APPENDIX O

Social impact assessment

AMPYR

Shell ENERGY

EMM creating opportunities

Wellington Battery Storage System

Social Impact Assessment

Prepared for AMPYR Australia Pty Ltd

October 2022

Wellington Battery Storage System

Social Impact Assessment

AMPYR Australia Pty Ltd

J210534 RP#14

October 2022

Version	Date	Prepared by	Approved by	Comments
1	24-05-2022	Bronte Batton	Caroline Wilkins	Draft
2	03-06-2022	Caroline Wilkins	Caroline Wilkins	Final
3	20-10-2022	Caroline Wilkins	Chris Mahoney	Exhibition

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Executive summary

ES1 Overview

AMPYR Australia (AMPYR) and Shell Energy (Shell) propose to develop and operate Wellington Battery Energy Storage System (the project). This involves the development of a large-scale battery energy storage system (BESS) with a discharge capacity of 500 megawatts (MW) and a storage capacity of 1,000 megawatt hours (MWh). The project also incorporates an on-site substation and connection infrastructure to facilitate transfer of energy to and from the electrical grid, upgrades to the TransGrid Wellington Substation and ancillary infrastructure.

The site proposed to be developed is located within the Dubbo Regional Council local government area (LGA) at 6773 Goolma Road and 6909 Goolma Rd at Wuuluman, approximately 2.2 km north-east of the township of Wellington and 44 km south-east of the township of Dubbo. The project will be developed within privately owned land (Lot 32 DP 622471) and will incorporate either an overhead or underground transmission line and upgrade works to Wellington substation in the adjoining TransGrid owned landholding (Lot 1 DP 1226751). The project is shown in its regional and local context in Figure 1.1 and Figure 1.2, respectively.

The project is classified as State significant development (SSD) under the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). This social impact assessment (SIA) supports the environmental impact statement (EIS) and associated application for development consent under Part 4, Division 4.7 of the EP&A Act.

ES2 Project description

The project consists of the construction and operation of a major grid-scale battery project immediately south east of the TransGrid Wellington Substation. The project will involve the following components:

- construction and operation of the BESS compound, comprising between 1,400–6,200 pre-assembled battery enclosures housing lithium-ion battery packs and related control equipment, and transformers and inverters with a peak maximum generation capacity of 500 MW/1,000 MWh;
- construction and operation of an on-site BESS substation, comprising two 330 kilovolts (kV) transformer bays, 33/0.440 kV auxiliary transformers, and auxiliary services building to house supporting equipment and systems;
- connection to the adjoining TransGrid Wellington Substation by way of an underground or aboveground transmission line and associated easement;
- upgrade of the TransGrid Wellington Substation, which may include an additional 330 kV switch bay with power transformers (which would be installed as an alternative to the transformer bays being located on the BESS site), switchyard bench extension to the south of the existing bench and relocation of security fencing; and
- ancillary infrastructure to facilitate construction and operation of the project, including improvements to the existing access road, a washdown bay for incoming vehicles, and a control and office building.

ES2.1 Construction workforce requirement summary

The construction phase of the project is expected to require up to 100 construction personnel, the majority of which are expected to be sourced from the Dubbo/Wellington region. Preference will be made for contractors utilising a regional workforce.

ES2.2 Operations workforce requirement summary

The proposed BESS will operate 24 hours a day, 7 days a week and be operated remotely.

The operation of the project is expected to commence from 2024 for a period of approximately 20 years. Once the project reaches the end of its investment and operational life, the project infrastructure will be decommissioned and removed from the site.

The project will contribute to the employment of up to two employees during operation.

ES3 Assessment of impacts

The assessment of the social impacts considered a range of factors and competing interests. The impact assessment is reflective of this and has:

A summary of the key potential social impacts and benefits identified are provided in Table ES1. The full assessment of impacts and benefits are provided in Section 6. The identification and assessment of impacts was informed by the analysis of the social context, the results from other technical studies, SIAs completed for similar projects and feedback generated through engagement as outlined in Section 5.

Table ES1 Key social impacts and benefits

Key social impacts and benefits	Assessment	
Impacts	**Unmitigated assessment**	**Mitigated assessment**
Amenity related to traffic noise	Medium	Medium
Public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road intersection	High	Medium
Public safety related to truck movements along school bus routes on Goolma Road	High	Medium
Public safety related to fire hazards	High	Medium
Benefits	**Unenhanced assessment**	**Enhanced assessment**
Community related to community investment, social cohesion and resilience	Low	Medium
Livelihood related to increased local employment opportunities	Low	Medium
Livelihood relating to training and apprenticeship opportunities	Low	Medium

ES4 Evaluation of the project

This SIA provides an assessment of potential social impacts and benefits associated with the project. It identifies the relevant social issues, social impacts and benefits, and associated mitigation and enhancement measures applicable to the design and operation of the project in accordance with the *Social impact assessment guideline for state significant projects* (SIA Guideline 2021) (DPE 2021a).

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 are to be developed for each mitigation and enhancement measure in consultation with stakeholders and monitored throughout the project life span.

An adaptive approach is proposed allowing AMPYR 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 serve to minimise negative social consequences and maximise social benefits associated with the project. The proposed mitigation and enhancement measures are summarised in full in Section 7.

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1 Introduction

1.1 Overview

AMPYR Australia Pty Ltd (AMPYR) and Shell Energy Operations Pty Ltd (Shell) propose to develop and operate the Wellington Battery Energy Storage System (the project). This involves the development of a large-scale battery energy storage system (BESS) with a discharge capacity of 500 megawatts (MW) and a storage capacity of 1,000 megawatt hours (MWh). The project also incorporates an on-site substation and connection infrastructure to facilitate transfer of energy to and from the electrical grid, and ancillary infrastructure.

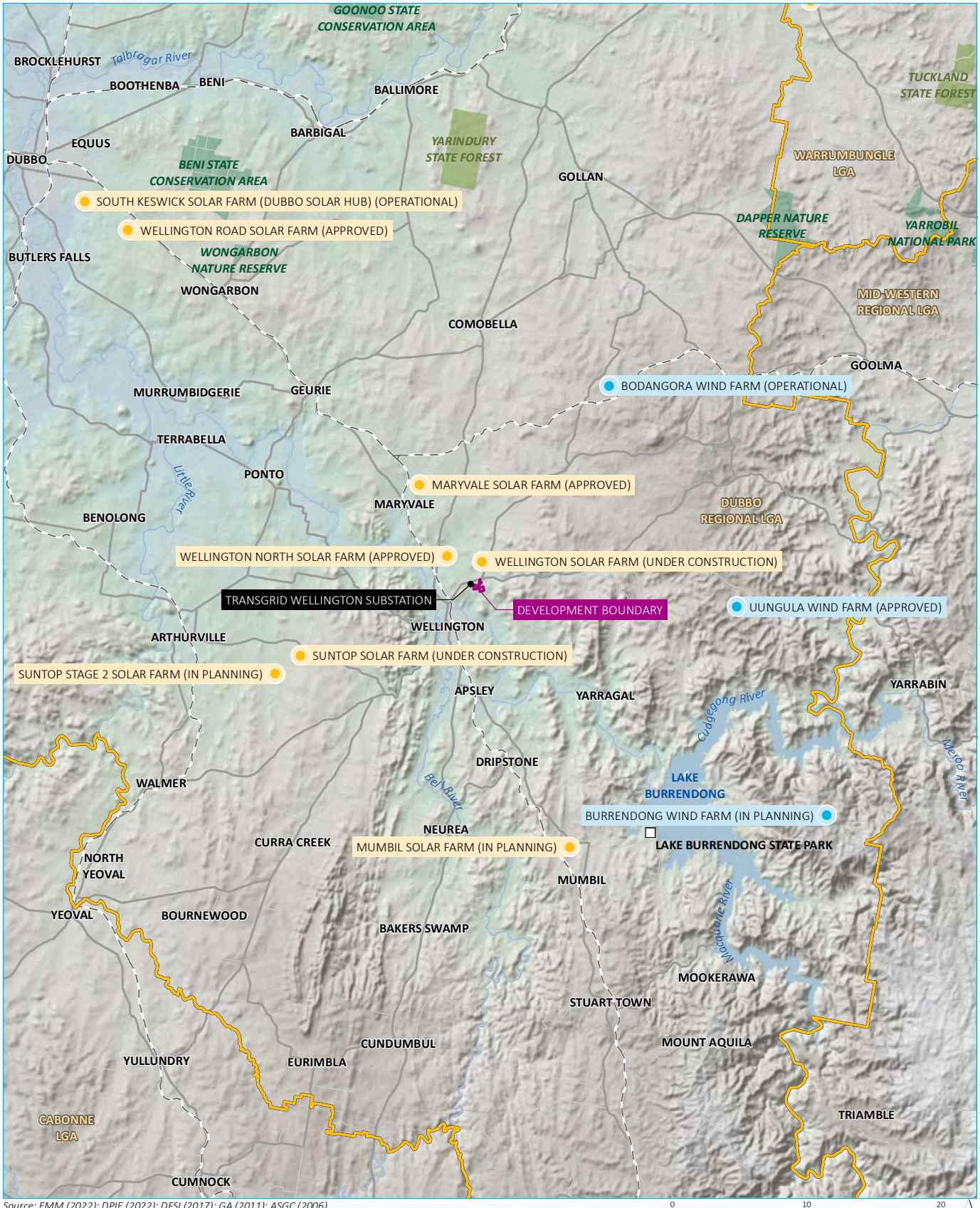
The site proposed to be developed is located within the Dubbo Regional Council local government area (LGA) at 6773 Goolma Road at Wuuluman (refer Figure 1.1) approximately 2.2 km north-east of the township of Wellington and 44 km south-east of the township of Dubbo (refer Figure 1.2). The project will be developed within privately owned land (Lot 32 DP 622471) and will incorporate either an overhead or underground transmission line and upgrade works to Wellington substation in the adjoining TransGrid owned landholding (Lot 1 DP 1226751).

The project will complement nearby renewable energy generation assets such as the Wellington Solar Farm and the approved Uungula Wind Farm by smoothing out fluctuations in electricity supply from these new intermittent power sources, potentially also balancing out price increases during peak demand. In operation, the project will be one of the largest battery projects in NSW and will contribute to the overall storage capacity and reliability of the National Electricity Market (NEM). The project also supports state and Commonwealth emission commitments by facilitating renewable energy input into the grid network during periods of low renewable energy generation.

This social impact assessment (SIA) has been prepared by EMM Consulting Pty Limited (EMM) on behalf of AMPYR and addresses the specific requirements provided in the Secretary's Environmental Assessment Requirements (SEARs) issued by the Department of Planning and Environment (DPE) on 1 October 2021 (SSD-27014706), as summarised in Table 1.1. It supports the environmental impact statement (EIS) and associated application for development consent under Part 4, Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The project is classified as state significant development (SSD) under the EP&A Act.

Table 1.1 Summary of SEARs for social impact

Key issue	Requirements
Socio-economic	An assessment of the social and economic impacts in accordance with Social Impact Assessment Guideline (DPE, July 2021a), any benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services.



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

0 10 20 km

GDA 1994 MGA Zone 55

N

KEY

- Development boundary
- Lake Burrendong State Park
- Rail line
- Major road
- Minor road
- River
- Named waterbody
- Local government area
- NPWS reserve
- State forest

Renewable energy project

- Solar farm
- Wind farm

Regional context

Wellington Battery Energy Storage System
Social Impact Assessment
Figure 1.1

EMM creating opportunities

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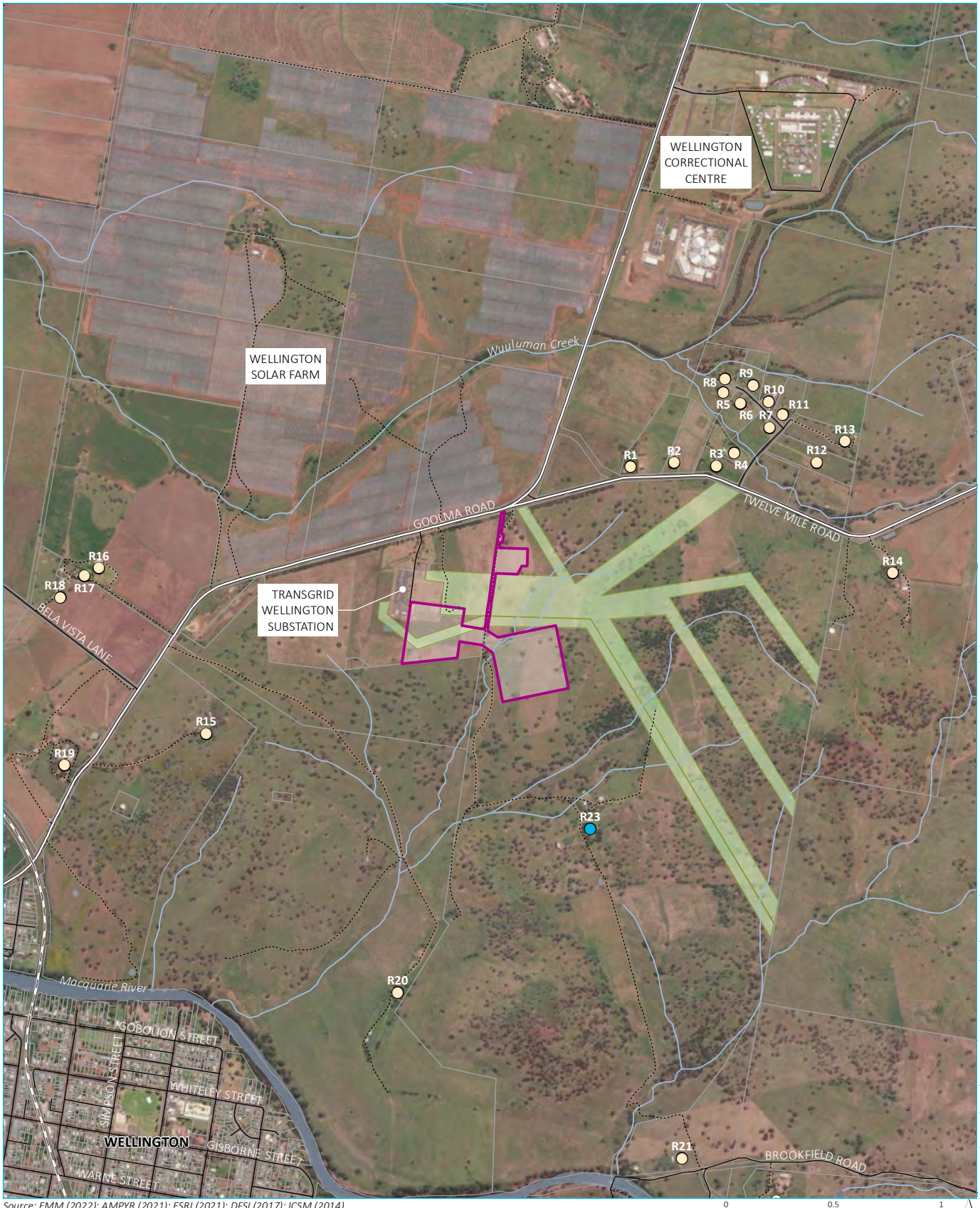

Source: EMM (2022); AMPYR (2021); ESRI (2021); DFSI (2017); ICSM (2014)

0 0.5 1 km

GDA 1994 MGA Zone 55

N

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KEY

- Development boundary
- Rail line
- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Freehold easement
- Landowner
- Project participating landowner

Local context

Wellington Battery Energy Storage System
Social Impact Assessment
Figure 1.2

EMM creating opportunities

1.2 The project

The project will involve the following components:

- construction and operation of the BESS compound, comprising between 1,400–6,200 pre-assembled battery enclosures housing lithium-ion battery packs and related control equipment, and transformers and inverters with a peak maximum generation capacity of 500 MW/1,000 MWh;
- construction and operation of an on-site BESS substation, comprising two 330 kilovolt (kV) transformer bays, 33/0.440 kV auxiliary transformers, and an auxiliary services building to house supporting equipment and systems;
- connection to the adjoining TransGrid Wellington substation by way of an underground or aboveground and associated easement;
- upgrade of the TransGrid Wellington substation, which may include an additional 330 kV switch bay with power transformers (which would be installed as an alternative to the transformer bays being located on the BESS site), switchyard bench extension to the south of the existing bench and relocation of security fencing; and
- ancillary infrastructure to facilitate construction and operation of the project, including improvements to the existing access road and a control and office building.

Construction of the project is expected to commence in 2023. Construction may be undertaken as a single stage, or over two stages. For the staged construction scenario, Stage 1 would likely include 300 MW installed discharge capacity, all civil and enabling works, installation of batteries, one transformer and switchgear and associated structural, mechanical and electrical works, and connection to the substation. Stage 2 would consist of 200 MW, including installation of a second transformer and associated switchgear and batteries. It is anticipated that construction of Stage 2 would commence approximately 6-12 months following completion of Stage 1 works, with each stage (or construction of the project in a single stage) anticipated to occur over a period of 12-18 months. Upgrade of the TransGrid Wellington substation may be undertaken in stages to coincide with the staged construction of the BESS should a staged approach be adopted.

Operation of the project is expected to commence from 2024 for a period of approximately 20 years at which point the project be decommissioned. Throughout its operational life, certain components and technologies may be replaced and/or upgraded, however such works are unlikely to be intensive. The BESS would operate 24 hours a day, 7 days a week and be operated remotely.

1.3 Purpose of this report

This SIA has been prepared for AMPYR to examine the potential social impacts of the project. It forms part of the EIS for the project and documents the following:

- methods and results;
- initiatives built into the project to avoid and minimise potential impacts to the local community; and
- mitigation and management measures proposed to address any residual impacts that are not able to be avoided.

This SIA addresses the potential social impacts and benefits of the project focussing on surrounding local and regional communities. 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 which reduce negative social impacts and enhance positive impacts; and
- develop a monitoring and management framework.

1.4 Assessment guidelines and requirements

This SIA has been prepared in accordance with:

- the SEARs for the project;
- the *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2021) (Department of Planning & Environment (DPE) 2021a); and
- the *Technical Supplement: Social Impact Assessment Guideline for State significant Projects* (SIA Technical Supplement 2021) (DPE 2021b).

The SIA review questions as outlined in the SIA Guideline 2021 (DPE 2021a) and corresponding responses are presented in Table 1.2

Table 1.2 SIA 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 1.4.1
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 1.4.1
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 Sections 4, 5, 6, 7
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 Sections 4, 6
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 Sections 4, 6
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 Sections 4, 5, 6 and 7
8	Does the social baseline study demonstrate social-science research methods and explain any significant methodological or data limitations?	Yes – see Sections 2, 3, 4 and 5

Table 1.2 SIA review questions

Reference number	SIA Guideline review question	Response
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 6
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 6
11	Does the SIA Report describe how the preliminary analysis influenced both the project design and EIS Engagement Strategy?	Yes – see Sections 6 and 7
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 5
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 Sections 4, 5, 6, and 7
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 6
15	Does the SIA Report identify the matters to which the precautionary principle could or should be reasonably applied?	Yes – see Section 6
16	Does the SIA Report analyse the distribution of both positive and negative social impacts, and the equity of this distribution?	Yes – see Section 6
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 Sections 3.3, 5, 6, and 7
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 6
19	Are the evaluations of significance disaggregated to consider the potentially different experiences for different people or groups, especially vulnerable groups?	Yes – see Section 6
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
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
22	How will the proponent adaptively manage social impacts and respond to unanticipated events, breaches, grievances, and non-compliance?	See Section 7

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

1.4.1 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 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. The following introduces each author:

Caroline Wilkins (review and quality assurance)

- Master of Social Science (International Development), RMIT University
- Bachelor of Arts/Bachelor of Commerce, Deakin University
- Graduate Certificate of Evaluation, University of Melbourne, 2021–current
- Member, Australian Evaluation Society (AES)
- Member, Social Impact Measurement Network Australia (SIMNA)

Caroline is a Social Scientist with over 20 years' experience designing, planning, implementing and evaluating major social programs in challenging operating contexts. She has a strong knowledge and demonstrates application of development strategies and processes and social science methodologies. Her skill set includes social research, community and stakeholder engagement, project management, evaluation, risk management, strategic planning and reporting.

Chris Mahoney (SIA National Technical Leader)

- Master of Urban and Regional Planning (Environmental Planning), Griffith University
- Bachelor of International Economic Relations, Griffith University
- Member, International Association of Impact Assessment (IAIA): Social Impact Assessment Group
- Member, Planning Institute of Australia (PIA

Chris is a highly experienced social scientist with specialist skills in the design and delivery of social performance programs, social impact assessment and community and stakeholder engagement programs. With over 25 years of professional experience across the infrastructure, resources and international development sectors, he has provided specialist social services to a wide range of complex initiatives throughout Australia and the Asia-Pacific region.

The curriculum vitae for each is provided in Appendix B.

ii SIA Declarations

The authors declare that this SIA report:

- was completed on 26 May 2022;

- has been prepared in accordance with the EIS process under the *Environmental Planning and Assessment Act 1979* (EP&A Act);
- has been prepared in accordance with the SIA Guideline 2021 (DPE 2021a);
- contains all reasonably available project information relevant to the SIA; and
- as far as EMM is aware, contains information that is neither false nor misleading.

Assumptions and limitations of this report are outlined in Sections 3.3 and 6.3.

2 Project description

2.1 Overview

The project consists of the construction and operation of a major grid-scale battery project immediately south-east of the TransGrid Wellington Substation. The project will use lithium-ion battery technology and will have a peak maximum generation capacity of 500 MW/1000MWh.

A summary of the key aspects of the project is provided in Table 2.1. A more detailed description for the project is provided in the EIS. The works described in these sections are subject to detailed design.

The project also involves a subdivision to separate the BESS from the remainder of the site which will continue to be used for farming and grazing.

Table 2.1 Key aspects of the Project description

Key aspects	Description
Project area	
Address and legal description	6773 Goolma Road, Wuuluman (battery energy storage system and transmission line) described as Lot 32 DP 622471 and 6909 Goolma Rd, Wuuluman (transmission line and Wellington Substation upgrade) described as Lot 1 DP 1226751.
Development boundary / disturbance area	Disturbance area of up to 19 ha that will be required during project construction (see Figure 2.1).
Operational area	Operational footprint including all permanent project infrastructure of up to 13 ha (see Figure 2.1).
Environmental constraints near the project area	The following constraints are present within the site: • nearby sensitive receivers, the closest of which being a resident along Twelve Mile Road, approximately 600 m north-east of the site; • the presence of a tributary to Macquarie River and associated riparian vegetation; • the presence of native vegetation and its associated ecosystem and species values; and • a portion of the site is within a designated bushfire prone area. The project has been designed to avoid these constraints (see Figure 2.1).
Physical layout and design	
Layout	The proposed BESS will generally comprise the following components: • lithium-ion (Li-ion) batteries inside battery enclosures; • power conversion systems (PCS) incorporating inverters and transformers; • an aboveground or underground transmission line to the TransGrid Wellington substation; • an on-site substation comprising two 330 kilovolt (kV) transformer bays; • cabling and collector units; and • an Asset Protection Zone (APZ). The project layout showing these components is presented in Figure 2.1.

Table 2.1 Key aspects of the Project description

Key aspects	Description
Ancillary infrastructure and upgrades	The Project will include the following ancillary components and upgrades: • an upgrade to the existing site access (currently at the intersection of Goolma Road and Twelve Mile Road) to facilitate safer connection to roadway network and to facilitate the entry of larger construction vehicles; • upgrades to existing access tracks within the project boundary; • connection to the switchyard in adjoining TransGrid Wellington substation; • upgrade of the TransGrid Wellington Substation, which may include an additional 330 kV switch bay with power transformers (which would be installed as an alternative to the transformer bays being located on the BESS site), switchyard bench extension to the south of the existing bench and relocation of security fencing; • control and office building and associated parking; • drainage and stormwater management; • ancillary infrastructure including security fencing, lighting and closed-circuit television; and • connection to utilities (telecom, sewerage, etc).
Built design, materials and finishes	Project enclosure components and cabinets will be light in colour to assist with heat management and made of steel. The control and office building will be a prefabricated building comprising a lunchroom, office and ablutions room. The building will be assembled onsite and built to a height of 5 m tall. The building will be made of Trimclad steel or similar and grey in colour. Upgrade of the Wellington substation will comprise an extension to the existing infrastructure elements on that site.
Design elements subject to change during detailed design	Detailed design for the project has yet to be completed. The following design elements may be amended throughout the detailed design process: • the layout of the BESS units and substation infrastructure; • the transmission line alignment and arrangement (ie either above ground on steel lattice tension structures and poles or underground); • the control and office building (material, finishes); • works at the TransGrid Wellington substation and switchyard to accommodate project connection; and • the location of attenuation features (noise wall/bunds) and fencing.
Plans and figures illustrating the layout and design in plan-view and cross-section	An overview of the project layout is provided in Figure 3.1 in the main EIS.

