW Government, from <https://www.nsw.gov.au/a-20-year-economic-vision-for-regional-nsw-refresh>.

NSW Government 2022, Central-West Orana Renewable Energy Zone Project Overview. Available at: <https://www.energy.nsw.gov.au/sites/default/files/2022-02/february-2022-cwo-rez-project-overview.pdf>
Accessed on 11 April 2022.

NSW Health 2021, Healthstats NSW, NSW Ministry of Health, <http://www.healthstats.nsw.gov.au/>.

NSW Police Force 2021, Police station search, NSW Police Force, from https://www.police.nsw.gov.au/about_us/regions_commands_districts/police_station_search

NSW SES 2021, Our zones, NSW SES, from <https://www.ses.nsw.gov.au/about-us/our-zones/>

Mid-Western Regional Council 2017, Mid-Western Regional Towards 2030 Community Plan, viewed 20 March 2022, <https://www.midwestern.nsw.gov.au/files/assets/public/council/plans-and-strategies/plan-community-plan-towards-2030.pdf>

Mid-Western Regional Council 2022, Councillors, viewed 25 March 2022, <https://www.midwestern.nsw.gov.au/Council/Councillors>

Mid-Western Regional Council 2022, Delivery Program 2017/18 – 2021/22 Operational Plan 2021/22, viewed 25 April 2022 <https://www.midwestern.nsw.gov.au/files/assets/public/council/plans-and-strategies/plan-operational-and-delivery-program-2021-22.pdf>

Mid-Western Regional Council 2021, Asset Management Strategy 2017/2021, viewed 25 April 2022, <https://www.midwestern.nsw.gov.au/files/assets/public/council/plans-and-strategies/strategy-asset-management-2017-2022.pdf>

Mid-Western Regional Council 2020, Our Place 2040, Mid-Western Regional Local Strategic Planning Statement viewed 25 April 2022, https://shared-drupal-s3fs.s3-ap-southeast-2.amazonaws.com/master-test/fapub_pdf/Local+Strategic+Planning+Statements/LSPS+2020/LSPS+Regional%3B/Mid+Western+Regional+Council+Local+Strategic+Planning+Statement+2020.pdf

Mid-Western Regional Council 2005, Cultural plan, from <https://www.midwestern.nsw.gov.au/files/assets/public/council/plans-and-strategies/cultural-plan-current.pdf>

Mid-Western Regional Council 2022, Mudgee Airport, viewed 25 March, <https://www.midwestern.nsw.gov.au/Services/Commercial-facilities/Mudgee-Airport>

NSC 2022a, Vacancy Report, April 2022 Released date 25 May 2022 from Vacancy Report April 2022.pdf (nationalskillscommission.gov.au)

NSC 2022b, Labour Market Dashboard Central West, April 2022 from New South Wales | Labour Market Insights

NSC 2022c, Recruitment Experiences and Outlook Survey, April 2022 from Recruitment Experiences and Outlook Survey | National Skills Commission

Ogdenscoaches 2022, Ogden's History and Experience, viewed 25 March, <https://www.ogdenscoaches.com.au/about/>

OzArk Environment & Heritage 2022, Aboriginal Cultural Heritage Assessment Report Birriwa Solar Farm and Battery Project, prepared for ACEN Australia Pty Ltd

OzArk Environment & Heritage 2022, Historic Heritage Assessment Report Birriwa Solar Farm and Battery Project, prepared for ACEN Australia Pty Ltd

Perkins R & Langton M 2010, First Australians, Miegunyah Press, Victoria.

REA Group 2021, Explore Australia's suburbs, <https://www.realestate.com.au/neighbourhoods/>.

REINSW 2021, Vacancy Rates Survey Results January 2021, Real Estate Institute of New South Wales, https://www.reinsw.com.au/Web/News/Media_Releases/2021/02_February/Small_fluctuations_in_rental_vacancies.aspx.

2022 SIA Interview Program to inform the Birriwa Solar Farm and Battery Project Social Impact Assessment, EMM Consulting

Siegel J, Lynch J, & Eades D 2007, Language description, history and development: Linguistic indulgence in memory of Terry Crowley, ProQuest Ebook Central, <https://ebookcentral-proquest-com.ezproxy.library.uq.edu.au>

SQM Research 2021, Residential Vacancy Rates, https://sqmresearch.com.au/graph_vacancy.php.