Table 2.1 Key aspects of the Project description

Key aspects	Description
Mitigation measures	The project has been sited to avoid environmental constraints within or near the site while minimising distance to the TransGrid Wellington Substation. Key mitigation measures considered in the project design include: • avoidance of higher condition native grassland and woodland in project siting and selection of disturbance area (EMM 2022c); • provision of suitable APZs within the design of proposed infrastructure and disturbance area (Sherpa 2022); • construction of noise attenuation barriers (wall/retaining wall and batter or earth mounds) four metres in height to the north, east, south and west as a means of reducing potential noise impacts on nearby residential receivers (EMM 2022a); and • planted landscaping around project infrastructure to minimise visual impacts (see Figure 3.1) (EMM 2022d. Further information regarding the proposed landscaping is provided in Section 3.2.7.
Specifications	
Discharge capacity	Up to 500 MW.
Storage capacity	Up to 1,000 MWh or two hours of maximum discharge capacity.
Typical operating cycle	One to two cycles per day.
BESS compound components	Specific component requirements are subject to selection of the potential technology provider. The BESS compound will comprise: • 1,400–6,200 pre-assembled battery enclosures incorporating power conversion systems, thermal management systems, and safety systems; • 150–300 inverters/transformers; and • ancillary infrastructure (ie electrical switchroom, a control and office building, security fencing). Battery enclosures will be 3 m tall.
BESS substation components	An on-site substation will comprise: • two 330 kV transformer switch bays; and • 33kV indoor switchgear housed in portable substation containers. The tallest component of the substation will be the tips of bushings, approximately 11 m tall, however the bulk of the unit will be 9 m tall.
Connection infrastructure	An approximate 500 m 330 kV transmission line will extend from the BESS substation. TransGrid has advised that the Wellington Substation upgrade works may incorporate installation of one new 330 kV switch bay and multiple transformers (which would be installed as an alternative to the transformer bays being located on the BESS site) and may be installed in stages to coincide with the staged construction of the BESS should a staged approach be adopted..
Construction	
Capital investment value	$545 million AUD.

Table 2.1 Key aspects of the Project description

Key aspects	Description
Construction activities	Construction of the project will involve: • civil and enabling works; • structural, mechanical and electrical works; • commissioning; and • demobilisation. The Project is anticipated to take approximately 12 months to construct. Construction of the project will require an area of up to 19 ha to facilitate the movement of plant and equipment (disturbance footprint). This area is illustrated in Figure 2.1. The area incorporates a temporary laydown area near the site access for the storage of materials and infrastructure prior to installation.
TransGrid connection works	The project will connect to the TransGrid Wellington substation switchyard via overhead or underground cables extending from the on-site substation. TransGrid has advised that the Wellington Substation upgrade works may incorporate installation of one new 330 kV switch bay and multiple transformers (which would be installed as an alternative to the transformer bays being located on the BESS site) and may be installed in stages to coincide with the staged construction of the BESS should a staged approach be adopted.
Construction workforce	The project will create up to approximately 100 construction employment opportunities, many of which are expected to be sourced from the Dubbo region and other surrounding regional areas.
Construction scheduling	Construction is expected to commence in May 2023 (subject to approval). The project will be constructed and commissioned in line with battery supply availability, labour and equipment availability and increasing demand in the network. This may occur in a single stage over a period of 12 – 18 months. Alternatively, it is considered likely that it may occur over two stages as follows: • Stage 1 – commencement of construction May 2023 and operations May 2024; and • Stage 2 – commencement of construction November 2024 and operation November 2025. Construction of the project, or each stage of it, would be undertaken in four phases, as follows: • enabling works (ie site establishment) – approximately 2 – 4 months; • construction works (civil works, structural works, and electrical works) – approximately 5 – 8 months; • commissioning – approximately 4 – 5 months; and • demobilisation – approximately 1 month. For the staged construction scenario, Stage 1 would likely include 300 MW installed discharge capacity, all civil and enabling works, installation of batteries, one transformer and switchgear and associated structural, mechanical and electrical works, and connection to the substation. Stage 2 would consist of 200 MW, including installation of a second transformer and associated switchgear and batteries. Upgrade of the Wellington Substation may also be installed in stages to coincide with the staged construction of the BESS should a staged approach be adopted.
Construction hours	Construction of the project will be undertaken in accordance with the recommended standard/normal hours as defined by the *Interim Construction Noise Guideline* (DECC 2009) and *Draft Construction Noise Guideline* (EPA 2021) being: • Monday to Friday: 7.00 am to 6.00 pm; • Saturday: 8.00 am to 1.00 pm; and • no works on Sunday and public holidays. Some exceptions may be made for low impact works and extraordinary circumstances.

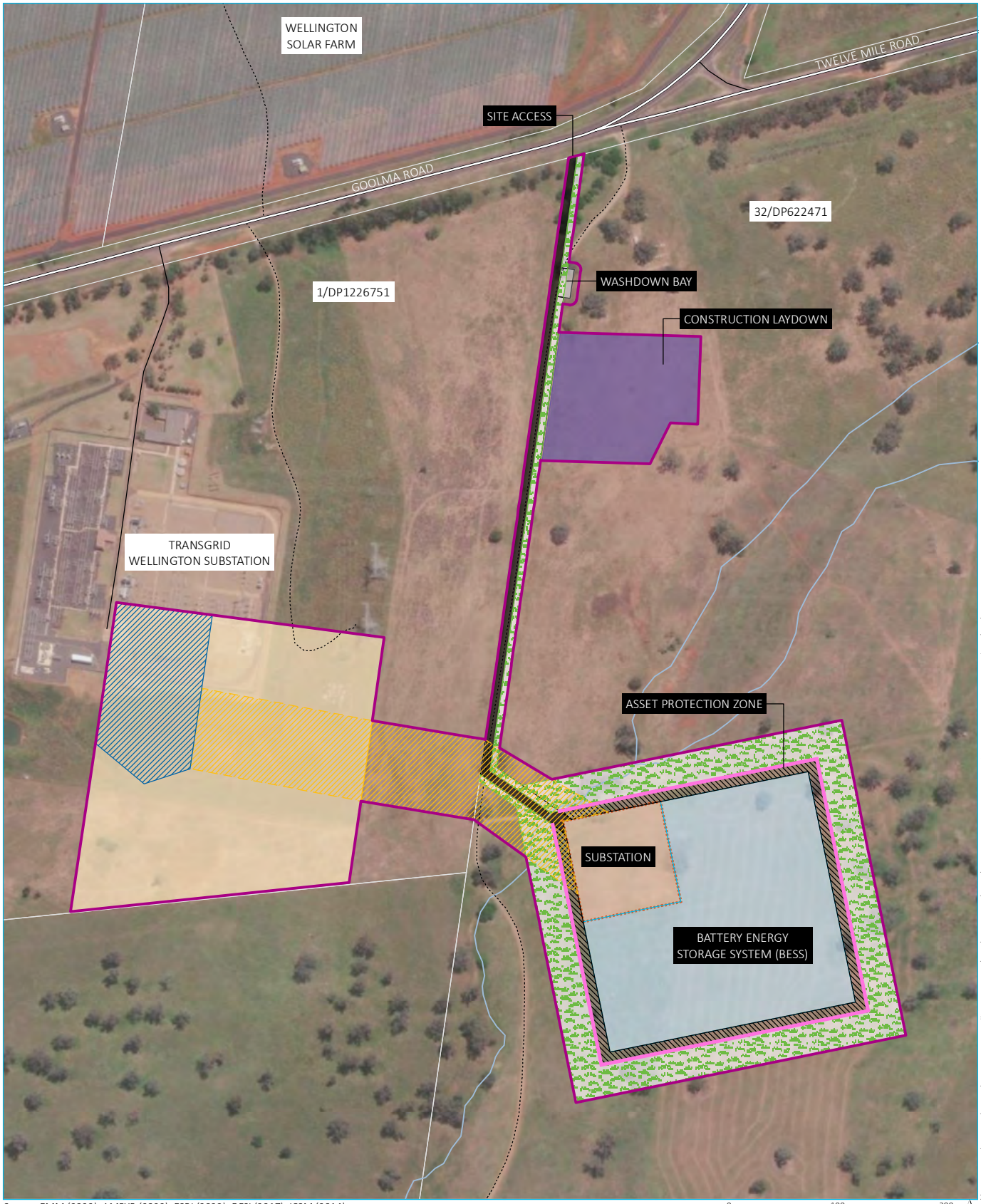
Table 2.1 Key aspects of the Project description

Key aspects	Description
Vehicle movements	The following maximum vehicle movements are predicted (subject to detailed design): • an average of up to 100 passenger vehicles per day (100 in and 100 out) during the construction works phase; • an average of up to 60 heavy vehicles per day (60 in and 60 out) during the construction works phase; and • up to 20 oversize overmass (OSOM) vehicles during the construction works phase. Average daily heavy vehicle movements will be significantly lower as delivery of enclosures is anticipated to occur in batches.
Transport	Project components (batteries, enclosures, PCS components and substation components) will be transported to the site from Sydney/Newcastle via the Mitchell Highway and Goolma Road, an approved B-double route. Construction materials sourced from surrounding concrete batching plants and hard rock quarries. Construction labour, equipment and plant will likely be sourced from Dubbo and other surrounding regional centres.
Water demand	Water used directly on site for construction is estimated at 10 mega litres (ML) used predominantly for dust suppression purposes. Water sources will be confirmed during detailed design but are likely to include a combination to be sourced from bore water located on the participating landholder's land, municipal water supply (in agreement with the relevant authority) and/or imported water in portable tanks.
Operation	
Operational activities	Operation of the project will involve: • maintenance and cleaning of equipment; • general office activities; and • waste removal.
Operational employment	The project will contribute to the employment of two employees during operation.
Operational life expectancy	The BESS is expected to operate for 20 years. At the end of operational life, this may be extended subject to the replacement of components.
Operational hours	The BESS will operate 24 hours a day, 7 days a week and be operated remotely.
Vehicle movements	Up to 4 trips per day (4 in-bound and 4 out-bound), compromising: • staff vehicles up to 3 per day (3 in-bound and 3 out-bound); and • heavy vehicles up to 1 per day transporting replacement parts and equipment as required. Vehicle movements to and from the site will occur infrequently during operations, primarily for scheduled maintenance.
Decommissioning	
Decommissioning timing	At the end of the operational life of the BESS the project will either be replaced and upgraded or built infrastructure will be removed and the site rehabilitated.
Decommissioning works	Works undertaken during decommissioning will not exceed intensity associated with construction works and is expected to take up to 8 months.

2.2 Project area and location

The project would be developed entirely within Lot 32 DP 622471 and will incorporate either an overhead or underground transmission line and upgrade works to Wellington substation in the adjoining TransGrid owned landholding (Lot 1 DP 1225751). The TransGrid Wellington substation is approximately 300 m to the west of the BESS.

Lot 32 DP 622471 subject to the project is proposed to be subdivided from the remainder of the landholding which will continue to use for grazing and agricultural purposes.



Source: EMM (2022); AMPYR (2022); ESRI (2022); DFSI (2017); ICSM (2014)

0 100 200 m

GDA 1994 MGA Zone 55

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KEY

- Development boundary

Project components

- Indicative asset protection zone (10 m)
- Indicative transmission connection corridor
- Indicative TransGrid substation upgrade core infrastructure area
- Indicative TransGrid substation upgrade disturbance area
- Battery Energy Storage System (BESS) (battery rows offset at 6 m spacing and setback from substation)
- Substation
- Washdown bay
- Construction laydown
- Indicative landscaping (post construction)
- Access road
- Indicative location of noise bund

Existing environment

- Major road
- Minor road
- Vehicular track
- Watercourse/drainage line
- Cadastral boundary

Project overview

Wellington Battery Energy Storage System
Social Impact Assessment
Figure 2.1

EMM creating opportunities

3 Methodology

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

- nature and scale of the project
- social characteristics and values of potentially affected communities; and
- *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2021) (DPE 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.

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

3.1 SIA study area

This SIA addresses the social impacts and benefits of the proposed project to the local area, the region, and to NSW.

This SIA study area has been determined in accordance with the SIA Guideline (DPE 2021a) and consideration of the following:

- the scale and nature of the project, its associated activities (including ancillary infrastructure), potential direct impacts, potential indirect impacts that may extend from the project site (for example, transport and logistics corridors, downstream water users) and potential cumulative impacts;
- who may be affected by the project, how they are expected to be affected, and their relevant interests, values and aspirations;

- any potentially affected built or natural features located on or near the project site or in the surrounding region that have been identified as having social value or importance, including key social infrastructure, facilities and amenities;
- any relevant social trends or social change processes being experienced by communities near the project site and within the surrounding region, for example, trends in availability of rented accommodation, changes to relative employment in different industries, changing land uses over time, population and demographic changes; and
- the history of the project and how communities near the project site and within the surrounding region have experienced the project and others like it to date.

Refer to Section 4.2 for determination of the SIA study area for the project.

3.2 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.

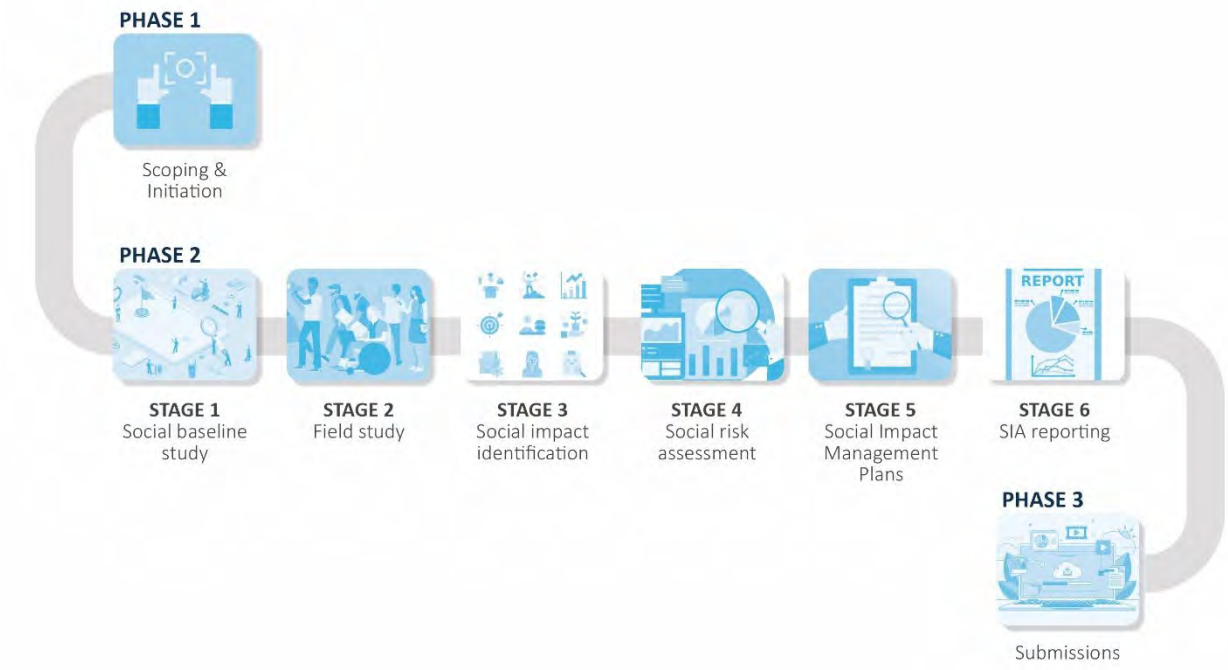


Figure 3.1 Phases of the SIA methodology

3.2.1 Phase 1

i Scoping and initiation

A scoping report for the project was prepared by EMM on behalf of AMPYR and submitted to DPIE (now Department of Planning and Environment (DPE)) on 14 September 2021. The report committed AMPYR to facilitate the preparation of the SIA in accordance with the SIA Guideline 2021 (DPE 2021a).

The SIA Guideline 2021 (DPE 2021a) requires that the applicant identify and understand the Project's SIA study area. As such, a demographic profile was developed as informed by stakeholder consultation and the SIA study area was defined as per the scoping report submitted to DPE in Phase 1.

3.2.2 Phase 2

i 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. The social baseline study:

- provides a community profile, including a socio-economic profile of the SIA study area;
- provides an analysis of social infrastructure within the SIA study area; 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 baseline study is presented in Section 4.

ii Stage 2 – field study

Key engagement objectives set out in the SIA Guideline 2021 (DPE 2021a) include:

- 'ensure likely affected people are identified and have enough understanding of the proposed project, how it may affect them, the development of the EIA, and how they can participate'; and
- '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'.

All SIA field study activities were conducted online, with in-depth interviews occurring via telephone or Microsoft Teams. Community consultation used social research methods, which included in-depth interviews to collect qualitative and quantitative data to:

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

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

iii 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 B) 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 the project and 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 be 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; and
- 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.

iv 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 assessment workshop to consider all identified potential social impacts was conducted on 22 March 2022 where all members of the SIA technical team participated. 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 6.2.

v Stage 5 – social impact mitigation and management

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.

vi Stage 6 – SIA reporting

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

3.3 Limitations of the SIA and level of confidence

Despite extensive efforts by the SIA team, data was collected from only one landowner interview which resulted in low level of confidence in the identification and assessment of social impacts being an accurate representation of the broad concerns and issues held within the community and stakeholders.

This social assessment is limited to being informed by:

- publicly available data and information;
- one landholder interview;
- six stakeholder interviews;
- issues identified during EIS engagement activities; and
- the professional judgement of EMM social scientists.

Adequate levels of confidence in the impacts and benefits identified have not been reached due to lack of representative data. The extent, likelihood and magnitude of social impacts and benefits identified in this social assessment draw on valid, but limited, evidence and hence should not preclude further inquiry regarding social impacts or consideration of supplementary evidence as it comes to hand over time.

4 Social baseline

4.1 Introduction

This chapter provides a summary of the baseline information and key social conditions in the SIA study area for the project that contribute to the identified potential social impacts and benefits. A complete baseline study that forms the basis for the SIA is provided in 0.

4.2 Defining the SIA study area

The project is located within the Wuuluman State Suburb Classification (SSC) area and is adjacent to the townships of Montefiores SSC and Wellington SSC. These suburbs are likely to experience the most direct impacts of the project. While the site itself 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.

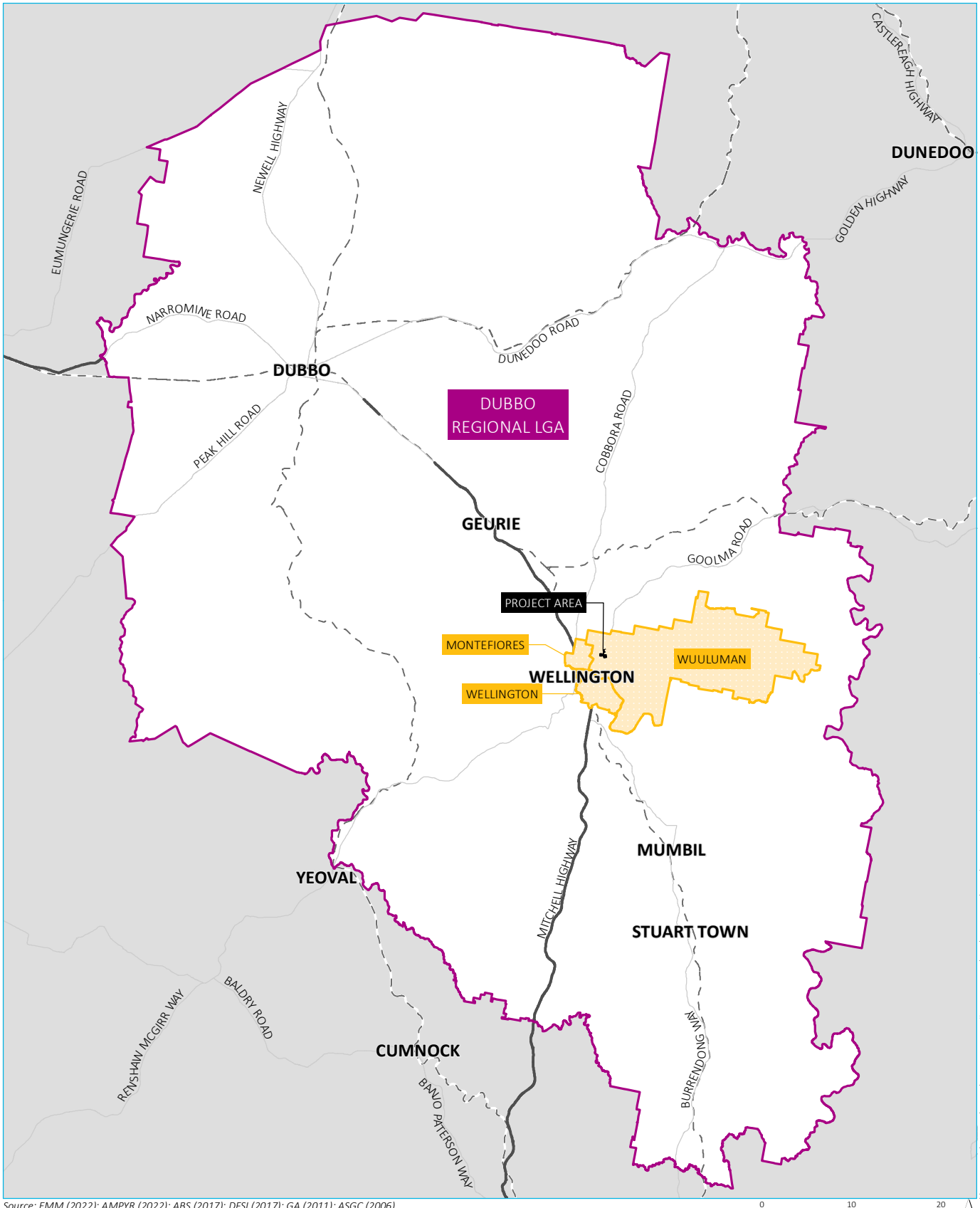
The project may have direct and indirect impacts within Wuuluman SSC, Montefiores SSC, and Wellington SSC related to local social infrastructure and services, local workforce, local business and industry, local housing and accommodation, and community health and wellbeing. Accordingly, these impacts have been assessed as being within the local study area.

The project may have a broader reach due to use of infrastructure, supply chains, haulage routes, transportation of goods, materials and equipment, the movement of its workforce (some of which may have drive-in-drive-out arrangements) and cumulative impacts arising from other projects in the area. These factors require the study area to include regional areas likely to be impacted by the project. Accordingly, Dubbo Regional Local Government Area (LGA) comprises the regional study area.

These communities, that make up the study area, local and regional (hereto referred to as local area or regional area) are shown in Table 4.1 and illustrated in Figure 4.1. They have been mapped to the Australian Bureau of Statistics (ABS) categories used for data collection.

Table 4.1 SIA study area

Study area	Geographic area	ABS data category	Referred to in report as:
Local study area	Wuuluman suburb	Wuuluman SSC	Local area
	Montefiores suburb	Montefiores SSC	
	Wellington suburb	Wellington SSC	
Regional study area	Dubbo Regional Council area	Dubbo Regional LGA	Regional area
State of New South Wales	State of New South Wales	New South Wales STE	NSW



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

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GDA 1994 NSW Lambert

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KEY

- Project area
- Regional area
- Local area
- Rail line
- Mitchell Highway
- Major road

INSET KEY

- NPWS reserve
- State forest

SIA study area

Wellington Battery Energy Storage System
Social Impact Assessment
Figure 4.1

EMM creating opportunities

4.3 Demographics

According to the 2016 Census of Population and Housing, the local area, has a total population of 5,445 people. Most of these people reside in Wellington SSC (4,077), with a small portion residing in Wuuluman SSC (776) and Montefiores (592). Projected population data for the area is only available for the regional area. Population projections published by DPE (2019) suggest that the projected population of the regional area is estimated to increase by 7,373 people from 51,404 in 2016 to 58,777 in 2041, representing a total increase of 14.3% and an average annual increase of 0.6%.