TAFE NSW 2022, TAFE NSW Dunedoo, TAFE NSW, from <https://www.tafensw.edu.au/locations/western-nsw/dunedoo>

TAFE NSW 2022, TAFE NSW Mudgee, TAFE NSW, from <https://www.tafensw.edu.au/locations/western-nsw/mudgee>

TAFE NSW 2022, TAFE NSW Dubbo, TAFE NSW, from <https://www.tafensw.edu.au/locations/western-nsw/dubbo>

Transport for NSW (TfNSW) 2022, Crash and casualty statistics – LGA view, Transport for NSW, https://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tblga=4.

Tindale N B 1974, Aboriginal Tribes of Australia: Their terrain, environmental controls, distribution, limits and proper names, Australian National University Press, Canberra.

Western College 2019, 'About Western College', <https://www.westerncollege.nsw.edu.au/about/>, <https://www.sydney.edu.au/medicine-health/schools/clinical-schools/rural-health-dubbo-orange.html>

Warrumbungle Shire Council 2016, About Warrumbungle Shire, viewed 28 April 2022, <https://www.warrumbungle.nsw.gov.au/our-council/community-and-economic-profile/about-the-shire/about-warrumbungle-shire>

Warrumbungle Shire Council 2021, Operational Plan and Delivery Program 2013/14 to 2016/17, viewed 25 April 2022, <https://www.warrumbungle.nsw.gov.au/our-council/publications-and-reporting/publications/documents/management-plan-and-budget/operational-plan-and-delivery-program>

Warrumbungle Shire Council 2022, Councillors, viewed 25 March 2022, <https://www.warrumbungle.nsw.gov.au/our-council/about-us/councillors/councillors>

Warrumbungle Shire Council 2022, Community Strategic Plan 2022-2037, from <https://www.warrumbungle.nsw.gov.au/our-council/have-your-say/have-your-say-articles/community-strategic-plan-2022-2037>

University of Sydney 2022, School of Rural Health (Dubbo/Orange), viewed 25 March <https://www.sydney.edu.au/medicine-health/schools/clinical-schools/rural-health-dubbo-orange.html>

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Appendix B

Risk framework

B.1 Risk framework

A risk-based framework has been adopted in the assessment of potential social impacts. The social impact significance levels for positive and negative impacts are provided in Figure B.1

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

Source: DPIE 2021

Figure B.1 Social impact significance matrix

The framework is applied using the following definitions of:

- likelihood of social impacts (Table B.1);
- dimension of social impact magnitude (Table B.2); and
- magnitude levels for social impacts (Table B.3).

Table B.1 Defining likelihood levels of social impacts

Likelihood level	Meaning
Almost certain	Definite or almost definitely expected (ie has happened on similar projects)
Likely	High probability
Possible	Medium probability
Unlikely	Low probability
Very unlikely	Improbable or remote probability

Source: DPIE 2021

Table B.2 **Dimensions of social impact magnitude**

Dimensions	Details needed to enable assessment
Extent	Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any vulnerable people? Which location(s) and people are affected? (ie near neighbours, local, regional, future generations).
Duration	When is the social impact expected to occur? Will it be time-limited (ie over particular project phases) or permanent?
Severity or scale	What is the likely scale or degree of change? (ie mild, moderate, severe).
Intensity or importance	How sensitive/vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change.
Level of concern/interest	How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood, duration and/or intensity.

Source: DPIE 2021

Table B.3 **Defining magnitude levels for social impacts**

Magnitude level	Meaning
Transformational	Substantial change experienced in community wellbeing, livelihood, infrastructure, services, health, and/or heritage values; permanent displacement or addition of at least 20% of a community.
Major	Substantial deterioration/improvement to something that people value highly, either lasting for an indefinite time, or affecting many people in a widespread area.
Moderate	Noticeable deterioration/improvement to something that people value highly, either lasting for an extensive time, or affecting a group of people.
Minor	Mild deterioration/improvement, for a reasonably short time, for a small number of people who are generally adaptable and not vulnerable.
Minimal	Little noticeable change experienced by people in the locality.