In the local area, the largest age groups are persons aged 24–34 years (13.6%), 45–54 years (12.0%), and 55–64 years (11.9%). In particular, Wuuluman SSC has a high percentage of its population between the ages of 25–44 years (56.6%). Overall the local area has a higher proportion of persons aged 65 years and older (21.3%) compared to NSW (16.3%), and the regional area (16.5%). The local area and regional area also have a higher proportion of persons aged 14 years and younger (17.8% and 20.7% respectively) compared to NSW (15.6%). Within the local area there is a slightly higher proportion of youth aged 15–24 (14.1%) compared to the regional area (12.4%) and NSW (12.5%). This suggests a prominent younger population in the local area compared to NSW, as well as a significant continued aging population. This is also reflected in the median ages across the local area, which includes 44 years in Wellington SSC and 40 years in Montefiores SSC which is older than the median age for NSW (38 years). Wuuluman SSC has a median age of 32 years which is younger than the median ages for Montefiores SSC (40 years), Wellington SSC (44 years) and NSW (38 years). This is likely due to Wuuluman SSC having a significant proportion of persons aged between of 25–44 (56.6%).

4.4 Qualifications and workforce

Non-school qualifications in the local area 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 (31.5% and 40.2% respectively). The proportion of persons with a certificate qualification in the local area is significantly higher compared to NSW (29.7%). This reflects the main occupations in the local and regional areas being technicians, trades workers, and labourers which typically do not require tertiary level education. This is also consistent with the lower rates of secondary schooling completion, making it difficult to directly enter university programs.

In 2016, the unemployment rate in the local area was 11.9%, which is higher than both the regional area (5.9%) and NSW (6.3%). In particular, the substantial level of unemployment in Wellington SSC reflects the high levels of disadvantage and low levels of advantage in Wellington SSC which ranked in Decile 1 for each of the Socio-Economic Indexes for Areas (SEIFA) indexes (see Section 4.9.4). Wellington SSC also has much lower levels of Year 12 completion (29.5%) compared to NSW (59.1%) which may also significantly contribute to the high levels of unemployment in the area. The youth unemployment rate in the local area (18.3%) is higher than the rate within the regional area (12.3%) and NSW (13.6%). Labour force participation in the local area was also lower (36.7%) compared to the regional area (59.3%) and NSW (59.2%).

In the local area the top three occupations are community and personal service workers (20.4%), labourers (14.7%) and technicians and trades workers (14.2%). These jobs 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 significant proportion of community and personal service workers throughout the local area corresponds to the prevalence of health care and social assistance being the top industry of employment in both the regional area (15.4%) and the local area (18.2%). Both individual and household median weekly income was significantly lower in Wellington SSC ($458 and $781 respectively) compared to both the regional area and NSW. This reflects the SEIFA scores within Wellington SSC, which suggest higher levels of disadvantage and lower levels of advantage.

4.5 Local business and industry

Health care and social assistance is the top industry of employment in the local area providing 18.2% of employment, followed by public administration and safety (12.3%), and retail trade (10.5%). Whilst health care and social assistance is the largest industry of employment within Wellington SSC and Montefiores SSC (19.2% and 15.0% respectively), agriculture, forestry and fishing are the largest industries of employment in Wuuluman SSC (49.0%). The high proportion of employment within the health care and social assistance industry in Wellington SSC and Montefiores SSC corresponds with the higher rates of populations with need for assistance in Wellington SSC and Montefiores SSC. Of the 5,142 registered businesses in the regional area, 22.3% were in the agriculture, forestry, and fishing industry. The industries with the next highest proportion of registered businesses across the regional area was construction (18.8%), and rental, hiring and real estate services (9.1%).

4.6 Social infrastructure and services

In the local area there is a total of one general practitioner (GP) practice, one hospital, one police station, a rural fire brigade, and a range of community services. Wellington SSC has a local police station however it does not operate 24 hours a day. In the local area there is one tertiary institution: TAFE NSW – Wellington. There are additional tertiary institutions available in the regional area.

The local area is well serviced by a range of schools, childcare and health services, located in the regional area. The regional area also provides community services including Aboriginal community services, child and family services, youth community services, housing and homelessness services, employment services, disability services, aged services, and domestic violence services (Healthdirect Australia 2021; Ask Izzy 2021). As previously mentioned, health care and social assistance is one of the top three industries of employment in the regional area. The availability of social infrastructure, services, and facilities in the local and regional area is presented in Table 4.2.

Table 4.2 Social infrastructure, services, and facilities in the local and regional area, 2021

	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	✓	✓

Table 4.2 Social infrastructure, services, and facilities in the local and regional area, 2021

	Local area	Regional area
Disability services	✓	✓
Aged care services	✓	✓
Women's services	✓	✓

Source: Healthdirect (2021); Ask Izzy (2021).

4.7 Road Infrastructure and transport

4.7.1 School bus service

Ogden's Coaches operate contracted school services in Mudgee, Wellington, Dubbo, Condobolin, Gilgandra, Gulargambone, Narromine and Trangie. Within the local area, Ogden Coaches run 13 school bus services that operate in and out of Wellington (AM and PM services). All of these school bus routes service Wellington Christian School, Wellington High School, St Mary's Catholic School and Wellington Public Primary School (Odgen Coaches 2022). However, two of these bus services utilise Goolma Road and the intersection with Twelve Mile Road:

- S106 Mt Bodangora (Spicers Creek) – travels between Spicers Creek through Bodangora to Wellington; and
- S110 Umagalee (Wuuluman) – travels through Wuuluman to Wellington.

Bus service S106 operates between Mt Bodangora and Wellington Schools and travels along Goolma Road. Bus service S110 operates between Umagarlee and Wellington Schools and travels on both Goolma Road and Twelve Mile Road. In doing so, the school busses pass by the Project site entrance (Odgen Coaches 2022). Both services use the Goolma Road and Twelve Mile Road intersection. According to Ogden Coaches, the school bus services operate approximately between 7:52 am – 8:47 am in the morning and 3:07 pm – 4:18 pm in the evening (Odgen Coaches 2022).

4.7.2 Future road improvements – upgrade of Goolma Road and Twelve Mile Road T-intersection

As a part of the construction of the nearby Uungula Wind Farm, the development consent for that project requires upgrade of the intersection between Goolma Road and Twelve Mile Road. Effectively the existing intersection will be closed to the public and Twelve Mile Road will be realigned to connect to Goolma Road at a location further north of the existing intersection location. The stretch of road between the realigned section of Twelve Mile Road at the existing intersection will be kept for use by the Uungula Wind Farm project for oversize overmass vehicles. After project completion the intersection will be closed and decommissioned.

At the time of writing, the timing for construction of the proposed intersection upgrade works associated the Uungula Wind Farm project is unclear, however anticipated to commence prior to the end of 2022 and take approximately 5–6 months to complete. It is anticipated the intersection upgrade works will be completed prior to commencement of construction of the project.

The access road from Twelve Mile Road to the project site will be improved to facilitate the access and egress of larger trucks during construction. Improvements would include gravel coverage, widening to 8 metres and additional drainage as required. The road will be maintained during operation to allow for the access and egress of maintenance and operational vehicles to batteries and control and office building.

4.7.3 Crash trends

Crash data from TfNSW Centre for Road Safety interactive history database for the last five years between 2016 and 2020 has been studied in the vicinity of the site, focusing on Goolma Road, Twelve Mile Road and the broader Dubbo Regional LGA. Goolma Road has experienced a yearly crash occurrence since 2017 with a significant increase in accidents in 2019. In 2019, there were two fatal crashes on Goolma Road contributing to a yearly count of six fatal crashes across the Dubbo Regional area. Additionally, Goolma Road in 2019 experienced three accidents that ended in serious injury, with one of these occurring at the Goolma Road and Twelve Mile Road intersection. In 2020, there was another crash at the intersection which resulted in moderate injury. Crashes along Twelve Mile Road were comparatively fewer with a crash in 2018 ending in minor/other injury and another in 2020 resulting in moderate injury. Crashes resulting in injury across the regional area have remained fairly steady. Crash trends for the local and regional area is presented in Table 4.3.

Table 4.3 Crash trends in the local and regional are, 2016 – 2020

Crash type	2016	2017	2018	2019	2020
Goolma Road					
Fatal	0	0	0	2	0
Serious injury	0	0	1	3	0
Moderate injury	0	1	0	0	1
Minor/other Injury	0	0	0	0	0
Twelve Mile Road					
Fatal	0	0	0	0	0
Serious injury	0	0	0	0	0
Moderate injury	0	0	0	0	1
Minor/other injury	0	0	1	0	0

Table 4.3 Crash trends in the local and regional are, 2016 – 2020

Crash type	2016	2017	2018	2019	2020
			Dubbo Regional LGA		
Fatal	6	4	6	6	4
Serious injury	39	41	48	34	30
Moderate injury	58	71	40	52	58
Minor/other injury	17	18	12	16	20

Source: TfNSW 2022, *Interactive Crash Statistics.*

4.8 Local housing and rental market

On 24 March 2022, the local area had a total of 48 properties for sale and 23 properties to rent (REA Group 2022). All of these properties are located in Wellington SSC.

From March 2019 – December 2021 the residential vacancy rate for postcodes 2820, 2831 and 2830, which encompasses most of the local area and regional area, has varied across the equilibrium level of 3.0% (SQM Research 2021). The residential vacancy rate for postcode 2831 and postcode 2830 has consistently remained below the 3.0% equilibrium benchmark. This indicates a lack of available rental housing (undersupply) in postcode 2831 and postcode 2830, and significant shifts between oversupply and undersupply in postcode 2820. Postcode 2820, which encompasses the local area, had a substantial oversupply of rental options between March 2019 – March 2020, with a significant drop below the 3% benchmark in June 2020, continuing until December 2021 which demonstrates an increase to 3.9%.

Within Wellington SSC between 2006 – 2016 there was a 62.2% increase in rent payments which was higher than the trends across the regional area (56.3%). In addition, within Wellington SSC, 12.9% of households had rent payments that were greater than or equal to 30% of household income which is higher than the regional area. This data relating to the rental market in the social baseline is consistent with findings from the SIA field study, with participants identifying high rental costs and a lack of affordable rental housing available within the local area, particularly within Wellington SSC.

4.9 Vulnerabilities and vulnerable groups

4.9.1 Disability

Data from the 2016 Census indicates that the population in both the local and regional area has a greater need for assistance than that in the rest of NSW 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. In the local area, 7.0% of the population has a need for assistance, which is a greater need for assistance compared to NSW (5.4%). This greater need for assistance in the local area could be attributed to the higher proportion of people aged 65 years and older (21.3%) compared to NSW (16.3%). In the regional area, the need for assistance is slightly higher compared to NSW with 5.7% of the population with a need for assistance. 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 Dubbo within the regional area, and larger cities where those services are more readily available.

4.9.2 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 at the SSC level but are available at the LGA level. According to the 2016 Census estimations on homelessness, rates of homelessness in Dubbo Regional LGA are lower than NSW rates, with a rate of 30.8 persons per 10,000 across the regional area compared to the NSW average of 50.4 persons per 10,000.

4.9.3 Aboriginal and/or Torres Strait Islander population

At the time of the 2016 Census, 29.6% of the total population within the local area and 15.5% of the regional area population identified as Aboriginal and/or Torres Strait Islander. This proportion in the local and regional areas is significantly higher than the proportion of the population who identify as Aboriginal and/or Torres Strait Islander in NSW (3.0%). Wuuluman SSC in particular has a significantly higher rate of people who identify as Aboriginal and/or Torres Strait Islander (47.8%), followed by Wellington SSC (27.8%) and Montefiores SSC (18.2%). According to the 2016 census there is a relatively even distribution of male and female Aboriginal/or Torres Strait Islanders in the local and regional area. However, there are more males than females between the ages of 15–34. There is also a higher proportion of people aged 25–34 years and 5–14 years in the local and regional areas compared to NSW.

4.9.4 Socio-economic disadvantage

The level of disadvantage or advantage in the population is indicated in the Socio-Economic Indexes for Areas (SEIFA) which focuses on low-income earners, relatively lower education attainment, high unemployment and dwellings without motor vehicles. SEIFA categorises levels of socio-economic disadvantage through four indexes, with each index being a summary of a different subset of Census variables and focuses on a different aspect of socio-economic advantage and disadvantage.

According to the 2016 SEIFA (ABS 2016b), socio-economic advantage and disadvantage vary between communities in the local area. The highest levels of disadvantage and lowest levels of advantage are experienced in Wellington SSC, which is ranked in Decile 1 for each of the SEIFA indexes. This means that compared to other suburbs across NSW, there is likely a higher proportion of households with low income, and residents without qualifications. Additionally, there is likely a smaller proportion of households with high incomes and in skilled occupations. A low Index of Education and Occupation (IEO) could also be indicative of a higher number of unemployed persons compared to other areas of NSW. The higher levels of disadvantage and lower levels of advantage in Wellington SSC reflects the slightly higher proportion of Aboriginal and/or Torres Strait Islander population compared to NSW. However, the SEIFA index indicates that there are higher levels of advantage and lower levels of disadvantage in Wuuluman SSC compared to other SSCs across NSW, with rankings of 7–9 in each of the SEIFA indexes. The SEIFA scores indicate that Montefiores SSC experiences a medium amount of overall socio-economic disadvantage and advantage compared to other SSCs across NSW, with rankings of 4–5 across each of the SEIFA indexes.

Within Dubbo Regional LGA, the SEIFA scores indicate that these areas experience a medium amount of overall socio-economic disadvantage and advantage compared to other LGAs across NSW, with rankings of 5–6 across each of the SEIFA indexes. This could indicate that these areas likely have a medium amount of people with higher education qualifications and working in skilled occupations, a more equal amount of people with high and low incomes, and a more balanced amount of more households earning higher incomes and owning their own homes compared to other LGAs within NSW.

Source: ABS 2016, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA).

Figure 4.2 SEIFA deciles in the study area, 2016

4.10 Community values

Another key aspect of the social make-up of the area is the culture and values of its population. Dubbo Regional Council values establishing strong community ties, improving liveability and housing affordability whilst promoting opportunities for tourism, education and training, recreation, Indigenous heritage, and the natural environment. In the 2040 Dubbo Community Strategic Plan (DRC 2018), Dubbo Regional Council prioritises increasing the general population, developing infrastructure to support the local community, ensuring adequate housing, ensuring economic growth, and enhancing employment opportunities whilst supporting local industries.

In 2016 Wellington Shire was amalgamated with the local government area of Dubbo City to form Western Plains Regional Council (which was subsequently renamed Dubbo Regional Council the same year). Today, Dubbo is a regional centre, with a strong agricultural sector in the Wellington area.

The Wellington community values the natural environment, rural landscapes and its colonial heritage and character, with many buildings dating to the late 1800's still standing and in use today. The Wellington Caves and Lake Burrendong are particularly of importance to the area.

5 Community and stakeholder engagement

5.1 Introduction

This section summarises the findings from the community engagement activities undertaken:

- as part of project EIS engagement; and
- as part of the data collected directly to inform the SIA.

5.2 EIS engagement

A summary of EIS engagement activities and participation is provided in Chapter 5 of the EIS and engagement materials are provided in Appendix C of the EIS.

A summary of the methods used to engage with the community in support of consultation for the project are outlined in Table 5.1.

Table 5.1 Engagement activities

	Community Information Sessions	Two community information sessions were held to provide information about the project. An in-person session was held on 22 February 2022 at PCYC Wellington, and an online session was held over Zoom on 26 February 2022. Both sessions were advertised via a newsletter letterbox dropped to the surrounding community including the communities of Wellington, Montefiores, Maryvale, and Wuuluman. Nearby neighbours were also provided a copy of the newsletter via registered post and email. In total four people attended across the two sessions and provided feedback on the project. No feedback forms were received.
	Stakeholder briefings	The team has undertaken face-to-face briefings with government agencies, elected leaders and interested neighbours. These briefings were held to introduce the project, explain the planning process, and discuss potential project impacts. AMPYR and Shell also provided regular updates to these stakeholders.
	Traditional landowner consultation	The consultation process initially identified 19 Aboriginal stakeholder organisations with potential interest in the project. Following a notification process, six responded to be registered for subsequent consultation through the project. Three representatives participated in the field investigation of a study area (which incorporated the development boundary for the project) and discussions around tangible and intangible values as part of the Aboriginal heritage stakeholder consultation process for the AHCA (refer Appendix F of the EIS).
	Letterbox drops	Three letterbox drops have taken place in the local community to help promote consultation opportunities and events. Letters were distributed to properties within 2 km of the project site. The letters provided residents with details of how to participate in consultation events and people were encouraged to contact the project team to provide feedback via a range of channels, including the 1800 number, website, and email inbox.
	Project website	A dedicated project website for the project was established: https://wellingtonbess.com/ This page is regularly updated to reflect latest project information and includes a feedback form.

Table 5.1 Engagement activities

	Project email address	A dedicated project email address - info@wellingtonbess.com - answers queries from neighbours and stakeholders. Four emails have been received from the community about the project. The project email address has been promoted on all community notifications and advertising.
	Project Phone line	A 24/7 phone line was established in August 2021 to allow local people and stakeholders to speak to a member of the project team. The 1800 number has been promoted on all community notifications and advertising.
	Community newsletter	A community newsletter was distributed in January 2022 via registered post and electronically to introduce the project, to provide an overview as to the status of the EIS, and to invite residents to the upcoming community information sessions.
	Advertising	AMPYR/Shell had placed advertising in the Daily Liberal and the Wellington Times to advertise the community information sessions and to advertise the SIA survey.

5.2.1 Continuous engagement

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

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

- ongoing participation and regular local stakeholder briefings and meetings, including:
  - Dubbo Regional Council;
  - TfNSW; and
  - Adjoining neighbours and landowners.
- regularly updating and 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.

5.3 SIA field study

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

5.3.1 Participation

The SIA field study consisted of interviews (conducted via telephone and videoconference) with local service providers and key stakeholders of the project. The methods of engagement with service providers and key stakeholders and details of participation are provided in Table 5.2.

Table 5.2 Participation by engagement event

Method	Event	Administered	Invited	Participated
Interviews	Videoconference and teleconference	25 February 2022 – 24 March 2022	• one representative of Dubbo Regional Council; • one representative of the Wellington branch of NSW Farmers; • eight nearby neighbours; and • 13 service providers located in Wellington.	• one representative of Dubbo Regional Council; • one representative of the Wellington branch of NSW Farmers; • one a nearby neighbour; and • four with local service providers in Wellington.

5.3.2 Interview participation

Interviews were conducted with local service providers and key stakeholders from 25 February 2022 to 24 March 2022.

Each of the service provider interviews explored the capacity of their service and also offered insights into the potential impacts and benefits of the project to specific areas of service in the community. A total of four brief interviews were conducted with four local service providers via telephone with:

- one representative of a local employment service provider;
- one representative of a local accommodation provider;
- one representative of the Wellington hospital; and
- one local real estate agent

Interviews with two additional key stakeholders and a local resident were conducted in-depth and 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. A total of three in-depth interviews were conducted with the following three stakeholders via videoconference and via telephone:

- one representative of Dubbo Regional Council;
- one representative of the Wellington branch of the NSW Farmers; and
- one local resident.

A summary of the key findings from the in-depth interviews are provided in Section 5.4.

5.3.3 Online community survey

An online community survey was open to the public to identify issues and potential impacts relating to the project. The online community survey was distributed via newsletter to properties in Wellington, Wuuluman, Montefiores, Bodangora and Maryvale and directly emailed to five nearby neighbours.

The survey included open ended, multiple choice, and rating-style questions to provide both quantitative and qualitative data. The survey was available for response between 5 January 2022 – 25 March 2022. However, there were no responses to the online community survey despite efforts to promote it with the landowners and other stakeholders. No data has been able to be attained from the community via an online community survey.

5.4 Summary of SIA field study findings

All consultation activities sought to understand how participants viewed their community and identify how the project may impact on their community. It is informed by the findings of the in-depth interviews held with local council, a representative of NSW Farmers, and local services providers.

Participants identified values, strengths, and vulnerabilities as shown in Table 5.3.

Table 5.3 Community identified values, strengths, and vulnerabilities

Values	Strengths	Vulnerabilities
Long-term sustainable employment.	Access to general health services in the local area – strong ambulance service (four ambulance vehicles).	Access to specialist health services is strained.
Recognition of the value the substation brings to the local and regional area.	High functioning emergency health service.	Hospital staff shortages and ageing facilities.
Community cohesion and resilience.	SIA participants noted that under Dubbo Regional Council, roads and service infrastructure has improved.	Concern for road safety at the proposed entrance of the site which is at the intersection of Goolma Road and Twelve Mile Road – the speed limit of 100 km/h has been identified as a safety concern.
Rural/country lifestyle and environment.	Adequate supermarket services ie both Woolworths and Coles within Wellington.	Poor town centre facilities - lack of retail facilities. Wellington is without a clothing store – residents need to travel to Dubbo for shoes and clothing.
Local growth and reliance on energy developments.	Access to good water quality.	Increased housing prices and rent payments.
Safety and security – community push for 24-hour policing.	Support for community activities and community cohesion.	Fire prone area.
Support to the local economy through tourism, such as the Wellington Boot Racing Carnival.	Heritage value of Wellington town centre.	Lack of affordable rental housing.
Satellite town for Dubbo.	Resource rich region.	The local community does not have 24-hour policing.
Generational history of the town.	Productive agricultural land.	Increased crime rate.
Creation of trust within the community.		Multiple developments occurring within the local area – construction phases may coincide.
		Drug and alcohol issues.
		Poor road infrastructure.
		Inadequate transportation infrastructure and connection to the wider regional area.
		Lack of support and assistance for the elderly community in the local area.
		Unsafe t-intersection at Goolma Road and Twelve Mile Road.

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 5.4.

The key issues or potential impacts, and opportunities or potential benefits identified by local service providers and key stakeholders are organised into categories of social impact theme. A detailed summary of the most prominent social impacts that were identified throughout the SIA field study and stakeholder engagement activities are available in Section 6.

Table 5.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
	• Noise during operation from the battery system could cause disruption to nearby residents. • Coinciding construction schedules with nearby renewable energy projects in the area may contribute to disruptions to daily life of the community. • Increased workforce travel and truck movements could have impacts related to traffic noise and light.	• Sustainable long-term employment contributing to maintained population and way of life in the local area.	• Opportunities to liaise with the proponents of Wellington Solar Farm and Uungula Wind Farm to ensure that local community is not overwhelmed by coinciding construction schedules.
	• Increased pressure on local emergency services that are already strained	• Greater access to reliable electricity. • 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).	• Opportunity for AMPYR to liaise with Council and local emergency service providers to generate working partnerships. • Preparation of consequence management plans which include assessment of risks or gaps in emergency services responses in consultation with local emergency services.
	• Increased pressure on rentals within the local area. • The influx of workers during construction phase may increase rental prices and produce a lack of rental housing availability therefore leading to existing residents being priced-out of the area. • The overlap of multiple projects in the local and regional area may impact upon the area's ability to absorb the increase in workforce.	• None provided.	• Leasing of local housing and offering subsidised rent for local employees.

Table 5.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
	• Potential loss of prime agricultural land.	• The prospect of having at least 2 permanent employees whilst the project is in operation will contribute to the local economy through the procurement of local goods and services. • The project may lead to an increase in workers utilising local accommodation on the short-term. However, longer-term workers may seek rental accommodation. • The project may benefit existing workers (specially laborers) in the area to up-skill their qualifications ie upgrading driver's license, tele-handling, forklift, traffic control etc. • Increased opportunities for employment will arise as a result of the project, both in the construction and operation phases.	• Potential opportunity to develop relationships with local employment providers in the area as well as the local TAFE to promote apprenticeship and skills training opportunities. • Opportunities to prioritise local employment and employment of Aboriginal persons to be pursued during construction and operation. • To enhance benefits associated with livelihood and employment opportunities, AMPYR could actively work to secure permanent employment for youth in the local area.
	• Additional workers in the local area may impact upon community cohesion – a representative from the NSW Farmers said that when the nearby solar farm was being constructed, the pick-up location for the workers' bus was the local swimming pool therefore, the car park was full and local residents had restricted access.	• Stakeholders identified how previous developments in the area have implemented community sponsorship and community programs. SIA participants recounted how past developments have 'given something back to the community' and supported community activity. During consultation, service providers and a local landholder put forth their hope that the project would implement similar forms of community investment.	• Opportunities for AMPYR to sponsor community activities or implement a fund to deliver community benefits and programs – one stakeholder described how past renewables developments have sponsored community activities which was greatly valued in the community.