Source: DPIE 2021

Appendix C

Curricula vitae



Bronwyn Pressland

Associate Social Planner |
Communications and Engagement Specialist
EMM Consulting Pty Limited

Professional Overview

Bronwyn is a highly experienced social impact assessment (SIA) practitioner, social researcher, community and stakeholder engagement specialist.

With more than twenty-five years of industry experience, Bronwyn's expertise includes Indigenous and non-Indigenous community and stakeholder engagement, SIA and management planning for major mineral resource projects (bauxite, manganese, gold, and coal) across QLD, NSW and NT.

Bronwyn has extensive experience in helping private sector clients and the community navigate the complex social challenges presented by greenfield and brownfield projects.

Qualifications and licences

Master of Environmental Management, Griffith University, 1999

Bachelor of Built Environment (urban and regional planning),
Queensland University of Technology, 1992

Specialisation

Indigenous and non-Indigenous community and stakeholder engagement

SIA and management planning

Greenfield and brownfield projects

Representative experience

Strategic advice

- NSW Minerals Council Social Impact Assessment Group, provision of advice and feedback in relation to the development of NSW SIA guidelines and draft community engagement guidelines.
- Strategic engagement advice – Angelo American, provision of strategic advice in relation to the management of a range of different community engagement and social performance issues, Bowden Basin.
- Strategic engagement advice, provision of strategic advice in relation to the management of community and stakeholder issues related to the operation of the Boggabri Coal Mine and future development plans, Idemitsu.

Key project experience

Aurukun Bauxite Project, (Glencore Aurukun Bauxite)

- Provision of strategic advice and support in relation to the development and implementation of an Indigenous community and stakeholder engagement program to support the environmental approvals process for the project.
- Provision of early advice and assistance to Glencore in relation to the establishment of a working group to progress the development of an Indigenous Land Use Agreement for the project.
- Preparation of an SIA and SIMP including social research and a comprehensive Indigenous community engagement process.

McPhillamys Gold Project (Regis Resources)

- Provision of strategic advice and support in relation to the development and implementation of a community and stakeholder engagement program supporting the environmental approvals process for a greenfield open cut gold mine.

- Preparation of an SIA and SIMP including social research and a comprehensive community engagement program.

Gemco Eastern Leases Project (South 32)

- Inform the development of an SIA and the broader EIS for the project.
- Provision of strategic advice and support in relation to the development and implementation of a key stakeholder and Indigenous community engagement program to support the project environmental approvals process.
- Preparation of a SIA including extensive social research and a comprehensive Indigenous community engagement program.

Tcharawopin Project (Glencore Aurukun Bauxite)

- Proposed development of a small-scale manganese mine adjacent to the Watson River and proximate to the Indigenous community of Aurukun.
- Strategic advice and support in relation to the development and implementation of an Indigenous community engagement program in support of the project environmental approvals process.

Other project experience

BYLONG Coal Project (Kepco Bylong)

- Preparation of an SIA and SIMP including comprehensive social research and community engagement program with extensive in depth KPIs.
- The SIMP included the development of a workforce accommodation strategy, local content plan and workforce management plan in consultation with key stakeholders to address key issues and concerns.
- Preparation of responses to public submissions, including stakeholder engagement following EIS public exhibition.
- Preparation of supporting materials and presentation at the IPC Project Hearing.

Tampakan Copper-Gold Project (Xstrata Copper)

- Management of the IFC compliant SIA and Environmental Health Impact Assessment studies.
- Provided assistance with the process of obtaining free and prior informed consent from the relevant indigenous parties and supported the implementation of the community engagement program for environmental approvals.

Project China Stone (MacMines)

- Preparation of an SIA, design and implementation of community engagement process for the development of an open cut and underground mining operation.
- Preparation of local content strategy, workforce accommodation strategy and detailed labour force analysis.

Moranbah South Project (Anglo American)

- Design and implementation of a community engagement program for EIS preparation.
- Preparation of an SIA and SIMP including tailored community engagement and development of a detailed workforce accommodation strategy.