Table 5.4 Community identified impacts and opportunities

Themes	Impacts	Benefits	Opportunities
	• Additional truck movements and increased workforce travel increasing the potential for traffic accidents, particularly related to current speed limits of 100 km/h and the t-intersection at Goolma Road and Twelve Mile Road. • Truck movements increasing along Goolma Road was raised by stakeholder has having significant public safety impacts for the school bus route that operates along Goolma Road. • Fire hazards posed by the battery storage system and the associated complications of extinguishing fire caused by a battery system. • The safety risk of smoke from potential fires travelling down-wind and across town. • Concern about lightning striking the facility and substation.	• None identified.	• Reduction of the speed limit along Twelve Mile Road and Goolma Road when approaching intersection. • Opportunity to liaise with Council to implement an extra turning lane at the intersection of Goolma Road and Twelve Mile Road. • Opportunity to implement a bus service for the workforce for the project to decrease the amount of traffic. • Potential for road upgrades with associated improvements for road safety.
	• The existing issue with communication with the Department of Transport may impact upon community members accessing grievance mechanisms to report road safety impacts arising from the project.	• None identified.	• For AMPYR to implement regular community consultation meetings to update the community on the progress of the project, in turn creating more community awareness and ability to access decision making systems and grievance mechanisms.

6 Social impact assessment

This chapter provides an assessment of the identified potential social impacts of the Project. 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.

6.1 Social impacts

The assessment of social impacts uses eight categories to identify social impacts:

- **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 (DPE 2021a).

6.2 Social 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 Table 6.1.

Table 6.1 Social impact significance matrix

Likelihood level		1	2	3	4	5
		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 2021b.

The framework is applied using the following definitions of:

- likelihood of social impacts, Table 6.2;
- dimension of social impact magnitude, Table 6.3; and
- magnitude levels for social impacts, Table 6.4.

Table 6.2 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: DPE 2021b.

Table 6.3 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.

Table 6.3 Dimensions of social impact magnitude

Dimensions	Details needed to enable assessment
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: DPE 2021b.

Table 6.4 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: DPE 2021b.

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 potential negative impacts on local communities while documenting the benefits to the broader region;
- considered the potential 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 3.2.2ii. These include benefits (ie positive social impacts) and negative social impacts.

Potential negative social impacts have been assessed in the absence of any social mitigation measures (referred to as 'unmitigated' impacts below) and then have been assessed based on the successful implementation of the proposed social mitigation measures (referred to as 'mitigated' impacts below).

Similarly, potential social benefits have been assessed in the absence of any additional social enhancement measures (referred to as 'un-enhanced' impacts below) and then have been assessed based on the successful implementation of the proposed social enhancement measures (referred to as 'enhanced' impacts below).

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

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

A social impact workshop was conducted on 22 March 2022 to assess potential impacts using a social risk framework.

6.3 Limitations of social impact assessment

Eight nearby neighbours were invited to participate in the in-depth interviews, however only one local resident participated in the study. Four local service providers were consulted.

Multiple efforts were made to involve more stakeholders in in-depth interviews, including multiple service provider groups - emergency services, local businesses, NGOs and the Local Aboriginal Land Council (LALC). Emergency service providers and the Wellington LALC were non-responsive, and despite efforts, no data was able to be attained from an online community survey. Non-responsiveness may be attributed to general apathy towards the project however there is not sufficient data from the SIA process to have a high level of confidence in this assumption.

The assessment is not considered representative of landholder/local resident issues due to the limited sample set of one local resident, and the lack of another data source, which constrains the level of confidence for this social impact assessment. Adequate levels of confidence have therefore not been reached for the SIA as sufficient data has not been attained.

This SIA has thus drawn heavily from EMM social scientists' professional judgement and previous SIAs that have similar issues, scope and impact.

6.4 Way of life

This section provides an assessment of unmitigated and mitigated potential impacts on way of life as a consequence of the proposed project. A key issue for consideration was impacts to amenity related to road traffic noise.

6.4.1 Amenity related to traffic noise – unmitigated

Past SIA studies in similar rural towns have indicated the value placed upon the 'quiet and peaceful' nature of living in rural communities (EMM 2021a). One local resident located near the project site entrance raised concerns that noise from increased passenger and truck movements would detract from the current amenity of the local area and affect some residents located along Goolma Road and Twelve Mile Road. Concern was raised related to general road noise and the potential for road noise to increase in the early hours of the morning.

The road traffic noise impact assessment as part of the *Wellington Battery Energy Storage System Noise and Vibration Impact Assessment* (NVIA) (EMM 2022a) considered the noise impacts of the proposed increase in daily truck movements along Goolma Road. Road traffic noise predictions considered an average daily estimate of up to 100 passenger vehicles and up to 60 heavy vehicles during the construction works phase. According to the NVIA, construction traffic operating along Goolma Road will be restricted to standard daytime hours (7am to

10pm) only. The nearest residential facades potentially affected by the proposed increase in traffic are located on Goolma Road and Twelve Mile Road. The NVIA has confirmed that road traffic associated with the construction of the project is predicted to satisfy the relevant road traffic noise criteria.

Without any social mitigation measures, the amenity impact related to traffic noise is assessed as **medium**. The likelihood of impact is assessed as **almost certain** due to residents being located on Goolma Road and nearby Twelve Mile Road. However, the negative magnitude of the impact is anticipated to be **minimal** as road traffic noise levels are predicted to satisfy the relevant road traffic noise criteria at the nearest potentially affected residences. The hours of construction work would provide a respite period from Saturday evening to Monday morning; and impacts to liveability and livelihood will be limited to the construction phase of the project.

6.4.2 Amenity related to traffic noise – mitigated

The AMPYR community engagement program (ie dedicated project phone number and email) provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback. Upon successful maintenance of community engagement mechanisms, avenues for grievance will be easily accessible to local residents and stakeholders and concerns should be adequately addressed and resolved. Ongoing monitoring and management of potential amenity impacts due to noise and dust from road traffic on residents would be maintained throughout the construction phase.

As the identified mitigation measures will only manage potential amenity impacts related to road noise, the mitigated social impact remains at **medium**. A summary of the assessment is provided in Table 6.5.

Table 6.5 Summary of amenity related to traffic noise

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
	Amenity related to traffic noise	Residents along Goolma Road and Twelve Mile Road	Construction	Local area	Medium	Medium

6.5 Community

This section provides an assessment of unmitigated and mitigated potential impacts on the community because of the proposed project. The matters assessed include community investment, social cohesion and resilience and sense of place.

6.5.1 Community investment, social cohesion and resilience – unenhanced

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).

The local community embraces communication and involvement in the community. During consultation, stakeholders expressed that the local community is generally community-orientated and close-knit. A local resident described the area to have a 'deep community history' and noted that generational residents and families in the area are very 'proud of their heritage'.

During consultation, service providers spoke of the benefits that came from the local wind farms and solar farms in the 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 such as Wellington, where funding opportunities for small community initiatives and organisations may not be easily accessible or available. SIA participants recounted how past developments have 'given something back to the community' and supported community activity. During consultation, service providers and a local landholder put forth their hope that the project would implement similar forms of community investment

Unenhanced, community benefits related to community investment, social cohesion and resilience is assessed as **low**. Without enhancement measures, the likelihood of community benefits community investment and involvement is **unlikely** without AMPYR developing targeted plans and strategies to support community investment. The anticipated positive consequences are **minimal**, with potential longer-term benefits for the local and regional economy and community resilience should community investment continue into the operation phase of the project.

6.5.2 Community investment, social cohesion and resilience – enhanced

The development and implementation of a community and stakeholder engagement strategy will strengthen social cohesion and resilience in the local area by increasing project transparency and facilitating investment into the local community.

AMPYR would maximise the benefits by exploring funding and grant opportunities within the local and regional area based on community need and continuing to implement their community and stakeholder engagement strategy to facilitate funding decisions informed by the local community, including regular meetings with local MP's, Dubbo Regional Council, local community groups, and local community members.

Potential benefits may be realised though the development of a strategy to enhance identification and implementation of shared value opportunities within the local area is recommended. 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). Creating shared value involves the interaction between company assets and expertise, business opportunities, and social need (Shared Value Project 2022). Through the shared value approach, social challenges are solved through business activities themselves.

A shared value approach will support AMPYR to manage negative impacts and enhance the benefits while addressing local community issues. Both the community and stakeholder engagement strategy and shared value strategy will require ongoing monitoring and recording of feedback from community stakeholders to ensure adequate consultation and inform any necessary revisions to either strategy.

Enhanced, the community benefits related to community investment, social cohesion and resilience is increased to **medium**. An implemented shared value approach will ensure that benefits are experienced by both AMPYR and the community which address local community issues. Should AMPYR implement enhancement measures, assessed likelihood of social benefit would increase to **possible** with positive social benefits having **moderate** levels of impact on the community. A summary of the assessment is provided in Table 6.6.

Table 6.6 Summary of community related to community investment, social cohesion and resilience

Social impact	Issue	Affected parties	Duration	Extent	Unenhanced	Enhanced
	Community investment, social cohesion and resilience	Residents of the local area and regional areas	Operation	Local area and regional area	Low	Medium

6.6 Health and wellbeing

This section provides an assessment of potential unmitigated and mitigated impacts on health and well-being due to the proposed project. The matters assessed include:

- public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road intersection;
- public safety related to truck movements along a school bus routes on Goolma Road; and
- public safety related to fire hazards.

6.6.1 Public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road intersection - unmitigated

Public safety concerns related to increased construction workforce travel and truck movements along Goolma Road as well as the Goolma Road/Twelve Mile Road intersection was the main potential impact raised by stakeholders during in-depth interviews. The current intersection was noted as a key vulnerability in the local area and was identified as having the potential for crashes resulting in injury or worse and associated stress considerations. According to the TIA, during the 12–18 month construction phase of the project, there will be an average increase of up to 100 passenger vehicles (100 in-bound and 100 outbound) and 60 heavy vehicles (60 in-bound and 60 out-bound) per day and a maximum of 80 passenger vehicles and 30 heavy vehicles during the peak hour (EMM 2022b).

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, Goolma Road has experienced a yearly crash occurrence since 2017, with two fatal accidents in 2019 and three accidents ending in serious injury in the same year (see Section 4.7.3). The Goolma Road and Twelve Mile Road intersection has experienced two crashes, one ending in serious injury and another resulting moderate injury in 2019 and 2020 respectively. Stakeholders repeatedly raised safety concerns for the current speed limit of 100 km/h along both Twelve Mile Road and Goolma Road. Multiple stakeholders reported lack of visibility of the site entrance at the current intersection and surrounding the intersection more generally. According to the TIA, sight distance to the right of site access access does not meet the minimum requirement (EMM 2022b).

Freire et al (2021) outline the key performance limitations of trucks particularly regarding visibility, braking and stopping distance. Required stopping distance for trucks increases with increased vehicle speed, for example, when travelling at 60 km per hour, the average required safe stopping distance for a truck is 83 m however when travelling at 100 km per hour, this increases to 185 m (Freire et al, 2021). Evidence suggests that if these heavy vehicle performance limitations are not accounted for, there is an increased road safety collision risk between truck and passenger vehicle drivers (Freire et al, 2021). Several stakeholders supported a reduction of the current speed limit of 100 km/h to 80 km/h as a potential means of reducing the chances of traffic collisions.

One landholder noted their concern for how the narrow lanes on Goolma Road will safely accommodate an increase in heavy vehicle traffic. It was also raised by this landholder that increased slashing of vegetation either side of the roads feeding into the intersection should be carried out to maximise the width of car lanes and increase visibility leading up to the site access and intersection. A stronger police presence at the intersection was suggested as a key opportunity to reduce safety risks. This suggests the need to support an increased police capacity in the local area. Local emergency service providers were not able to be consulted therefore, there is uncertainty surrounding how an increased possibility for vehicle accidents may impact upon local emergency services capacity to respond.

The road safety concerns outlined above may also be compounded by driver fatigue experienced by both workers travelling to and from the project site, and logistics and transportation drivers who have been driving for extended periods, often through the night. Past SIAs have pointed to these public safety impacts arising from driver fatigue when utilising a drive-in-drive-out workforce (EMM 2021b). 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 **likely** 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 or death, which will have a lasting impact on safety and wellbeing that may survive long after the life of the project.

6.6.2 Public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road T-intersection – mitigated

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). Reductions in the average travel speed across the network is regarded as the most effective and swift way to reduce road trauma (WHO 2004; De Pauw 2014; TfNSW 2021). It is also recommended that AMPYR liaise with Dubbo Regional Council and TfNSW to explore the potential and utility of a reduction of the speed limit along Goolma Road as well as for an increase in road maintenance. As an additional road safety initiative, AMPYR should look to implement a corporate policy that restricts its heavy vehicle fleet to travelling a maximum of 80 km/h along Goolma Road. Successful implementation of this speed limit reduction acknowledges the effect that vehicle speed has on crash likelihood and severity outcome and the consequential and material effect of speed on the level of road safety risk along Goolma Road. AMPYR should also consider putting in place driver inductions, including a driver code of conduct, requiring compliance with road safety procedures and prohibiting unsafe driving practices such as tailgating, convoying, and speeding. Effective implementation of these mitigation measures will reduce the risk of collisions between truck and passenger vehicles by accounting for truck performance limitations. AMPYR 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 community engagement mechanisms.

Recommendations outlined in the TIA to improve road safety along Goolma Road include implementation of construction stage traffic measures such as warning signs for entering trucks and warning signs for motorists to take caution with heavy vehicles should also be considered (EMM 2022b). Installation of improved signage will potentially mitigate some safety concerns.

Utilising local bus services and enforcing carpooling policies amongst the local workforce to get to and from site may reduce the volume of daily project-related traffic volume. 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.

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 magnitude of the impact of a rare road accident or collision to occur remains **major**. A summary of the assessment is provided in Table 6.7Table 6.7.

Table 6.7 Summary of public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road T-intersection

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
HEALTH & COMMUNITY WELLBEING	Increased truck movements and workforce travel at the Goolma Road and Twelve Mile Road t-intersection and associated impacts to site access	Local residents, particularly those residing along Goolma Road and Twelve Mile Road. Workers travelling to and from the site	Construction 12–18 months	Local area	High	Medium

6.6.3 Public safety related to increased truck movements along school bus routes on Goolma Road – unmitigated

Concern was raised by some stakeholders engaged as part of the SIA regarding the safety of the school bus routes that operate along Goolma Road. Odgen Coaches offer two bus services that utilise Goolma Road and the intersection with Twelve Mile Road:

- S106 Mt Bodangra (Spicers Creek) – travels between Spicers Creek through Bodangra to Wellington; and
- S110 Umagalee (Wuuluman) – travels through Wuuluman to Wellington (refer Figure 6.1 S106 Mt Bodangra (Spicers Creek) School Bus Route and S110 Umagalee (Wuuluman) School Bus Route).

Both school bus routes pass by the project site entrance and utilise the Goolma Road and Twelve Mile Road intersection (see Section 4.7.1). According to Ogden Coaches, the school bus services operate approximately between 7:52 am – 8:47 am and 3:07 pm – 4:18 pm (Odgen Coaches 2022).

All project related traffic is expected to exit the site via Goolma Road (EMM 2022b). Participants in the SIA field study indicated that speed limits, road crossings and traffic safety along Goolma Road, specifically at the Goolma Rood and Twelve Mile Road intersection, are ongoing issues within the community. Previous SIAs of similar projects have pointed to potential concerns surrounding existing safety concerns with drop-off/pickup zones, including insufficient drop-off/pick-up space available and limited road crossings (EMM 2020). In considering school bus safety, the hazard profile of rural and regional roads differ greatly from that of urban roads as they often feature an additional range of dangers such as 'steep gradients, deteriorating road surfaces, obscured visibility due to vegetation or sharp curves, large variation in speed limits, roadside and on-road obstacles such as large trees, wildlife and stock, adverse weather conditions and heavy vehicles' (School Bus Safety Community Advisory Committee 2012).

Research on school bus safety in rural and regional NSW has pointed to the substantial challenges of establishing 'safe' bus stops in rural areas, noting that 'a school bus can drop a child dressed in dark school uniform at an unprotected location on the roadside facing traffic speeds of up to 100 km/h' (School Bus Safety Community Advisory Committee 2012). One local resident noted concern for the narrow lanes of the roads. This may inhibit the school bus from being able to fully pull off the road to ensure the safety of children before and after boarding/disembarking from the bus (School Bus Safety Community Advisory Committee 2012). The increase in heavy truck movements along Goolma Road raises significant safety considerations surrounding the need for the school bus to travel in 'high-speed' traffic zones (80km/h and above) featuring hazards such as narrow lanes and the prevalence of heavy vehicles. It has been found that 'high volumes of heavy vehicle traffic increase the risk to students on buses significantly, as these vehicles are of equal or greater mass' (School Bus Safety Community Advisory Committee 2012).

The unmitigated impact of public safety issues related to increased truck movements on a school bus route is assessed as **high** as the likelihood of impact is **possible** due to both school bus services operating along Goolma Road and the potential presence of trucks during school pick-up and drop-off hours. The negative magnitude is assessed as **major** due to potential loss of life and the broad impact it has on residents. The duration of this impact would be long-term as the grief and loss is not limited to the time of the accident and loss.

6.6.4 Public safety related to increased truck movements along school bus route on Goolma Road – mitigated

To mitigate public safety impacts a risk prevention strategy may be implemented to limit heavy vehicle traffic occurring along the school bus route during school commuting times. The school bus route occurs between 7:52 am – 8:47 am and 3:07 pm – 4:18 pm and heavy vehicles may be restricted from travelling during these times.

Liaison between AMPYR, TfNSW, Dubbo Regional Council and the bus operator would serve to establish safe rural bus stops to enable the bus to draw fully off the road in conjunction with school bus zone signage (as opposed to only on-bus signage) which may be more visible from an approaching driver's perspective. Such signage markings could also warn drivers of the possible presence of a child waiting or playing at a roadside bus stop when the bus is not present (School Bus Safety Community Advisory Committee 2012).

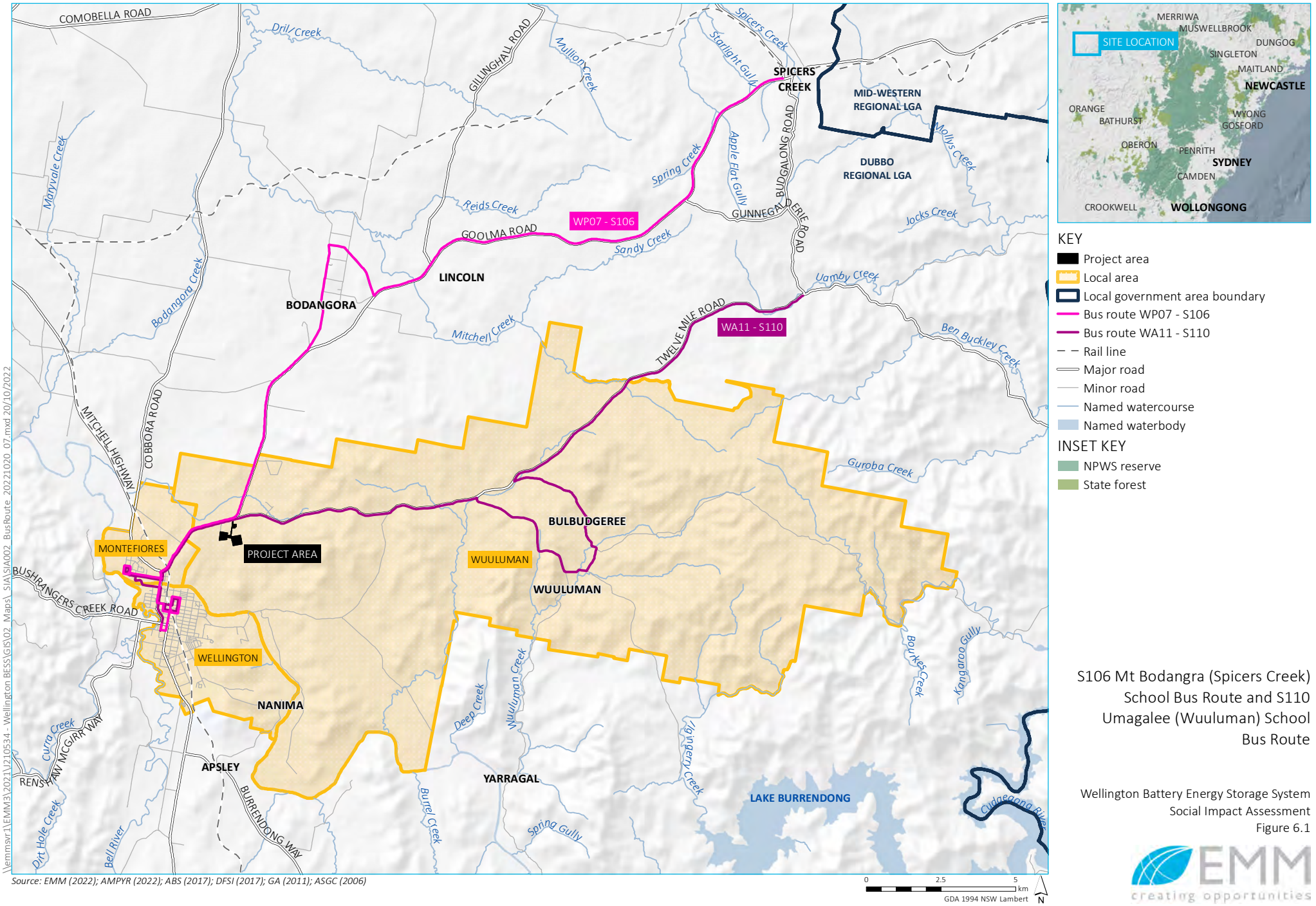
As a part of corporate policies, AMPYR can ensure that there is a reduction in heavy vehicle speed along the school bus route on Goolma Road during school commuting hours. A Driver's Code of Conduct may be implemented to manage AMPYR's contribution to safety issues. The Code would document requirements for vehicle maintenance, driver behaviour and journey preparation and include a requirement for all truck drivers to give way to school bus movements.

Stakeholder engagement is also a potential mitigation measure. The ongoing maintenance of the project grievance mechanism (ie a complaints hotline and project email address) would allow concerns to be monitored and help to inform appropriate mitigation to be addressed by relevant personnel. As outlined in the cumulative assessment (see Section 6.8.2) there is an opportunity to work with proponents of other development projects in the area to mitigate safety concerns surrounding the operation of the school bus routes.

With provision of appropriate and adequate safety road safety measures in the form of restricted heavy vehicle travel times, establishment of rural bus stops and signage (as addressed by Dubbo Regional Council, TfNSW and the bus operator), implementation of a Driver's Code of Conduct, regular stakeholder meetings, and maintenance of a grievance mechanism, the mitigated public safety impacts due to increased truck movements on school bus routes is assessed as **medium**. The likelihood of impact is reduced to **unlikely**, with the negative consequence remaining **major** due to the severity of impacts associated with potential loss of life.

Table 6.8 Summary of public safety related to increased truck movements along school bus route on Goolma Road

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
HEALTH & COMMUNITY WELLBEING	Increased truck movements along school bus route on Goolma Road	Students, and parents of Wellington Christian School, Wellington High School, St Mary's Catholic School and Wellington Public Primary School	Construction 12–18 months	Local area (along Goolma Road)	High	Medium



\\emmsvr1\EMM3\2021\P210534 - Wellington BESS\GIS\02 Maps\ SIA\SIA002 BusRoute 20221020 07.mxd 20/10/2022

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

S106 Mt Bodangra (Spicers Creek) School Bus Route and S110 Umagalee (Wuuluman) School Bus Route

Wellington Battery Energy Storage System
Social Impact Assessment
Figure 6.1

EMM creating opportunities

6.6.5 Public safety related to fire hazards – unmitigated

Potential fire impacts were raised as a concern by several stakeholders. During community information sessions and interviews with stakeholders, concerns were raised that fires associated with the BESS would be difficult to extinguish. One representative from the NSW Farmers Union Wellington branch noted concern over the capacity of emergency services to adequately respond to a battery fire. Further consultation with emergency services during subsequent phases of the project is required to fully understand potential risks.

The Preliminary Hazard Assessment (PHA) (Sherpa 2022) 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 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 is assessed as **high** as the likelihood of offsite impacts are **possible** despite provision to fire protection/suppression systems for the BESS and local emergency services may struggle in their capacity to respond. The magnitude level is assessed at **major-** whilst the BESS will be situated in a rural area with a large separation distance to the nearest dwelling(s) there is the potential for onsite employees to be at risk which may extend to injury or loss of life.

6.6.6 Public safety related to fire hazards – mitigated

AMPYR have noted that equipment will be monitored (ie fire and smoke detectors) and will provide early detection to reduce this risk. AMPYR will establish an asset protection zone around the site and between equipment in accordance with design guidelines and regulations.

The successful implementation of the recommendations stated in the PHA to mitigate any potential public safety risks stemming from fire hazards would reduce the fire hazard. AMPYR may 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. To mitigate any potential fire hazard risks, AMPYR can consult with the local Wellington Fire Service and the Rural Fire Service to implement a Fire Management and Response Plan.

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

Table 6.9 Summary of public safety related to fire hazards

Social impact	Issue	Affected parties	Duration	Extent	Unmitigated	Mitigated
HEALTH & COMMUNITY WELLBEING	Public safety relating to fire hazards	BESS operators/ worker, nearby residents	Operation	Local area (along Goolma Road)	High	Medium

6.7 Livelihood

This section provides an assessment of positive project impacts related to livelihoods. This includes how people sustain themselves through employment or business, their capacity to do so and whether disadvantage/advantage is experienced. The matters assessed are:

- ongoing and increased local employment; and
- training and apprenticeship opportunities.

6.7.1 Livelihood related to increased local employment opportunities – unenhanced

The project proposes approximately 100 full-time construction roles during the construction phase and two full-time jobs during the operation phase. Consultation with a local employment provider emphasised that Wellington is a 'small growing community' where employment opportunities in the local area are scarce with many people in the community having to commute to Dubbo for work. This local employment provider raised that development projects in the area are 'massive' opportunities for providing their jobseekers with meaningful employment opportunities. The local area has a high unemployment rate compared to the regional area and NSW. Labourers and technicians and trades workers were among the top occupations within the local area and 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 people living within the local area 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 (see Section 4.5).

During in-depth interviews, participants consistently identified employment arising from the project as a significant potential benefit. One stakeholder raised the significance of the local town gaining two permanent employees from the operation of the project, noting this increased employment as an important contribution to the local economy. A representative from Dubbo Regional Council felt that an increase in skilled employment opportunities in the local area would improve youth retention. The project could improve youth unemployment in the local area by providing employment pathways for skilled careers as well as offer additional career pathway opportunities. 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).

Unenhanced, the benefit from increased local employment opportunities arising 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 **minimal** positive consequences as benefits will be realised in the medium to long term and are anticipated to result in benefits to the local economy.

6.7.2 Livelihood related to increased local employment opportunities – enhanced

To maximise enhancement, AMPYR may appoint a construction contractor(s) who adopts a preferential approach to hiring of workers with relevant skills residing within the local area, then the regional area, followed by hiring outside of these areas. This ensures that potential employees within the local and regional areas receive first preference for prospective jobs, increasing the potential benefits related to local and regional employment.

These commitments to local hiring would also assist to address compounding underlying social factors associated with vulnerabilities within the local area related to a lack of rental housing. SIA field study participants noted that the region has seen a great increase in demand for rental and market properties in the past year, largely as a consequence of the COVID-19 pandemic with an increasing number of people choosing to relocate to less-urban locations. If local rental accommodation was inundated with the additional need to service demand from an increased workforce that was from outside of the region, this would likely increase housing scarcity and further decrease rental affordability. In turn, this would most likely impact residents who are already vulnerable and may not have the flexibility and resources to find alternative housing.

A representative from a local employment service, during the SIA field study, advised that there would be benefits associated with establishing partnerships to ensure employment opportunities are guaranteed for the local and regional community. To enhance benefits stemming from employment opportunities, AMPYR and/or its construction contractor(s) is encouraged to work with local employment, apprenticeship and training agencies to enhance the potential of hiring of local and regional workers. Successful implementation of this enhancement measure will minimise the need to hire workers from outside of the local and regional areas. Partnership with local employment and training organisations could specifically benefit at-risk youth, Aboriginal and/or Torres Strait job seekers and people struggling to find employment by providing direct employment opportunities (see Section 0).

Enhanced, the livelihood benefit related to increased local employment opportunities remains **medium**. Under the assumption that AMPYR prioritises employment of workers with relevant skills residing within the local area, the likelihood of benefit increases to **likely**. **Minor** positive consequences will arise with the enhanced measures as livelihood benefits in the form of employment may or may not be permanent, with anticipated benefits to both the local and regional economy. A summary of the assessment is provided in Table 6.10.

Table 6.10 Summary of livelihood related to increased local employment opportunities

Social impact	Issue	Affected parties	Duration	Extent	Unenhanced	Enhanced
HEALTH & COMMUNITY WELLBEING	Increased local employment opportunities	Residents of the local area and regional area	Operation	Local area and regional area	Low	Medium

6.7.3 Livelihood related to training and apprenticeship opportunities – unenhanced

The construction phase of the project will require a workforce of 100 personnel. Where possible and practical, AMPYR should encourage contractors to hire locally and could potentially invest in apprenticeships at the site. During in-depth interviews, stakeholders raised the potential benefit associated with providing training and upskilling opportunities to local workers and youth in the local and regional areas.

An employment provider representative in the local and regional area identified opportunities to engage with local services, such as employment and education services, to assist in the provision of apprenticeship, training, and employment opportunities. The provision of training opportunities can increase job satisfaction amongst employees, resulting in increased productivity and quality of work (Truitt 2011; Australian Government 2020). Additionally, training and upskilling employees leads to improved company competitiveness due to maximisation of employee knowledge and innovation (Marin-Diaz, et al 2014).

Youth employability pathways was recognised as a vulnerability during the SIA field study, with stakeholders perceiving that youth within the local area leave in pursuit of employment and education opportunities which are not available in the local area.

Often in regional areas it is difficult for youth to attain training and employment opportunities which results in younger people moving from regional areas in pursuit of education and employment opportunities (Department of Regional NSW 2020). Supported by findings from the social baseline, the youth unemployment rate in the local area is significantly higher than youth unemployment across the regional area and the state (see Section 4.5). Youth living within the local area would benefit from training, apprenticeship and employment opportunities as it would provide a mechanism through which the local education system could better connect with the labour market. To support vulnerable groups in the local area, AMPYR should look to involve Aboriginal and/or Torres Strait Islander youth in any training and apprenticeship opportunities.

Unenhanced, the livelihood benefit related to training and apprenticeship opportunities is assessed as **low**. Without enhancement strategies it is possible that training, apprenticeship, and employment opportunities would be minimal and unlikely to arise due to lack of targeted strategies to involve local workers in training and apprenticeship opportunities. Therefore, the likelihood of livelihood benefits related to training, apprenticeship and employment opportunities without enhancement measures are **unlikely** and the positive consequence is assessed as **minimal.**

6.7.4 Livelihood related to training and apprenticeship opportunities – enhanced

To ensure training and apprenticeships are suitable for the local and regional area, it is recommended that apprenticeships and training programs are tailored to the local community and promote skilled employment pathways for the project. To maximise potential benefits, AMPYR and/or its construction contractor(s) is encouraged to explore the opportunity to sponsor the licenses 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 employability.

A resident in the local area who works within the education sector identified enhancement opportunities to better connect youth with the local labour market. It was suggested that AMPYR liaise with other renewable development companies in the local area to organise an educational program with local schools, particularly secondary schools, surrounding renewable technology. The stakeholder raised that the implementation of such a program would begin to engage students in the work and opportunities available in the local area. Benefits associated with livelihood related to training, apprenticeship and employment opportunities can be further enhanced through the implementation of vocational education and training (VET) programs and work experience for schools in the local and regional area. This could encourage pathways to local employment, thereby encouraging youth retention (Johns et al 2004). By establishing training, apprenticeships for youth in the local area there is potential to increase capacity in the local workforce. This can encourage local hiring, which is prioritised for the project construction phase.

Training and apprenticeship opportunities would not only support project construction but could enhance the local workforce's overall capacity and potentially encourage youth retention due to the provision of new opportunities for skilled career pathways. Research demonstrates that engaging young people in regional areas increases their likelihood of staying when they feel like they can contribute to the local community (Davie 2015).

Enhanced, the livelihood benefit related to training and apprenticeship opportunities increases to **medium**. Under the assumption that AMPYR successfully identifies and facilitates training and apprenticeship opportunities for local workers and youth, the likelihood of benefit increases to **possible**. Positive consequences are increased to **moderate**, due to the high youth unemployment rate in the area and the potential training and apprenticeship opportunities to up-skill the local workforce. Whilst livelihood benefits in the form of employment may or may not be permanent, there would be anticipated benefits to both the local and regional economy. A summary of the assessment is provided in Table 6.11.

Table 6.11 Summary of livelihood related to training and apprenticeship opportunities

Social impact	Issue	Affected parties	Duration	Extent	Unenhanced	Enhanced
HEALTH & COMMUNITY WELLBEING	Training and apprenticeship opportunities	Residents of the local area and regional area	Operation	Local area and regional area	Low	Medium

6.8 Cumulative impacts

There are several concurrent development projects operating, or are intended to operate, in and around the SIA study areas. A total of ten projects (operational and proposed/approved) were identified within proximity to the project site. Therefore, these developments and their identified impacts have the potential to contribute to the cumulative impacts of the project. A radius of approximately 30 km from the project has been used to identify future projects of relevance. These have been identified as projects for consideration of cumulative impacts. The majority of the projects consist of proposed and approved electricity generation developments (solar and wind). Of the ten SSD projects within 30 km of the project:

- all are within the Dubbo Regional LGA;
- six are approved (Uungula Wind Farm, Wellington North Solar Farm, Maryvale Solar Farm) and three are either complete or are near completion (Wellington South Solar Farm, Bodangora Wind Farm, and Suntop Solar Farm); and
- two have construction programs with potential to overlap with the project and have substantial workforce requirements that may draw construction workers from the same region, including:
  - Wellington North Solar Farm; and
  - Uungula Wind Farm, including associated construction and upgrades the local road network, including realignment/upgrade of the intersection of Goolma Road/Twelve Mile Road.

A summary of State significant development projects as identified through the NSW DPIE Major Projects website, including workforce forecasts in construction and operational phases, is given in Table 6.12.

Table 6.12 Concurrent development projects within 30km of the project site

LGA	Project name	Anticipated timeframe/ project life	Development type	Status	Construction workforce	Operational workforce
Dubbo Regional LGA	Uungula Wind Farm	Project life of 30 years	Electricity generation – wind	Construction to commence in 2022 and to be fully operational in 2027	650	47
Dubbo Regional LGA	Wellington North Solar Farm	Project life of 30 years	Electricity generation – solar	Construction to commence in 2022 and to be fully operational in 2024	250	2–4

Table 6.12 Concurrent development projects within 30km of the project site

LGA	Project name	Anticipated timeframe/ project life	Development type	Status	Construction workforce	Operational workforce
Dubbo Regional LGA	Wellington South Solar Farm	Project life of 30 years	Electricity generation – solar	Construction largely completed. Operation is expected in 2022	200	1–3
Dubbo Regional LGA	Maryvale Solar Farm	Project life of 30 years.	Electricity generation – solar	Determination – 4 December 2019	150	6–10
Dubbo Regional LGA	Apsley Battery Energy Storage System	Project life of 30 years.	Electricity storage – BESS	EIS in preparation	50	5
Dubbo Regional LGA	Bodangora Wind Farm	25 years	Electricity generation – wind	MOD 4 Determination – 22 December 2017 Project life of 30 years	70–80	Not stated
Dubbo Regional LGA	Suntop Solar Farm	Project life of 30 years	Electricity generation – solar	Determination – 4 December 2018	250	6–10
Dubbo Regional LGA	Suntop Stage 2 Solar Farm	Project life of 30 years	Electricity generation – solar	EIS preparation	300	Not stated
Dubbo Regional LGA	Mumbil Solar Farm	Project life of 30 years	Electricity generation – solar	EIS in preparation	100	Not stated
Dubbo Regional LGA	Burrendong Wind Farm	Project life of 30 years	Electricity generation – wind	EIS in preparation	Not stated	Not stated
Total					**2,030**	**79**

Source: DPIE 2021, Major Projects.

For the developments within proximity to the project site, there is the potential that interactions can produce socio-economic impacts concurrently or sequentially.

The construction phase of the project will result in approximately 100 new jobs. The known construction workforce associated with expected concurrent projects is approximately 1,730 full-time employees. Whilst it is unlikely that all of these employees will be sourced externally, the total has been used as we are not able to predict the level of in migration resulting from other projects.

As construction of the project only requires a comparatively small number of external contractors for a short period of time, contributions to any cumulative impacts (compared to other concurrent projects) during construction works is expected to be minimal.

The potential for other developments in the area (Uungula Wind Farm, Wellington North Solar Farm) to have overlapping construction phases may cause potential impacts on the availability of skilled workforce in the local area, and therefore hiring may be dictated by skill requirements/worker availability. This may require additional project workforce to be sourced from outside the local and regional areas.

The potential of a non-resident and relocating workforce from the concurrent developments may contribute to the cumulative impacts in the local area. This may result in impacts on the capacity and availability of rental housing and traffic. However, potential cumulative benefits may also be associated with the high number of SSD projects in the local area, such as increased employment and economic opportunities for local businesses and suppliers.

The population of the Dubbo Regional Council area is forecast to increase by 5,000 people (1.0% increase per year) between 2021 and 2041 (DPE 2019). Therefore, the development of new projects within the local area will likely provide employment for construction workers and employment continuity once projects cease construction.

The known operational workforce associated with SSD projects in the SIA study area is expected to be approximately 79 full time equivalent employees. The demand for skilled operational workforce in key sectors may increase the likelihood of cumulative socio-economic impacts locally and regionally.

6.8.1 Rental housing

Construction of the project will require a peak workforce of 100 personnel, with much of the workforce expected to be sourced from the Dubbo/Wellington region. For the construction phase, AMPYR should encourage contractors to adopt a preferential hiring approach to prioritise the employment of workers with relevant skills from the local area, then regional area, followed by hiring outside of these areas (where feasible and practical). However, the low unemployment rate in the regional area (5.9%), see Section 4.4 and potential skills shortages, may pose barriers for local hiring. Therefore, workforce shortages or circumstances where skilled or specialised roles are unavailable in the local and/or regional area would result in external hiring. This may require accommodation of non-local construction workforce personnel in the local and regional area. This has the potential to impact the capacity and availability of rental accommodation as well as lead to an increase in rental prices within the local and regional area.

A key issue raised during the SIA field study was the impact of the project on access to affordable housing and rental housing. During consultation with Dubbo Regional Council, access to housing was raised as a primary concern. A representative from Dubbo Regional Council noted that the local area could absorb the housing capacity needed for this individual project however having multiple SSD projects in the area puts strain and pressure on the rental housing market. From March 2019 – March 2020, the residential vacancy rate for the local area demonstrated a significant over-supply of rental housing. However, in June 2020 a substantial drop occurred, falling below the equilibrium level of 3.0% to 2.0%. This may signal to the impact of the COVID-19 pandemic to the affordability of the regional housing market which substantially decreased residential vacancy rates and increased median rental property prices due to migration from urban centres (Homelessness NSW 2021). This is consistent with findings from the SIA field study, with participants identifying high rental costs and lack of rental housing available within the local area.

If the local rental market is inundated due to demand from the project-related construction workforce, there is potential that rental housing scarcity will increase, and rental affordability will decrease. This would introduce significant issues for housing stability 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 due to low or unstable incomes, health and mental health issues and unstable employment (Thomas & Hicks 2010).

Using anecdotal evidence from previous developments in the area, a local real estate agent noted that the influx of workers during the construction phase of a project has the potential to place pressure on rental availability and promote landlords to increase rental payments, leading to existing residents being priced out of the area. Additionally, multiple SIA participants raised observations on previous developments in the area, describing how 3–4 workers would rent one house, inadvertently raising rental prices.

Evidence from the social baseline study is consistent with the concern for impacts relating to housing availability. Wellington SSC has a substantially higher proportion of households with rent payments greater than or equal to 30% of their household income (12.9%) compared to the regional area (9.8%). This is significant as Wellington SSC median weekly household income is $781, which much lower than the regional area and NSW.

Increased demand for skilled workforce, as well as demand on 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.

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 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 reduce the need for outsourcing of workers. Potential cumulative impacts to local amenity may occur due to the number of SSD projects in the local area, as well as the proximity of projects to residential areas and towns.

6.8.2 Employment and Industry

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 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. Construction of the project will contribute to the employment of up to 100 jobs during peak construction. Operation of the project will contribute to the employment of up to two people.

6.8.3 Traffic

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 potential for overlapping construction phases with the Wellington North Solar Farm and Uungula Wind Farm was a significant concern raised amongst SIA field study participants, as these projects are expected to require frequent workforce travel and truck movements to transport product to and from the project sites. Previous SIAs suggest that construction traffic from multiple SSD's can have a substantial disruption to resident's way of life, including impacts surrounding traffic noise, lights and dust.

The TIA has assessed the cumulative traffic impacts of the project considering the future traffic generation of existing and approved projects and developments (EMM 2022b). This includes the construction traffic movements of the Wellington North Solar Farm and Uungula Wind Farm.

The greatest potential for cumulative impacts of future projects and the project are related to:

- construction of the Wellington North Solar Farm (WNSF) and Uungula Wind Farm, which have the potential to have construction periods that overlap with the project; and
- upgrades to the Goolma Road/Twelve Mile Road intersection.

In regard to the Wellington North Solar Farm, 100% of traffic movements will pass the access points for the project site and that for the Uungula Wind Farm, 50% of traffic movements will affect the Project site access (EMM 2022a). According to the TIA, there will be an increase in the peak hour volume of traffic from 211 at the baseline conditions to 510 at the cumulative traffic conditions, with 35% of this total being heavy vehicles (EMM 2022a). These traffic totals are for a worst-case scenario where it is assumed that traffic from nearby developments, 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 arrival and departure patterns of traffic may not necessarily coincide.

Goolma Road currently operates with a LOS A however daily movements of construction vehicles will push the road to LOS D with the proposed traffic and the net cumulative traffic from the other developments in the area. Furthermore, the reduction in the LOS (by two levels) is only for the duration of peak construction activity. When the project construction work has been completed, the LOS will return to the baseline traffic conditions.

i Public safety and existing school bus services

Increased usage of the Goolma Road and Twelve Mile Road t-intersection stemming from increased construction traffic from nearby developments was an issue of concern amongst SIA study participants. There has been long-standing community concern for the current intersection, with the 100k/h speed limit along both roads being a primary factor in community perceptions of road safety risks. The construction of various developments within the vicinity of the project has the potential to generate cumulative safety impacts for the school bus services operating along Goolma Road. According to the TIA, both the construction of the Wellington North Solar Farm and Uungula Wind Farm have potential to have overlapping construction periods with the project, including as the proposed upgrades to the Goolma Road/Twelve Mile Road intersection. Specific scheduled timing for these respective construction periods have not yet been specified.

AMPYR could look to liaise with proponents from other developments in the area, namely the proponents of Wellington North Solar Farm and Uungula Wind Farm as well as Dubbo Regional Council, Wellington schools and bus service operator to establish community meetings. These meetings could serve as a consistent means of monitoring the safety of school bus route during construction and inform appropriate mitigation measures to be addressed by relevant personnel.

As part of the Uungula Wind Farm development, the existing Goolma Road/ Twelve Mile Road intersection will be relocated approximately 400 m to the north which will improve traffic safety for all motorists.

7 Mitigation and management

This section provides a summary of the identified social impacts along with the corresponding perceived stakeholder risk rankings 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. 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. A summary is provided in Table 7.1.

This section also provides a monitoring and management framework.

Table 7.1 Summary of mitigation and management strategies

Social impact	Matter	Unmitigated / Unenhanced	Mitigated/ Enhanced	Responsibility	Potential partners	Proposed mitigation and management
	Amenity related to traffic noise	Medium	Medium	AMPYR	NA	The primary social impact management measure is the ongoing use of AMPYR's community engagement mechanism (ie dedicated project phone number and email), which provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback. Upon successful maintenance of a community engagement mechanisms, avenues for grievance will be easily accessible to local residents and stakeholders and concerns should be adequately addressed and resolved.
	Community related to community investment, social cohesion, and resilience	Low	Medium	AMPYR (community investment and program funding)	Dubbo Regional Council (implementation) Local community organisations Local businesses	Develop funding and grant opportunities within the local and regional area where need is determined. Development of a strategy for the enhanced identification and implementation of shared value opportunities within the local area. This strategy will allow AMPYR to establish adequate and appropriate means of community consultation to minimise negative impacts and maximise positive community and company benefits, as well as ensuring that benefits are experienced by the community that address local community issues. Utilise a community and stakeholder engagement strategy to facilitate funding decisions that are informed by the local community, including regular meetings with local MP's, Dubbo Regional Council, local community groups, and local community members.

Table 7.1 Summary of mitigation and management strategies

Social impact	Matter	Unmitigated / Unenhanced	Mitigated/ Enhanced	Responsibility	Potential partners	Proposed mitigation and management
	Public safety related to increased traffic on Goolma Road and through Goolma Road and Twelve Mile Road intersection	High	Medium	AMPYR (road maintenance funding, driver inductions) TfNSW (reduction of 100 km/h speed limit)	Dubbo Regional Council	The intersection between Goolma Road and Twelve Mile Road will be upgraded to a new intersection in accordance with the development consent for the Uungula Wind Farm project. AMPYR to implement the recommendations of the TIA to improve road safety objectives along the Goolma Road. Implementation of construction stage traffic measures such as warning signs for entering trucks and warning signs for motorists to take caution with heavy vehicles should also be considered. It is also recommended that T-intersection warning signage should be installed on each approach to the intersection of Goolma Road and Twelve Mile Road. Liaise with Dubbo Regional Council and TfNSW to explore the potential and utility of a reduction in the speed limit along Goolma Road as well as for an increase in road maintenance. AMPYR should look to implement a corporate policy that restricts its heavy vehicle fleet to travelling a maximum of 80 km/h along Goolma Road. Implement driver inductions, including a driver code of conduct, requiring compliance with road safety procedures and prohibiting unsafe driving practices such as tailgating, convoying, and speeding. Explore carpooling and utilisation of a bus service as a way to mitigate public safety impacts and manage driver fatigue. Continue community engagement to monitor compliance with road safety measures and encourage local residents to report any instances of unsafe driving of construction vehicles using community engagement grievance mechanisms.

Table 7.1 Summary of mitigation and management strategies

Social impact	Matter	Unmitigated / Unenhanced	Mitigated/ Enhanced	Responsibility	Potential partners	Proposed mitigation and management
	Public safety related to increased truck movements along school bus route on Goolma Road	High	Medium	AMPYR Unngula Wind Farm Wellingon North Solar Farm Dubbo Regional Council Representatives of schools being serviced by the school bus Contractors	Parents and teachers at schools being serviced by the school bus Odgen Coaches	Implementing a risk prevention strategy to limit heavy vehicle traffic occurring along the school bus route during school commuting times. The school bus route occurs between 7.52 am – 8.47 am and 3.07 pm – 4.18 pm and it is recommended that heavy vehicles are restricted from travelling during these times. As a precaution, AMPYR should ensure that there is a reduction in heavy vehicle speed along the school bus route on Goolma Road during school commuting hours. Liaison between AMPYR, TfNSW, local Council and the bus operator is recommended to establish safe rural bus stops to enable the bus to draw fully off the road in conjunction with school bus zone signage. Implementation a Driver's Code of Conduct which would manage AMPYR's contribution to these safety issues. The Driver's Code of Conduct should include a requirement for all truck drivers to give way to school bus movements. Stakeholder engagement could also be a potential mitigation measure. AMPYR could look to liaise with representatives from other developments in the area, namely the proponents of Wellington North Solar Farm and Uungula Wind Farm as well as Dubbo Regional Council, Wellington schools and bus service operator to establish community meetings. These meetings could serve as a consistent means of monitoring the safety of school bus route during construction. Ongoing maintenance of a project grievance mechanism (ie a complaints hotline and email address).
	Public safety related to fire hazards	High	Medium	AMPYR Contractors	Emergency services	AMPYR consider implementation of the recommendations stated in the PHA to mitigate any potential public safety risks stemming from fire hazards. AMPYR to 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. AMPYR to consult with the local Wellington Fire Service and the Rural Fire Service to implement a Fire Management Plan.