Grosvenor Project (Anglo American)

- Design and implementation of a community engagement program for EIS preparation.
- Preparation of an SIA and SIMP including tailored community engagement and development of a workforce accommodation strategy.

Boggabri Coal Simp Update (Idemitsu/BCOPL)

- Review and update of the regulatory SIMP for the existing Boggabri Coal Mine.

Angus Place Extension Project (Centennial Coal)

- Preparation of SIA including social research and targeted community engagement in support of an application to extend operations at the existing Angus Place Mine.

Alicia Minogue

Social Planner

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Curriculum vitae

Alicia is a social planner with experience in social research, social impact assessments and community and stakeholder engagement. Alicia has conducted a range of social planning and impact assessment projects including baseline studies, risk assessments, social data collection, data analysis and community and stakeholder engagement workshops and information sessions.

Alicia has worked with clients across a range of sectors including mining and extractives, renewable energies, critical infrastructure and social infrastructure across in New South Wales.

Qualifications

- Bachelor of Social Sciences, University of Wollongong

Career

- EMM Consulting, 2021–present
- Mara Consulting, 2021–2020

Representative experience

Social planning and impact assessments

- Hunter Valley Operations Continuation Project, technical assistance for social impact assessment and community engagement, survey analysis, Hunter Valley NSW (Glenore)
- Birriwa Solar Farm project, social baseline study, data analysis, Mid-Western Region of NSW (ACEN Australia)
- Stubbo Solar Farm project, social baseline study, community engagement, data analysis, social risk assessment, Mid-Western Region of NSW (ACEN Australia)
- Dungowan Dam, social impact assessment and engagement, development of community information sheets, community survey development, Tamworth (WaterNSW)
- Environmental Generalist, desktop research for development of communication facilities (US Space Force)
- Lake Conjola Coastal Management Program, community consultation and facilitation of stakeholder workshops (Shoalhaven City Council)
- Pinecrest Solar Farm project, scoping report, data analysis, Lithgow (Banpu)
- Oven Mountain Pumped Hydro Energy Storage project, stakeholder workshops, community engagement, data analysis technical input, social impact assessment Armidale Regional LGA and Kempsey Shire LGA (OMPS)
- Goulburn Mixed Use Development EIS, social impact assessment, examining project opportunities and impacts, developing social baseline, Goulburn NSW (Woodlands Ridge Poultry)

Appendix D

Review questions

D.1 SIA Guideline 2021 – Appendix D review questions

Table D.1 SIA Guideline 2021 – Appendix E review questions

Reference number	SIA Guideline review question	Response
General		
1	Does the lead author of the SIA Report meet the qualification and experience requirements?	Yes – see Section 1.2.1
2	Has the lead author of the SIA Report provided a signed declaration certifying that the assessment does not contain false or misleading information?	Yes – see Section 1.2.1
3	Would a reasonable person judge the SIA Report to be impartial, rigorous, and transparent?	Yes.
Project’s social locality and social baseline		
4	Does the SIA Report identify and describe all the different social groups that may be affected by the project?	Yes – see Section 4, 5, 6, 7, 8 and Appendix A
5	Does the SIA Report identify and describe all the built or natural features that have value or importance for people, and explain why people value those features?	Yes – see Section 5, 6, 7 and Appendix A
6	Does the SIA Report identify and describe historical, current, and expected social trends or social changes for people in the locality, including their experiences with this project and other major development projects?	Yes – see Section 4, 5, 6, 7 and Appendix A
7	Does the social baseline study include appropriate justification for each element, and provide evidence that the elements reflect both relevant literature and the full diversity of views and potential experiences?	Yes – see Section 5, 6, 7 and Appendix A
8	Does the social baseline study demonstrate social-science research methods and explain any significant methodological or data limitations?	Yes – see Section 2, 4, 5, 7 and Appendix A
Identification and description of social impacts		
9	Does the SIA Report adequately describe potential social impacts (whether negative, positive, tangible, intangible, perceived, and/or cumulative) from the perspectives of how people may experience them, and explain the research used to identify them? Where the assessment is partially complete, and expected to be completed in Phase 2 SIA, has this been explained?	Yes – see Section 7
10	Does the SIA Report apply the precautionary principle to social impacts, and consider how they may be experienced differently by different people and groups (ie distributive equity)?	Yes – see Section 7
11	Does the SIA Report describe how the preliminary analysis influenced both the project design and EIS Engagement Strategy?	Yes – see Section 7 and 8
Community engagement		
12	Were the extent and nature of engagement activities appropriate and sufficient to canvass all relevant views, including those of vulnerable or marginalised groups?	Yes – see Section 6
13	How have the views, concerns, and insights of affected and interested people influenced both the project design and each element of the SIA Report (ie the social baseline, predicting impacts, and mitigation/enhancement measures)?	Yes – see Section 4, 5, 6, 7 and 8