Table 7.1 Summary of mitigation and management strategies

Social impact	Matter	Unmitigated / Unenhanced	Mitigated/ Enhanced	Responsibility	Potential partners	Proposed mitigation and management
	Livelihood related to increased local employment opportunities	Medium	Medium	AMPYR	Local employment and training services in the local and regional area, such as TAFE and JobLink Plus Local secondary schools	AMPYR k to appoint a construction contractor(s) who adopts a preferential approach to hiring which prioritises employment of workers with relevant skills residing within the local area, then the regional area, followed by hiring outside of these areas. AMPYR and/or its construction contractor(s) is encouraged to work with local employment, apprenticeship and training agencies to enhance the potential of hiring of local and regional workers thereby minimising the need to hire workers from outside of the local and regional areas. Partnerships with local employment and training agencies could create specific benefits for at-risk youth and people struggling to find employment by providing direct employment opportunities. Provision of apprenticeship and training opportunities.
	Livelihood related to training and apprenticeship opportunities	Low	Medium	AMPYR	Local employment and training services in the local and regional area, such as TAFE and JobLink Plus Local secondary schools	To maximise potential benefits, AMPYR and/or its construction contractor(s) to partner with local employment training agencies to provision for apprenticeships and training programs that are tailored to the local community and promote skilled employment pathways for the project. AMPYR and/or its construction contractor(s) explore the opportunity to sponsor the licenses 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 employability. Apprenticeship and employment opportunities can be further enhanced through the implementation of vocational education and training (VET) programs and work experience for schools in the local and regional area. This could encourage pathways to local employment, thereby encouraging youth retention.

7.1 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 Dubbo Regional 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, AMPYR and Shell will continue with ongoing consultation activities with both stakeholders and community members throughout the construction and operation of the project.

AMPYR community and stakeholder engagement strategy will continue to incorporate a range of communication strategies and opportunities for the community to provide feedback through a variety of channels including:

- ongoing participation and regular local stakeholder briefings and meetings, including:
  - Dubbo Regional Council;
  - TfNSW; and
  - adjoining neighbours and landowners;
- community engagement mechanism – ongoing operation of the community telephone line, email address, mailbox and website, with set response times for project queries and complaints;
- community information sessions;
- newsletters; and
- letterbox drops.

Abbreviations

Abbreviation	
ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum Assessment and Reporting Authority
ACECQA	Australian Children's Education and Care Quality Authority
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
AMPYR	AMPYR Energy Pty Ltd
BESS	Battery Energy Storage System
BOCSAR	Bureau of Crime Statistics and Research
Cr	Councillors
DAWE	Department of Agriculture, Water and the Environment
DPIE	Department of Planning, Industry and Environment
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
GP	general practitioner
IAIA	International Association for Impact Assessment
IEO	Index of Education and Occupation
IER	Index of Economic Resources
IFC	International Finance Corporation
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
K10	Kessler 10
LALC	Local Aboriginal Land Council
LGA	Local Government Area
LHD	Local Health District
MW	megawatts

Abbreviation	
NSW	New South Wales
OSHC	outside of school hours care
PHA	Preliminary Hazard Assessment
PHN	Primary Health Network
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
SSC	state suburb classification
SSD	State Significant Development
STE	State/Territory
the Project	Wellington Battery Energy Storage System Project
TfNSW	Transport for NSW
TIA	traffic impact assessment

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Appendix A
Social baseline study

EMM
creating opportunities

A.1 Overview

A social baseline study is a requirement of the New South Wales (NSW) Department of Planning, Industry, and Environment's (DPIE 2021) *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2021). 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 thorough review of all social indicators was undertaken to understand and determine the existing social conditions and trends. This allowed for the differentiation and measurement of the changes that are likely to occur as a consequence of the project compared to those that would occur without the project (IAIA 2015). Accordingly, this social baseline identifies the study area for the Wellington Battery Energy Storage System (the project) and the existing known and predicted social conditions for its community.

A.2 Study area

The project is located within the Wuuluman State Suburb Classification (SSC) area and is adjacent to the townships of Montefiores SSC and Wellington SSC. These suburbs are likely to experience the most direct impacts of the Project. While the site itself 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.

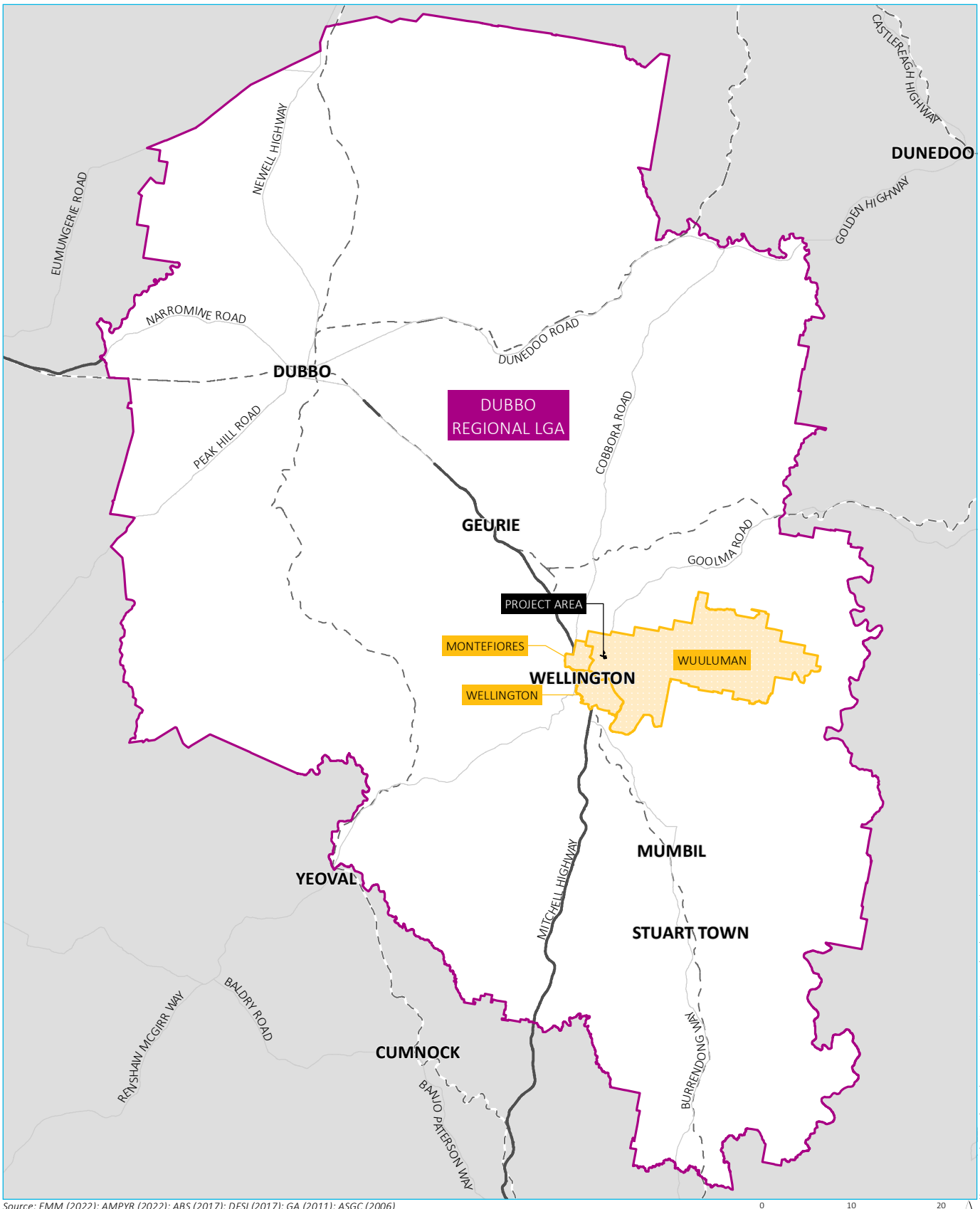
The project may have direct and indirect impacts within Wuuluman SSC, Montefiores SSC, and Wellington SSC related to local social infrastructure and services, local workforce, local business and industry, local housing and accommodation, and community health and wellbeing. Accordingly, these suburbs comprise the local study area.

The project may have a broader reach due to use of infrastructure, supply chains, haulage routes, transportation of goods, materials and equipment, the movement of its workforce (some of which may have drive-in-drive-out arrangements) and cumulative impacts arising from other projects in the area. These factors require the study area to include regional areas likely to be impacted by the project. Accordingly, Dubbo Regional Local Government Area (LGA) comprises the regional study area.

These communities, that make up the study area, local and regional (hereto referred to as local area or regional area) , are shown in Table A.1 and illustrated in Figure A.1. They have been mapped to the Australian Bureau of Statistics (ABS) categories used for data collection.

Table A.1 Study area

Study area	Geographic area	ABS data category	Referred to in report as:
Local study area	Wuuluman suburb	Wuuluman SSC	Local area
	Montefiores suburb	Montefiores SSC	
	Wellington suburb	Wellington SSC	
Regional study area	Dubbo Regional Council area	Dubbo Regional LGA	Regional area
State of New South Wales	State of New South Wales	New South Wales STE	NSW



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

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KEY

- Project area
- Regional area
- Local area
- Rail line
- Mitchell Highway
- Major road

INSET KEY

- NPWS reserve
- State forest

SIA study area

Wellington Battery Energy Storage System
Social Impact Assessment
Figure A.1

EMM creating opportunities

A.3 Political and planning context

This section provides a summary of the relevant plans and strategies across NSW and Dubbo Regional Council that inform the social risk assessment and mitigation and management strategies.

A.3.1 Federal

The project is located within the federal electorate of Parkes, which is currently represented (in the House of Representatives) by the Hon Mark Coulton 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.

A.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 Dugald Saunders of the National Party of Australia

There are a number of State Acts and Regulations which concern the recognition, protection and conservation of cultural heritage sites and protected areas. These include the *Environmental Planning and Assessment Act 1979* (EP&A Act), *Biodiversity Conservation Act 2016*, *National Parks and Wildlife Act 1974*, *Protection of the Environment Operations Act 1997*, *Heritage Act 1977*, and the *National Parks and Wildlife Regulation 2009*.

DPIE is responsible for administering the EP&A Act and its subordinate legislation and policies.

A.3.3 State strategies and plans

i A 20-Year Economic Vision for Regional NSW, 2018–2038

A 20-Year Economic Vision for Regional NSW 2018–2038 (NSW Government 2018) presents a strategy for Regional NSW that encourages its role as a vibrant and growing part of the NSW economy, and fosters decisions to live in the regions. The vision is organised into five sections that form a pathway to a prosperous Regional NSW. This 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;
- a description of the global forces shaping regional economies, and the implications of these trends;
- means to rise to economic challenges, such as investing in infrastructure, skills, advocacy and promotion, and the business environment;
- a presentation of a bright future for Regional NSW that highlights growth in key sectors, increased regional populations, and supporting infrastructure and services; and
- the current priorities for the NSW Government.

ii Building Momentum: State Infrastructure Strategy, 2018–2038

The *State Infrastructure Strategy 2018–2038* (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 strategy provides:

- 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; and
- 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 extractive industries as a key industry in several regions across NSW. Strategic objectives are presented for infrastructure that supports the industry, particularly water and transportation, to ensure its continued economic viability.

A.3.4 State guidelines

i SIA Guideline 2021

a Social Impact Assessment Guideline for State Significant Projects,

The SIA Guideline (DPIE 2021a) provides direction on assessing impacts arising from State significant development 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 2021 requires that all State significant projects have a clear and consistent approach to assessing social impacts. The SIA Guideline 2021 builds upon the SIA Guideline 2017 which applies to State significant resource projects. The SIA Guideline 2021 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 (DPIE 2021a).

The SIA Technical Supplement 2021 accompanies the SIA Guideline 2021 to provide specific methods and techniques for the identification and assessment of social impacts and benefits (DPIE 2021b).

b Undertaking Engagement Guidelines for State Significant Projects (Undertaking Engagement Guidelines 2021)

The Undertaking Engagement Guidelines 2021 (DPIE 2021c) describes the requirements for effective engagement on State significant projects in NSW. The Undertaking Engagement Guidelines 2021 outlines the actions the DPIE will take, identifies opportunities for community participation, and outlines requirements for proponents. 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. These guidelines also provide 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 Undertaking Engagement Guidelines 2021 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.

A.3.5 Local

The project is located in the Dubbo Regional Council local government area LGA which has the highest proportion of directly impacted stakeholders. The plans and strategies supported by local government are representative of the needs of local communities and identify strategies and opportunities to further improve the liveability and resilience of these communities, which could be affected by the project. A summary of the relevant Mayors and Councillors (Cr) is provided in Table A.2.

Table A.2 Councillors, Dubbo Regional Council, 2022

Role	Councillors	
Mayor	Councillor Mathew Dickerson	
Deputy Mayor	Councillor Richard Ivey	
Councillors	Councillor Joshua Black	Councillor Shibli Chowdhury
	Councillor Lewis Burns	Councillor Jessica Gough
	Councillor Viki Etheridge	Councillor Damien Mahon
	Councillor Matthew Wright	Councillor Pamella Wells

Dubbo Regional Council has regional and strategic plans that articulate their vision for the future of their community. These are summarised in Table A.3.

Table A.3 Regional planning context

Plan/Strategy	Summary	Responsibility	Time frame
Dubbo Development Control Plan (Dubbo DCP 2013)	The Dubbo DCP 2013 was designed in conjunction with the Dubbo LEP 2011. The plan outlines various development principles and guidelines for development application processes in order to manage developments and ensure the conservation of land. The objectives outline In the Dubbo DCP 2013 are as follows: • promote good quality and environmentally sustainable developments; • provide guidance to prospective proponents and the community of Council's requirements; • provide criteria to the Council in assessing applications; and • provide development controls and requirements that are easily understood by the community and proponents. The development considerations addressed in this plan that pertain to the Project are: • access and mobility; • economic impact; • social impact; • heritage conservation; and environmental management.	Dubbo Regional Council	Adopted 2013
Dubbo Local Environmental Plan (Dubbo LEP 2011)	The Dubbo LEP 2011 is a statutory document which provides a guide for land use planning and development within Dubbo. The Dubbo LEP 2011 consists of strategies that focus on how certain areas should look over time. The strategies are designed to provide greater detail of land use planning and development projects to ensure certainty regarding the projects and encourage community-based consultation. Areas concerned in the Dubbo LEP 2011 are rural, residential, commercial, industrial, special use, open space, and environmental zones. Aims of this plan include (but are not limited to): • maintaining the Dubbo central business district as the primary commercial centre for the greater region; • the protection of environmental and cultural heritage; and • protect land zoned for industrial purposes from inappropriate development.	Dubbo Regional Council	Adopted 2011

Table A.3 Regional planning context

Plan/Strategy	Summary	Responsibility	Time frame
Interim Asset Management Strategy and Asset Management Plans	The Interim Asset Management Strategy presents the Dubbo Regional Council's plan to ensure effective management and maintenance of existing community infrastructure and physical assets throughout the life of the Community Strategic Plan and manage the provision of new assets. This strategy endeavours to create further opportunity for community and stakeholder engagement in the identification of how Dubbo Regional Council should manage assets. This strategy informs the development of Asset Management Plans for specific Dubbo Regional Council assets, including: • transport, • water supply, • sewerage services, • stormwater drainage, • parks and landcare, and • buildings.	Dubbo Regional Council	Various timeframes.
Contaminated Land Policy and Contaminated Land Management Plan	Together, the Contaminated Land Policy and Contaminated Land Management Plan provide an approach to the investigation and remediation of land contamination in relation to the making of planning decisions, maintaining up-to-date information and monitoring of remediation. This policy and plan determine how information is managed, set standards for consultation of contaminated land, and define when a Site Audit is necessary. Industry, including mining and extractive industries, are identified as a potentially contaminating land use, including mineral or ore processing. Other land uses with the potential to contaminate land identified under this policy and plan that may be involved in the Project are various transport-related activities, chemical use, and fuel use.	Western Plains Regional Council	Adopted 2016
Dubbo Mining Areas Land Use Strategy 2015	The Dubbo Mining Areas Land Use Strategy 2015 envisions support and management of mining and related activity to maximise growth, minimise negative impacts, particularly on scarce water resources, and enable balance with other land uses. This strategy identifies mining and extractive industries as a key driver for economic growth in the region and supports the development of Dubbo as a major mining service centre in an effort to contribute to the development of the industry within the wider Orana region and across Western NSW. Specific strategies within the mining areas strategic framework that relate to the Project include: • maintain and enhance agricultural productivity while supporting the development of a sustainable mining/extractive industry; • meet the housing needs of the Dubbo community; • maintain and enhance Dubbo's natural environment whilst enabling opportunities for sustainable resource extraction; • meet expanding infrastructure requirements; • maintain and enhance the social health and wellbeing of the Dubbo community amidst population increases; and • provide adequate land and support for commercial and industrial developments associated with the impacts of resource extraction.	Dubbo Regional Council	Adopted 2015

Table A.3 Regional planning context

Plan/Strategy	Summary	Responsibility	Time frame
Community Participation Plan 2019	The Community Participation Plan 2019 encourages active communication between Council and the community through engagement and participation in planning processes. The plan was established to provide better outcomes for residents, businesses, industry, and the community by ensuring transparency and clarity related to planning and development projects. The plan aims to: • inform the community about planning processes; • provide meaningful opportunities for the community to participate in planning processes; • establish early consultation with members of the community regarding major developments and their impacts prior to application for planning approval of the developments; and • ensure effective processes of engagement between Council and the community.	Dubbo Regional Council	Adopted 2019
The 2040 Dubbo Community Strategic Plan (Community Strategic Plan)	The Community Strategic Plan states the overall visions and future aspirations of Dubbo. The visions outlined focus on establishing strong community ties, improving liveability and housing affordability whilst promoting opportunities for tourism, education and training, recreation, Indigenous heritage, and the natural environment. Additionally, the Community Strategic Plan focuses on transitioning Dubbo into the 'big city in the bush' as well as a transport and freight hub. The plan is focused around increasing the general population, developing infrastructure to support the local community, ensuring economic growth, and enhancing employment opportunities whilst supporting local industries. Themes areas are outlined in the plan and consists of various strategic outcomes to be fulfilled by 2040. The themes are as follows: • housing; • infrastructure; • economy; • community leadership; and • liveability. The Delivery Program and Operational Plan provide the actions that will be taken and necessary means to achieve the outcomes identified in the 2040 Community Strategic Plan. Progress will be continually reviewed by the Dubbo Regional Council through public reporting to guarantee progress towards the strategic outcomes.	Dubbo Regional Council	2018–2040

Table A.3 Regional planning context

Plan/Strategy	Summary	Responsibility	Time frame
Delivery Program and Operational Plan 2019/2020	The Delivery Program and Operational Plan explores the actions to be taken to achieve the strategic outcomes identified in the 2040 Community Strategic Plan. 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: 1. housing; 2. infrastructure; 3. economy; 4. community leadership; and 5. liveability. Each theme consists of numerous strategies with a set of specific actions to be taken to ensure their realisation.	Dubbo Regional Council	Delivery Program: 2018–2021 Operational Plan: 2020-2021
The Dubbo Local Strategic Planning Statement (LSPS)	The Dubbo Local Strategic Planning Statement (LSPS) integrates with the 2040 Dubbo Community Strategic Plan and is closely related to the Local Environmental Plans (Dubbo and Wellington LEPs) and Development Control Plans (DCPs). The LSPS prioritises development and land use suitable for the character and community goals of the Dubbo and Wellington areas. The contents of the LSPS are organised according to five themes: • infrastructure; • economy; • housing; • liability; and • sustainability. Each theme consists of regional planning goals, regional planning directions, and regional plan priorities for the Dubbo LGA.		Adopted June 2020

A.3.6 Road infrastructure and planned upgrades

i Goolma Road and Twelve Mile Road intersection upgrade associated with Uungula Wind Farm

As a part of the nearby Uungula Wind Farm, the intersection between Goolma Road and Twelve Mile Road will be upgraded to a new intersection as per the Development Consent for Uungula Wind Farm.

Effectively the existing intersection will be closed to the public and Twelve Mile Road will be realigned to connect to Goolma Road at a location further north of the existing intersection location. The stretch of road between the realigned section of Twelve Mile Road at the existing intersection will be kept for use by the Uungula Wind Farm project for oversize overmass vehicles. After project completion the intersection will be closed and decommissioned.

The access road from Twelve Mile Road to the site will be improved to facilitate the access and egress of larger trucks during construction. Improvements would include gravel coverage, widening to 8 metres and additional drainage as required. The road will be maintained during operation to allow for the access and egress of maintenance and operational vehicles to batteries and control and office building.

The upgrade works to the intersection are set to commence April/May 2022 and will take approximately 5/6 months to complete. It is anticipated the intersection upgrade will be completed prior to the construction of the Project.

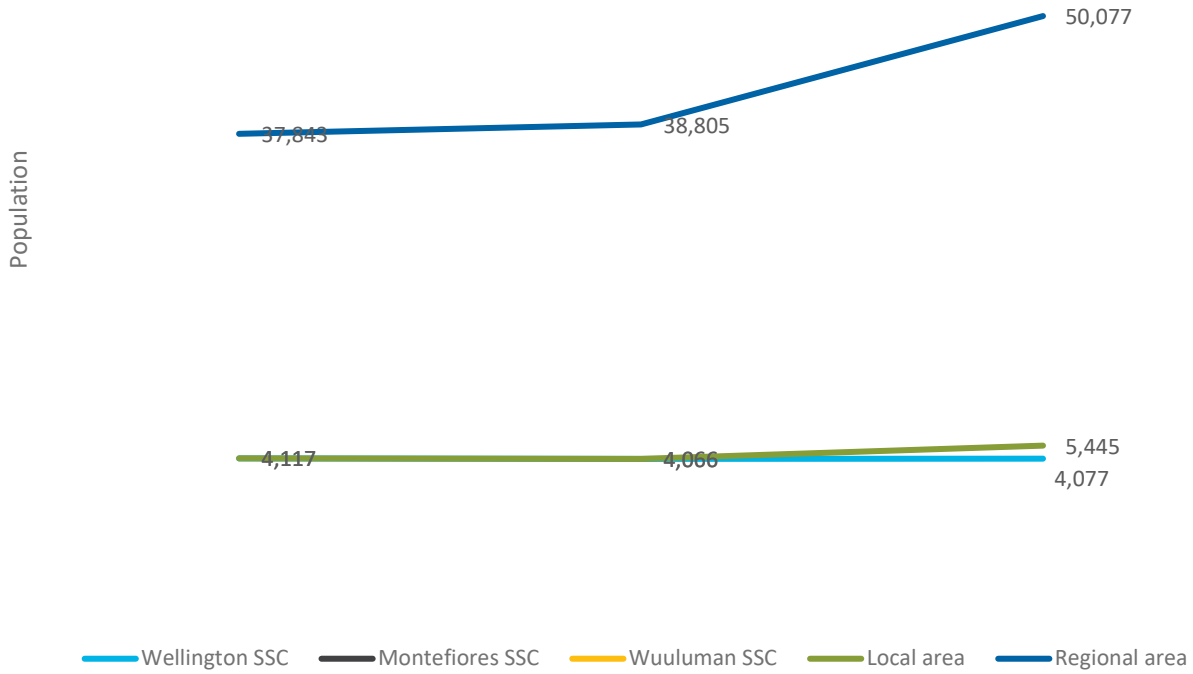
A.4 Demographic profile

According to the 2016 Census of Population and Housing (the 2016 Census), the local area had a total population of 5,445, including a population of 776 in Wuuluman SSC, 592 in Montefiores SSC, and 4,077 in Wellington SSC (ABS 2016a). The regional area had a 2016 population of 50,077 (ABS 2016a). Population data was not available for Montefiores SSC and Wuuluman SSC in 2006 and 2011 due to changing ABS structures. As a result, population trends and analysis may be skewed. However, population trends from the available data of the regional area demonstrate an increasing population, with a 32.3% increase of the total population between 2006 – 2016. It is anticipated that most of this growth is concentrated in Dubbo within the regional area. The population trends in the study area are presented in Table A.4 and Figure A.2.

Table A.4 Population trends, 2006 – 2019

Location	2006	2011	2016	Total % change 2006 – 2011	Total % change 2011 – 2016	Total % change 2006 – 2016
Wellington SSC	4,117	4,066	4,077	-1.2%	0.3%	-1.0%
Montefiores SSC	NA		592		NA	
Wuuluman SSC	NA		776		NA	
Local area	**4,117**	**4,066**	**5,445**	**-1.2%**	**33.9%**	**32.3%**
Regional area	**37843**	**38805**	**50077**	**2.5%**	**29.0%**	**32.3%**
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.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Notes: 1. Population totals for Montefiores SSC and Wuuluman SSC are not available for 2006.
2. Population totals for Montefiores SSC and Wuuluman SSC are not available for 2011.

Figure A.2 Population trends in the local area, 2006 – 2016

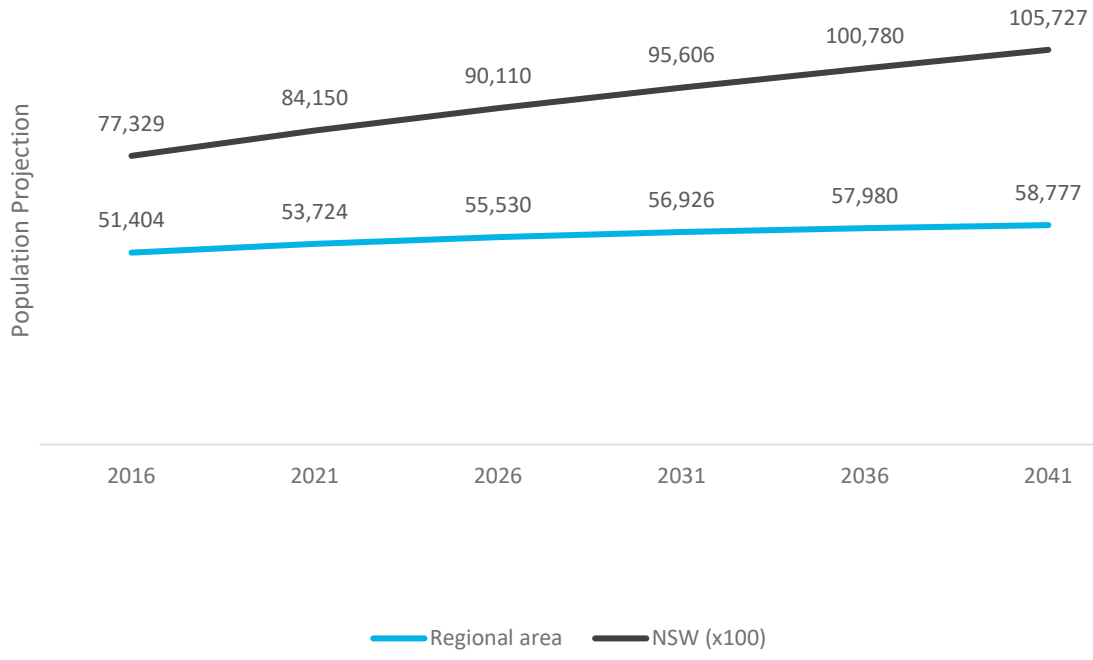
Projected population data for the area is only available for the regional area. In the regional area, there is projected population growth between 2016 – 2041 with a total growth of 14.3% and average annual growth rate of 0.6%. These figures are both significantly below the NSW total projected change from2016 – 2041 and projected average annual growth rate (36.7% and 1.5% respectively). This data indicates 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). Population projections for the study area are presented in Table A.5 and Figure A.3.

Table A.5 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
Regional area	51,404	53,724	55,530	56,926	57,980	58,777	7,373	14.3%	0.6%
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 A.3 Projected population, 2016 – 2041

A.4.1 Population by age and sex

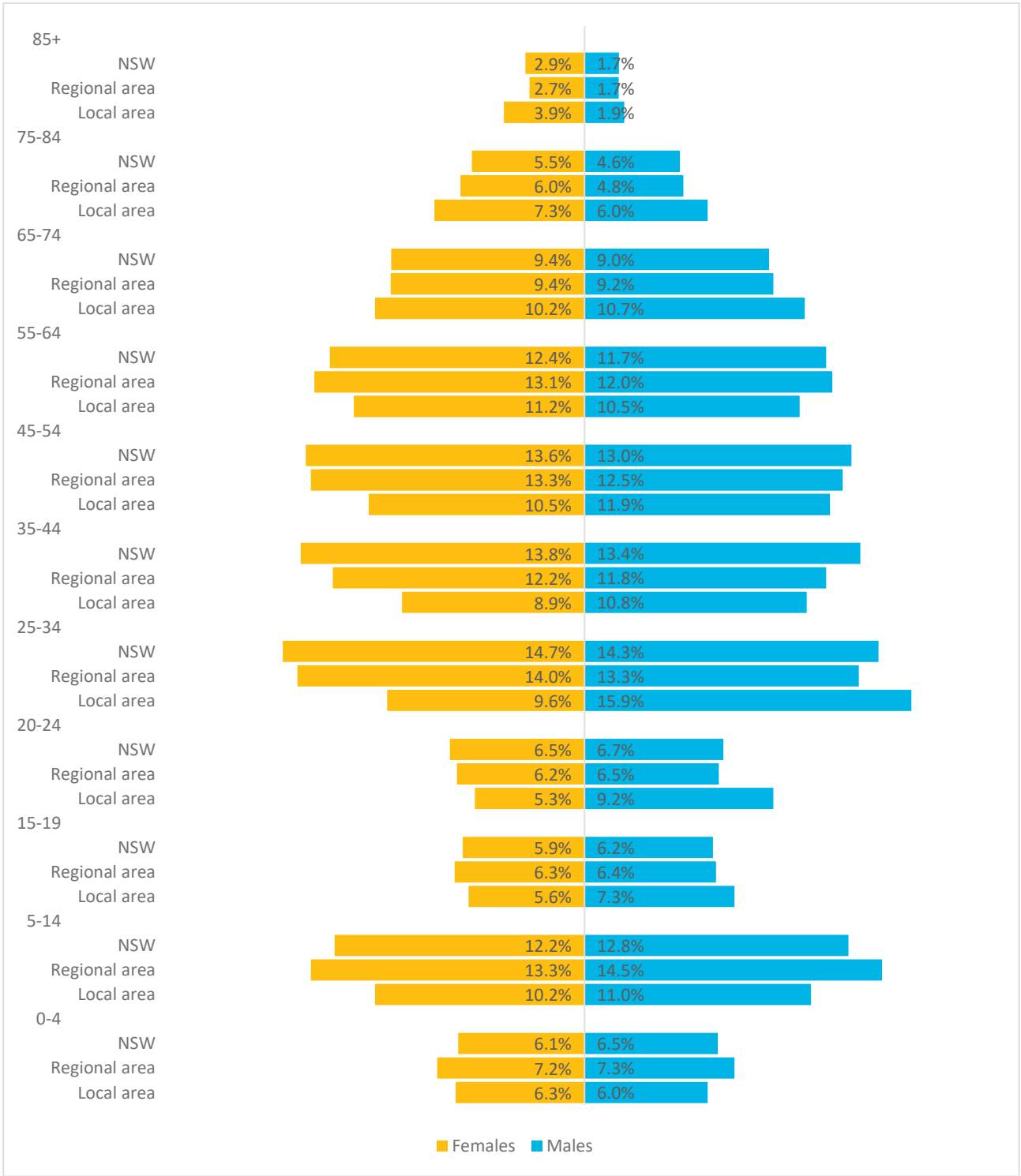
In the local area, the largest age groups are persons aged 24 – 34 years (13.6%), 45 – 54 years (12.0%), and 55 – 64 years (11.9%). The proportion of persons aged between 24 – 34 is similar in the local area (13.6%) compared to the regional area (13.4%) and NSW (14.3%). The local area also has a higher proportion of persons aged 65 years and older (21.3%) compared to NSW (16.3%), and the regional area (16.5%). The local area and regional area also has a higher proportion of persons aged 14 years and younger (17.8% and 20.7% respectively) compared to NSW (15.6%). Within the local area there is a higher proportion of youth aged 15 – 24 (14.1%) compared to the regional area (12.4%) and NSW (12.5%).

This suggests a prominent younger population in the local area compared to NSW, as well as a significant continued aging population. This is also reflected in the median ages across the local area, which includes 44 years in Wellington SSC and 40 years in Montefiores SSC which is older than the median age for NSW (38 years). Wuuluman SSC has a median age of 32 years which is younger than the median ages for Montefiores SSC (40 years), Wellington SSC (44 years) and NSW (38 years). This is likely due to Wuuluman SSC having a significant proportion of persons aged between of 25 – 44 (56.6%).

Table A.6 Aged group distribution 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	Median age of persons 2016
Wellington SSC	7.5%	12.3%	6.6%	6.4%	9.7%	8.6%	12.2%	13.0%	12.4%	7.8%	4.0%	44
Montefiores SSC	8.3%	17.4%	5.4%	5.2%	10.5%	11.0%	10.6%	10.0%	14.4%	11.0%	1.2%	40
Wuuluman SSC	0.4%	1.5%	5.2%	16.6%	36.5%	20.1%	11.7%	5.2%	2.1%	0.4%	0.0%	32
Local area	**6.5%**	**11.3%**	**6.3%**	**7.8%**	**13.6%**	**10.5%**	**12.0%**	**11.6%**	**11.1%**	**7.1%**	**3.1%**	**NA**
Regional area	**7.1%**	**13.6%**	**6.2%**	**6.2%**	**13.4%**	**11.8%**	**12.7%**	**12.4%**	**9.1%**	**5.3%**	**2.1%**	**37**
NSW	**3.3%**	**12.3%**	**6.0%**	**6.5%**	**14.3%**	**13.4%**	**13.1%**	**11.9%**	**9.1%**	**5.0%**	**2.2%**	**38**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure A.4 Population distribution, 2016

A.4.2 Aboriginal and Torres Strait Islander population

At the time of the 2016 Census, 29.6% of the total population within the local area and 15.5% of the regional area population identified as Aboriginal and/or Torres Strait Islander. This proportion in the local and regional areas is significantly higher than the proportion of the population who identify as Aboriginal and/or Torres Strait Islander in NSW (3.0%). Wuuluman SSC in particular has a significantly higher rate of people who identify as Aboriginal and/or Torres Strait Islander (47.8%), followed by Wellington SSC (27.8%) and Montefiores SSC (18.2%). The proportion of Aboriginal and/or Torres Strait Islander population in the study area is presented in Table A.7.

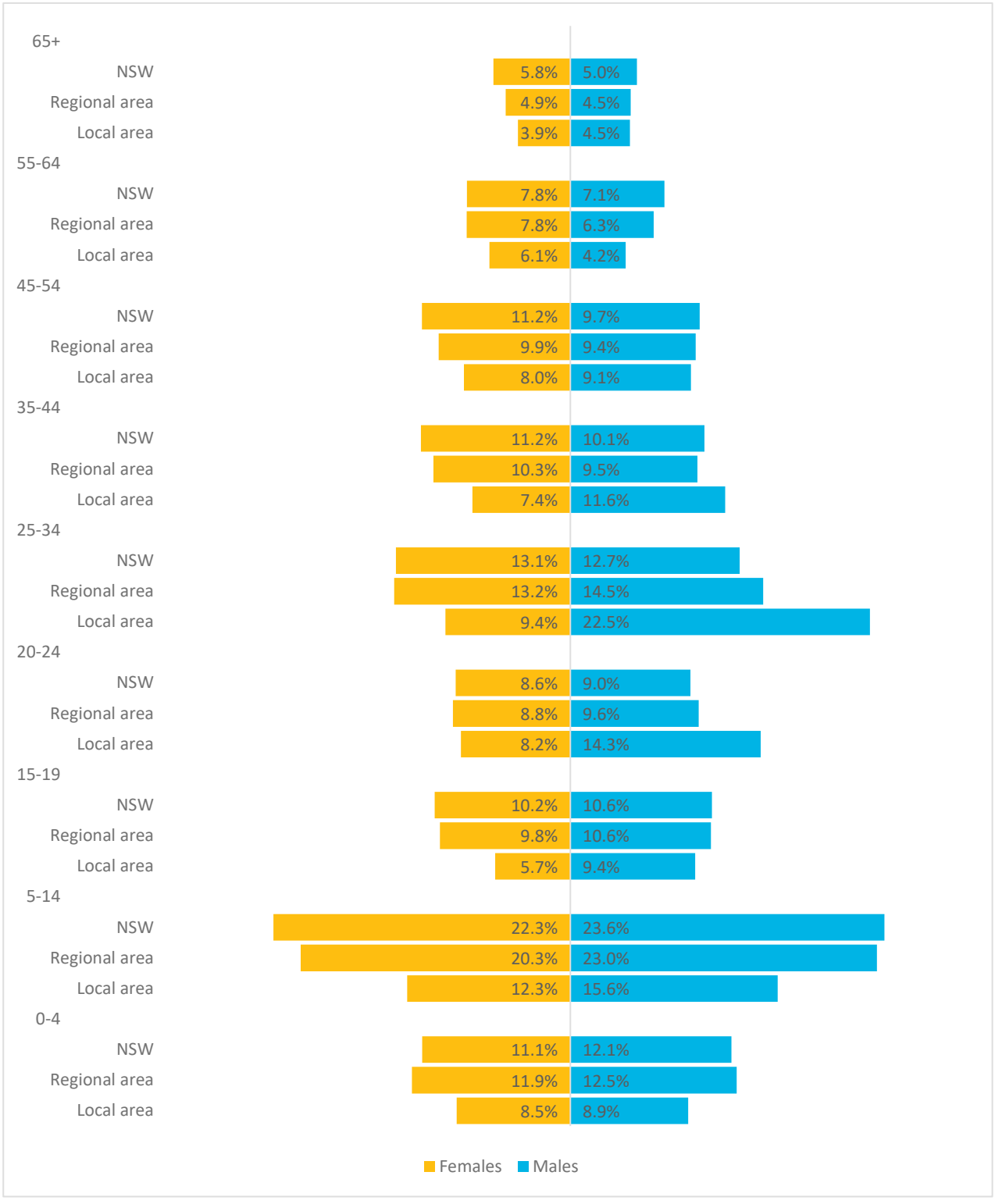
Table A.7 Indigenous persons as percentage of population, 2016

Location	Indigenous population
Wellington SSC	27.8%
Montefiores SSC	18.2%
Wuuluman SSC	47.8%
Local area	**29.6%**
Regional area	**15.5%**
NSW	**3.0%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

According to the 2016 census there is a relatively even distribution of male and female Aboriginal/or Torres Strait Islanders in the local and regional area. However, there are more males than females between the ages of 15-34. There is also a higher proportion of people aged 25 – 34 years and 5 – 14 years in the local and regional areas compared to NSW.

The distribution of people who identify as Aboriginal and/or Torres Strait Islander within the study area is presented in Figure A.5.



Source: ABS 2016, Census of Population and Housing: General Community Profiles.

Figure A.5 Population distribution of Aboriginal and/or Torres Strait Islander persons, 2016

A.4.3 Socio-economic advantage and disadvantage

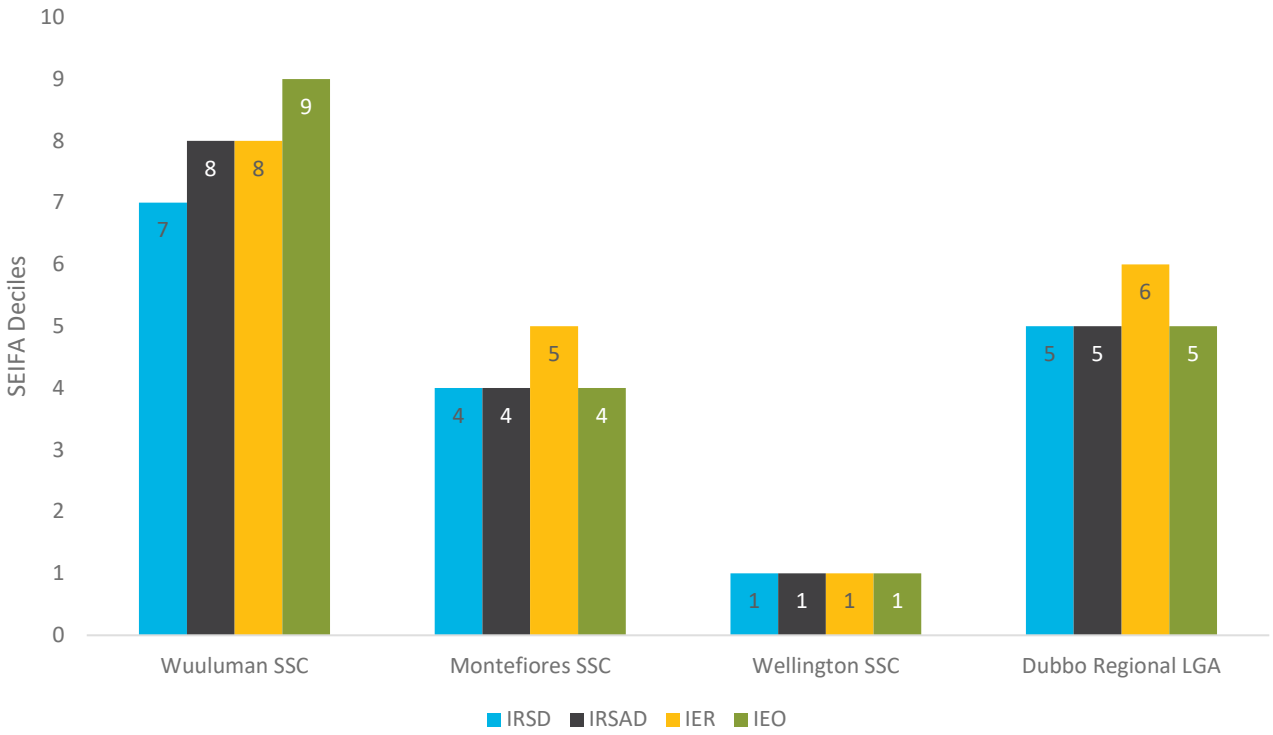
The level of disadvantage or advantage in the population is indicated in the Socio-Economic Indexes for Areas (SEIFA) which focuses on low-income earners, relatively lower education attainment, high unemployment and dwellings without motor vehicles. SEIFA is a suite of four summary measures that were 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. The rankings of the communities within the study area for each of the four summary measures are demonstrated in Figure A.6.

According to the 2016 SEIFA, socio-economic advantage and disadvantage vary between communities in the local area. The highest levels of disadvantage and lowest levels of advantage are experienced in Wellington SSC, which is ranked in Decile 1 for each of the SEIFA indexes. This means that compared to other suburbs across NSW, there is likely a higher proportion of households with low income, and residents without qualifications (see Section A.6). Additionally, there is likely a smaller proportion of households with high incomes and in skilled occupations (see Section A.7). A low IEO could also be indicative of a higher number of unemployed persons compared to other areas of NSW (see Section A.7). However, the SEIFA index indicates that there are higher levels of advantage and lower levels of disadvantage in Wuuluman SSC compared to other SSCs across NSW, with rankings of 7 – 9 in each of the SEIFA indexes. A ranking in Decile 9 for the IEO in Wuuluman SSC suggests a higher proportion of households with high income (see Section A.7.2) and in high-skilled occupations (see Section A.7.1), The SEIFA scores indicate that Montefiores SSC experiences a medium amount of overall socio-economic disadvantage and advantage compared to other SSCs across NSW, with rankings of 4 – 5 across each of the SEIFA indexes.

Within Dubbo Regional LGA, the SEIFA scores indicate that these areas experience a medium amount of overall socio-economic disadvantage and advantage compared to other LGAs across NSW, with rankings of 5 – 6 across each of the SEIFA indexes. This could indicate that these areas likely have a medium amount of people with higher education qualifications and working in skilled occupations, a more equal amount of people with high and low incomes, and a more balanced amount of more households earning higher incomes and owning their own homes compared to other LGAs within NSW.



Source: ABS 2016, 2033.0.55.001 – Census of Population and Housing: Socio-Economic Indexes for Areas (SEIFA).

Figure A.6 SEIFA deciles in the study area, 2016

A.4.4 Cultural diversity

Compared to NSW averages, the local area and regional area have a lower level of cultural diversity compared to greater NSW. In 2016, 82.4% of the local area population was Australian born. Australian-born persons also constitute a much higher proportion of the population in the regional area (84.0%) compared to NSW (65.5%). The local area and regional area also have a much higher proportion of intergenerational Australians, with (66.7%) of people in the local area and (75.6%) of people in the regional area with both parents born in Australia, compared to (45.4%) across NSW (ABS 2016a). A significantly smaller proportion of households in the local area (1.9%) and regional area (4.4%) 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 study area is presented in Table A.8.

Table A.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
Wellington SSC	81.9%	75.7%	86.7%	1.9%
Montefiores SSC	83.8%	78.5%	86.5%	3.5%
Wuuluman SSC	83.9%	10.4%	11.3%	0.4%
Local area	**82.4%**	**66.7%**	**75.9%**	**1.9%**
Regional area	**84.0%**	**75.6%**	**86.4%**	**4.4%**
NSW	**65.5%**	**45.4%**	**68.5%**	**26.5%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.4.5 Vulnerable groups

i Disability

Data from the 2016 Census indicates that the population in both the local and regional area has a greater need for assistance than that in the rest of NSW 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. In the local area, 7.0% of the population has a need for assistance, which is a greater need for assistance compared to NSW (5.4%). This greater need for assistance in the local area could be attributed to the higher proportion of people aged 65 years and older (21.3%) compared to NSW (16.3%). In the regional area, the need for assistance is slightly higher compared to NSW with 5.7% of the population with a need for assistance.

Table A.9 Core activity need for assistance, 2016

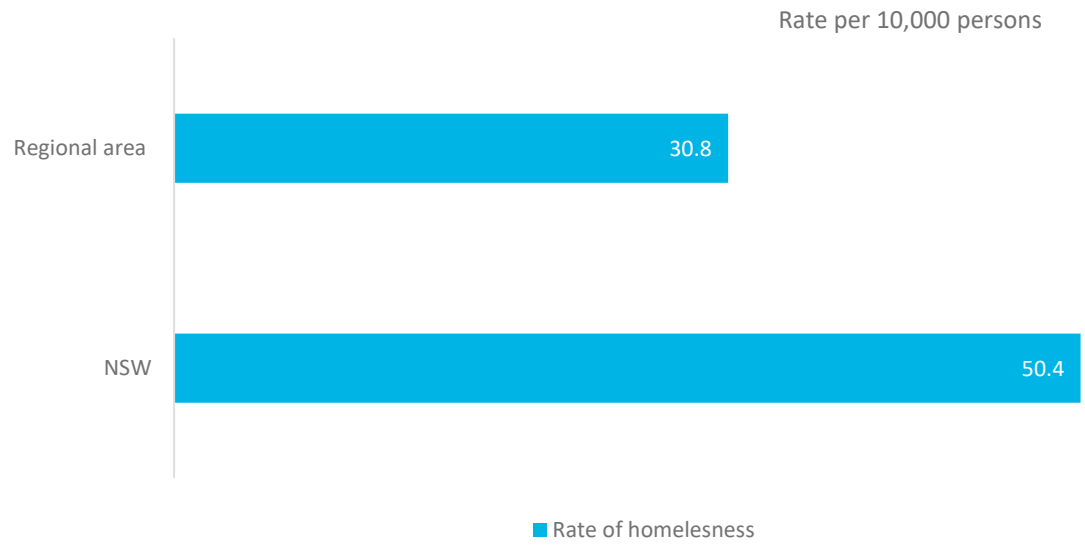
	Has need for assistance	Does not have need for assistance
Wellington SSC	8.6%	79.0%
Montefiores SSC	4.7%	84.0%
Wuuluman SSC	0.5%	11.3%
Local area	**7.0%**	**69.9%**
Regional area	**5.7%**	**84.4%**
NSW	**5.4%**	**87.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

ii 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 at the SSC level but are available at the LGA level. According to the 2016 Census estimations on homelessness, rates of homelessness in Dubbo Regional LGA are lower than NSW rates, with a rate of 30.8 persons per 10,000 across the regional area compared to the NSW average of 50.4 persons per 10,000. Rates of homelessness in the study area are presented in Figure A.7.