Table D.1 SIA Guideline 2021 – Appendix E review questions

Reference number	SIA Guideline review question	Response
Predicting and analysing social impacts		
14	Does the SIA Report impartially focus on the most material social impacts at all stages of the project life cycle, without any omissions or misrepresentations?	Yes – see Section 7
15	Does the SIA Report identify the matters to which the precautionary principle could or should be reasonably applied?	Yes – see Section 7
16	Does the SIA Report analyse the distribution of both positive and negative social impacts, and the equity of this distribution?	Yes – see Section 7
17	Does the SIA Report identify its assumptions, and include sensitivity analysis and alternative scenarios (including ‘worst-case’ and ‘no project’ scenarios where relevant)?	Yes – see Section 2.2.3, 5, 6, 7 and 8
Evaluating significance		
18	Do the evaluations of significance of social impacts impartially represent how people in each identified social group can expect to experience the project, including any cumulative effects?	Yes – see Section 7
19	Are the evaluations of significance disaggregated to consider the potentially different experiences for different people or groups, especially vulnerable groups?	Yes – see Section 7
Responses, monitoring and management		
20	Does the SIA Report propose responses (ie mitigations and enhancements) that are tangible, deliverable by the proponent, likely to be durably effective, and directly related to the respective impact(s)?	Yes – see Section 7 and 8
21	How can people be confident that social impacts will be monitored and reported in ways that are reliable, effective, and trustworthy?	See Section 7 and 8
22	How will the proponent adaptively manage social impacts and respond to unanticipated events, breaches, grievances, and non-compliance?	See Section 7 and 8

Appendix E

Cumulative projects

Table E.1 Concurrent development projects

LGA	Project name	Anticipated timeframe/ project life	Development type	Status	Construction workforce	Operational workforce
Mid-Western Regional LGA	Bowdens Silver Project	23 years life of project	Mining	Assessment phase	246	228
	Stubbo Project	24 months construction period/30 years life of project	Electricity generation – solar	Approved	400	10
	Tallawang Solar Farm	34 month construction period/35 years life of project	Electricity generation – solar	SEARs issued	430	7
	Barneys Reef Wind Farm	28 months construction period	Electricity generation – wind	SEARs issued	340	10
	Bellambi Heights Solar Farm	12 to 18 months construction period/30 years and 20 years for BESS life of project	Electricity generation – solar and batter storage	SEARs issued	400	5-8
Warrumbungle LGA	Valley of the Winds project	24 to 42 months construction period	Electricity generation – wind	Response to Submission stage	400	50
	Sandy Creek Solar Farm	22 to 28 months construction period/50 years and 20 years for BESS life of project	Electricity generation – solar	SEARs issued	700	15
	Dunedoo Solar Farm	10 to12 months construction period/30 years life of project	Electricity generation – solar	Approved.	100	3
	Spicers Creek Wind Farm	24 to 30 month construction period/30 year project life	Electricity generation – wind	SEARS issued	Na ²	Na ²
	CWO REZ Network Infrastructure and Candidate Foundation Generators ¹	Construction completed by 2026	Electricity supply	Preliminary technical studies, community consultation, CFG process	450	0
Total					3,466	331

Notes:

1. The timing and location of the CWO REZ infrastructure such as transmission line and the Merotherie Energy Hub are still in development and under discussion with relevant parties.
2. Workforce numbers for the Spicers Creek Wind Farm project were unavailable at the time of writing.

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