Source: ABS 2016, 2049.0 – Census of Population and Housing: Estimating Homelessness.

Figure A.7 Rates of homelessness per 10,000 persons, 2016

A.5 Community culture, values, and aspirations

A.5.1 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.

The project area is on Wiradjuri land. Tindale (1974) describes the land of the Wirajudri as extending from Dubbo south to Albury, and Ivanhoe east to the Blue Mountains. The Australian Institute of Aboriginal and Torres Strait Islander Studies (1996) marks the northernmost boundary as Nyngan. It is important to remember that these groupings represent an account of Aboriginal groups post contact, they may not necessarily present an accurate picture of the way lands were occupied or used in the past.

The area was known as "the land of the three rivers", after the *Wambuul* (later named the Macquarie River, now dual named the Wambuul-Macquarie River), the *Kalare* (later named the Lachlan River), and the *Murrumbidjeri* (later named the Murrumbidgee River) (Perkins and Langton 2010, p. 32; Heritage Office (HO) and Department of Urban Affairs and Planning (DUAP) 1996). Tindale (1974, p. 201) quotes Alfred William Howitt as mentioning several of these local groups of the tribe: *Narrandera* (prickly lizard), *Cootamundra* (kuta-mundra, from the kutamun turtle), and *Murranbulla* (maring-bula, two bark canoes). *Binjang* ('the beautiful valley') is the Wiradjuri name for the Wellington Valley. There is some reference to the Wirrum Wirrum people of the Binjang clan within the Wiradjuri Nation occupying the confluence of the Wambuul-Macquarie and Bell's Rivers (and, by proximity, likely the project area). Wellington was a focal point of post-contact activity in the early 1800s, and is notable as the site of one of the first Aboriginal mission sites in NSW. Three missions – some operating concurrently – were established at Wellington, several kilometres south of the project area (EMM 2022a).

Additional details of the Aboriginal ethno-historical context of the local area are provided in the *Aboriginal Cultural Heritage Assessment for the Wellington Battery Energy Storage System* (see Appendix F of the EIS).

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 (nd), 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 nd).

A.5.2 Non-Indigenous history

Wellington and the surrounding land were first explored by John Oxley in 1817, and in late 1822 Europeans began to occupy the land. Initially the area was slated as a convict settlement with Lieutenant Simpson having been appointed to transfer the convicts and solders to the area. One of the first jobs at hand was to prepare the ground for crops (particularly wheat), which the rich red soil was well suited too. Like many convict settlements at the time, the camp lacked skilled labour such as stonemasons, brick layers, sawyers and carpenters. Due to this shortage of skills the settlement lacked adequate housing and fencing, this led to sheep eating the wheat and wandering free, and houses to leak and become sodden. The situation did not improve until 1826 when the settlement started to yield tobacco, barely, potatoes, oats and maize. By 1831 Wellington was no longer being used as a convict establishment, however it continued to be occupied as a Government stock station. As Wellington grew and more of the area was explored, a complex cave network was discovered. These caves were explored by Sir Thomas Mitchell for fossils, of which there was an abundance (EMM 2022b). In 1829 Joseph Barrow Montefiores established a private village, just north of Wellington known as Montefiores after he obtained 5,059 ha (12,502 acres) within the area. A small township grew and those who spent time there noted it's beauty. One visitor wrote about Montefiore in the Sydney Morning Herald in 1847 that the town was as deserving of admiration of the countryside in Italy or France (EMM 2022b). Additional details of the early settler history of the local area are available in the *Historic Baseline Assessment for the Wellington Battery Energy Storage System* (see Appendix G of the EIS).

In 1950 Wellington was amalgamated with Macquarie Shire and part of Cobbora Shire to form Wellington Shire. There was a number of transfer of areas with adjoining shires, and in 2016 Wellington Shire was amalgamated with the local government area of Dubbo City to form Western Plains Regional Council (which was subsequently renamed Dubbo Regional Council the same year). Today, Wellington is a regional centre, with a strong agricultural sector in the Wellington area.

A.6 Social infrastructure

A.6.1 Education

Within the local area in 2016, there was a smaller proportion of persons attending preschool (4.0%) compared to the regional area (6.7%) and the whole of NSW (5.7%). The proportion of students attending primary school and secondary school was also lower in the local area (15.8% and 13.1% respectively) compared to the regional area (27.7% and 19.4% respectively) and NSW – particularly in Wuuluman SSC, where only 0.8% of education attendees attended primary school, and another 1.6% attended secondary school. This likely reflects the middle-aged and aging demographic within the local area, particularly within the suburb of Wuuluman SSC (see Section A.3). Within the local area, there was also a significantly smaller proportion of persons attending university or other tertiary institution (3.1%) compared to NSW (16.2%). Lower university and other tertiary institution attendance could reflect lower rates of secondary school attendance and completion or fewer tertiary institutions in the local area. All three of the top occupations in the area, including community and personal service workers (20.4%), labourers (14.7%) and technicians and trades workers (14.2%), are occupations that don't often require a bachelor's degree level qualification or higher. This may also explain the substantially lower university attendance (see Section A.7.1). A summary of education institution attendance is presented in Table A.10.

Table A.10 Education institution attendance, 2016

	Preschool	Infants/primary	Secondary	Technical or further educational institution	University or other tertiary institution	Other type of educational institution
Wellington SSC	5.6%	5.6%	5.6%	5.6%	5.6%	5.6%
Montefiores SSC	6.3%	24.4%	18.5%	3.4%	7.3%	1.5%
Wuuluman SSC	0.4%	0.8%	1.6%	0.0%	0.6%	0.0%
Local area	**4.0%**	**15.8%**	**13.1%**	**4.4%**	**3.1%**	**0.5%**
Regional area	**6.7%**	**27.7%**	**19.4%**	**7.4%**	**6.2%**	**1.5%**
NSW	**5.7%**	**26.1%**	**20.1%**	**6.2%**	**16.2%**	**2.7%**

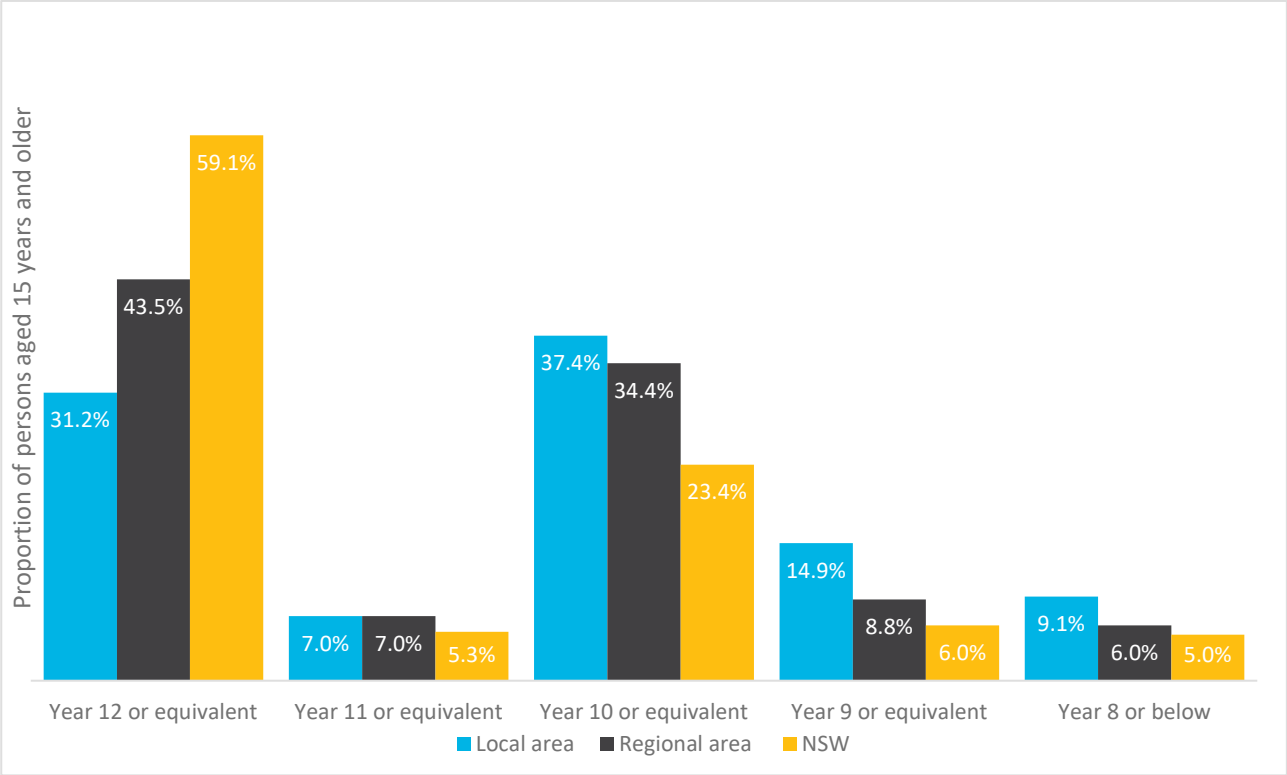
Source: ABS 2016, Census of Population and Housing: General Community Profiles.

The local area has a smaller proportion of persons who have completed Year 12 or equivalent (31.2 %) compared to NSW (59.1%). Within the local area, Wuuluman SSC has the highest proportion of persons who have completed Year 12 or equivalent at (54.4%) compared to 38.7% in Montefiores SSC and 29.5% in Wellington SSC. In the local area persons over 15 years of age with Years 11, 10, 9 and 8 levels of schooling were all higher than the state average. However, the highest level of education completed in the local area was still Year 10. This demonstrates a higher percentage of the population within the local area who have not completed secondary level schooling compared to the NSW average. As discussed previously, the top occupations in the local area are not occupations that require entry into university tertiary education, therefore may explain the lower rate of secondary school completion. The substantially lower rate of Year 12 completion in Wellington SSC reflects the high levels of disadvantage and low levels of advantage in Wellington SSC which ranked in Decile 1 for each of the SEIFA indexes (see Section A.4.3). Research by the Mitchell Institute found that socio-economic disadvantage has a greater impact on educational opportunity than any other predictors considered in the study (Mitchell Institute, 2015). The Mitchell Institute additionally found that rural Australian students often 'attend school less frequently, are less likely to go to university and are more likely to drop out if they enrol' (Mitchell Institute, 2015). The highest level of schooling completed within the study area is presented in Table A.11 and Figure A.8.

Table A.11 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
Wellington SSC	29.5%	7.2%	37.3%	15.7%	9.5%
Montefiores SSC	38.7%	5.8%	38.4%	10.3%	7.1%
Wuuluman SSC	54.4%	5.9%	33.8%	5.9%	4.4%
Local area	**31.2%**	**7.0%**	**37.4%**	**14.9%**	**9.1%**
Regional area	**43.5%**	**7.0%**	**34.4%**	**8.8%**	**6.0%**
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 A.8 Highest level of schooling completed for persons 15 years and older, 2016

i Tertiary

In the local area there is one tertiary institution: TAFE NSW – Wellington. There are additional tertiary institutions available in the regional area. A summary of the tertiary institutions within the local area is provided in Table A.12.

Table A.12 Tertiary institutions in the local area, 2021

Location	Institute	Education and training courses
Wellington	TAFE NSW	Specialises in equipping students with the skills and qualifications for the local workforce.

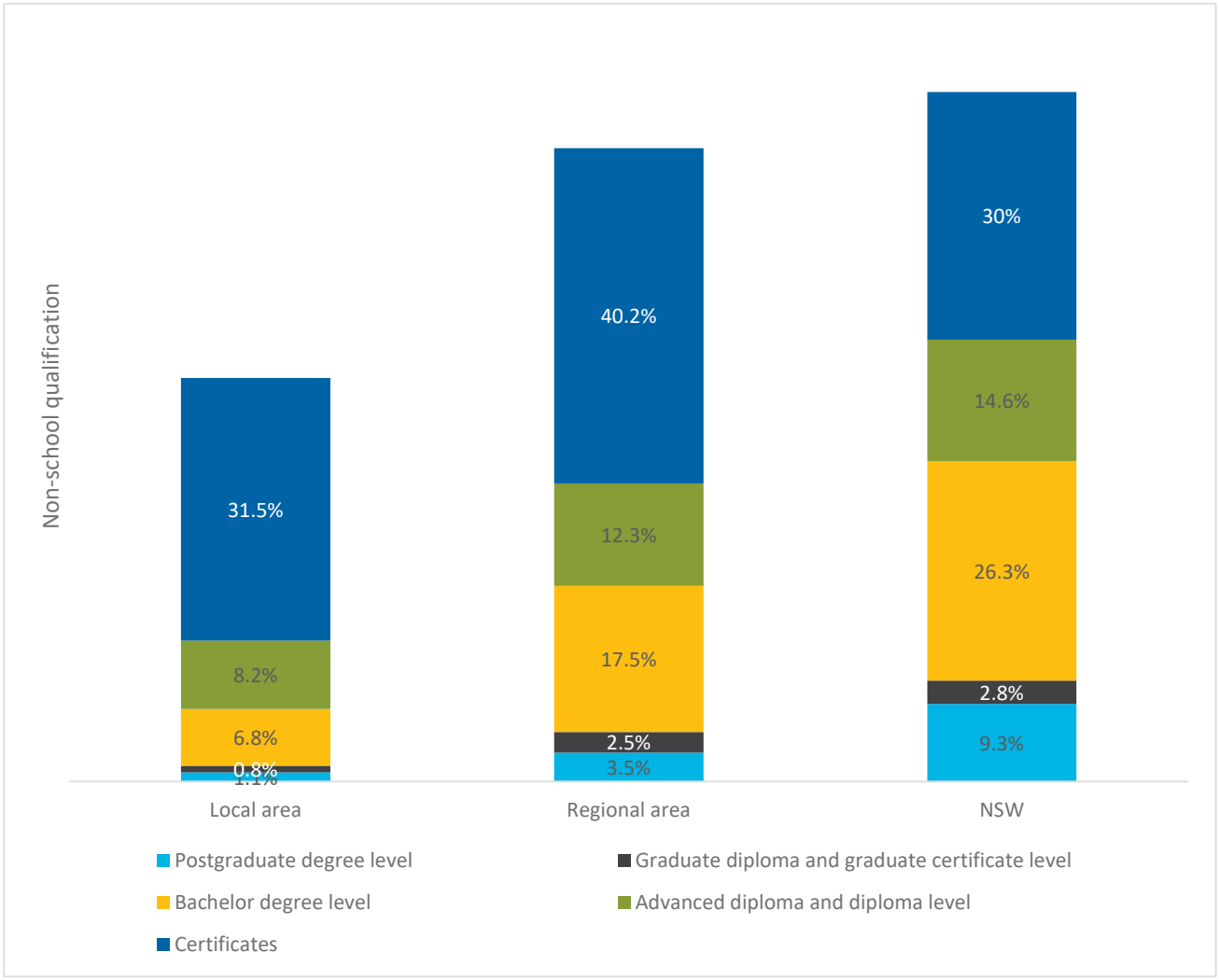
Source: TAFE NSW 2022

Within the local and regional areas, certificates comprise the largest proportion of non-school qualifications held by people over 15 years (31.5% and 40.2% respectively). The proportion of persons with a certificate qualification in the local area and regional area is higher compared to 29.7% across NSW. There is also a smaller proportion of people with Bachelor and postgraduate level degrees across the local area (6.8% and 1.1% respectively) compared to the regional area and NSW. This may be in part due to the lower rates of secondary schooling completion (see Figure A.8), making it difficult to directly enter university programs. In addition, the top occupations in the local area which include community and personal service workers (20.4%), labourers (14.7%) and technicians and trades workers (14.2%), are occupations that don't often require a Bachelor degree level qualification or higher. However, these occupations do generally require certificate level qualifications. This may explain the lower levels of people holding Bachelor degree level qualifications or higher as well as the higher level of people holding certificates in the local area. A summary of the proportions of persons over 15 years with a non-school qualification is presented in Table.A.13.

Table.A.13 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
Wellington SSC	1.4%	1.3%	8.5%	10.6%	42.3%
Montefiores SSC	2.3%	0.0%	12.8%	11.3%	43.4%
Wuuluman SSC	0.0%	0.0%	0.7%	1.8%	2.7%
Local area	**1.1%**	**0.8%**	**6.8%**	**8.2%**	**31.5%**
Regional area	**3.5%**	**2.5%**	**17.5%**	**12.3%**	**40.2%**
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 A.9 Proportion of persons over 15 years with a non-school qualification, 2016

A.6.2 Health

The local area is located within the Western NSW LHD.

i Hospital

The Western NSW LHD looks after all public hospitals and healthcare facilities provisions in the local area.

Source: NSW Health 2021

Figure A.10 Western NSW LHD

The only hospital in the local area is Wellington Hospital which provides a variety of services to the surrounding area. The details of Wellington Hospital are presented in Table A.14.

Table A.14 Hospitals in the local area, 2021

Hospital	Location	Type	Number of beds
Wellington Hospital	Wellington	Public	NA

Source: AIHW 2022, Hospitals.

The most common cause of admission to the hospital between 2016 – 2020 was medical (emergency) followed by medical (non-emergency). From 2016 – 2022, the number of admissions to Wellington Hospital decreased from 736 in 2016 – 2017 to 489 in 2019 – 2020. The low admissions for the other admissions categories suggests that people within the local area would access more specialised care outside of the local area.

Table A.15 Admissions to Wellington Hospital, 2016 – 2020

Admission category	2016 – 2017	2017 – 2018	2018 – 2019	2019 – 2020
Childbirth	0	0	<5	0
Surgical (emergency)	<5	<5	0	0
Surgical (non-emergency)	0	0	<5	0
Medical (emergency)	534	426	315	319
Medical (non-emergency)	168	175	197	168
Other acute (emergency)	0	0	0	0
Other acute (non-emergency)	<5	0	0	0
Mental health	0	0	0	0
Rehabilitation	25	15	<5	0
Palliative	9	11	<5	<5
Other subacute and non-acute	<5	0	<5	0
Total	736	628	520	489

Source: AIHW 2021, 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.

ii Primary health

a General practitioners

A total of one private general practitioner (GP) practice was identified in the local area. Swift Street Medical Service offers services including standard GP services and special services. Wellington Community Health Service also offers GP services, as well as community health services and a variety of specialist services. Additional GP services located in the regional area also service the local area – particularly within Dubbo SSC. A GP practices in the regional area are summarised in Table A.16.

Table A.16 GP services by location in the local area, 2021

Service name	Location	GP services	Community health services	Indigenous health services	Mental health services	Maternal, child, and family health services	Aged care services	Other specialist services
Swift Street Medical Service	Wellington	✓	✗	✗	✗	✗	✗	✓
Wellington Community Health Service	Wellington	✓	✓	✓	✓	✓	✓	✓

Source: Healthdirect 2022.

A.6.3 Emergency

The number of available emergency services in the local area is shown in Table A.17.

Table A.17 Emergency services in the local area, 2021

	Police station	Ambulance station	Fire and rescue station	Rural fire service brigades	State Emergency Service
Wellington SSC	1	0	0	1	0
Montefiores SSC	0	0	0	0	0
Wuuluman SSC	0	0	0	0	0
Local area	**0**	**0**	**1**	**1**	**0**

Source: police.nsw.gov.au; ambulance.nsw.gov.au; fire.nsw.gov.au; rfs.nsw.gov.au; ses.nsw.gov.au.

A.6.4 Transport infrastructure

i 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 (72.4%), which is slightly higher than the NSW average (64.6%) but lower than the regional area average (78.1%). Travel using public transport varies throughout the local area. A substantially lower proportion of people travel to work by public transport in the regional area (0.5%) compared to NSW (16.0%). This suggests that a significant proportion of the population does not have to travel to work, or that public transport infrastructure is limited in the area. Modes of travel to work in the study area are summarised in Table A.18.

Table A.18 Modes of travel, 2016

	By car (as driver, as passenger)	By public transport (train, bus, ferry, tram)
Wellington SSC	73.0%	0.5%
Montefiores SSC	75.8%	0.0%
Wuuluman SSC	43.1%	0.0%
Local area	**72.4%**	**0.4%**
Regional area	**78.1%**	**0.5%**
NSW	**64.6%**	**16.0%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

ii Public transport

There are varying levels of public transport in the area. In Wellington SSC, there is a regional train and coach network from Wellington Station to Sydney Central Station, the Central West and Orana network to Dubbo and a regional Coaches Network to Nyngan SSC and Lithgow SSC (Transport NSW, 2021). There appears to be no public transport to or from Wuuluman SSC to the surrounding areas such as Dubbo or Sydney (Transport NSW, 2021). There is also no public transport between Wuuluman SSC and Wellington SSC which is the closest suburb to Wuulman SSC (Transport NSW, 2021). Montefiores SSC appears to be moderately connected by bus to the surrounding area. There is a bus between Wellington SSC and Montefiores SSC and a bus from Montefiores SSC to Dubbo SSC (Transport NSW, 2021).

iii Road network

The Mitchell Highway connects Dubbo SSC with Wellington SSC and Montefiores SSC. The highway is also close to Wuuluman SSC and can be accessed via Goolma Road. Renshaw McGirr Way, Bushrangers Creek Road, Burrendong Way, Goolma Road and Saxa Road all connect the local area to Parkes, Gulgong, Elong Elong and Orange.

iv Air

The local and regional areas can access air transport from Dubbo City Regional Airport. The airport consists of two sealed runways, a taxiway, an RPT apron, and a passenger terminal (Dubbo Regional Airport, 2021). The nearest airports offering both domestic and international flights are Sydney Airport and Newcastle Airport which are both approximately 4.5 hours' drive (367 km and 374km respectively) from the local area.

A.6.5 Community services

A summary of community services that service the local area is presented in Table A.19.

Table A.19 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	✓	✓
Women's services	✓	✓

Source: My Community Directory 2021; Healthdirect 2021; Ask Izzy 2021.

i Aboriginal community services

There are six services in the local area offering Aboriginal community services. The most comprehensive Aboriginal services are available through the Wellington Aboriginal Corporation Health Services (WACHS), which offers a range of Aboriginal health services, mental health and counselling services, health education services, and Aboriginal support services. The Wellington Community Health Centre also provides Aboriginal health services. Hearing Australia provides specific hearing services for Aboriginal people.

The Wellington Local Aboriginal Land Council provides information, support, advocacy and referral for Aboriginal people who live in the local community. Housing, cultural, and heritage awareness raising and enterprise and employment opportunities are provided. The Wiradjuri Wellington Aboriginal Town Common Aboriginal Corporation provides support specifically for the Wiradjuri Aboriginal community of Wellington.

Communities for Children also provides a 'Mums to Mentors' program which provides an opportunity for Aboriginal parents and carers of children 0 – 12 years old to become mentors in their community.

ii Child and family services

The main providers of child and family services in the local area are Communities for Children and Bernardos Western NSW, both of which are located in Wellington SSC. Communities for Children provides a variety of child and family services, including 'Mums to Mentors' program, school holiday activities, intensive family support, 'Little Learners' literacy and numeracy programs for young children, and parenting programs. Bernardos Western NSW provides targeted early intervention (for the Aboriginal community), a breakfast club, 'Beyond Barbed Wire' program (support services for women with children, who are caught up in the criminal justice system, or leaving prison), 'Brighter Futures Early Intervention Project', a learning centre, and playgroups.

Dubbo Regional Council provides Family and Children's Services (which includes child care, kindergartens, parenting education and support, immunisation and infant and childhood health). Additional child and family services are available through the WINS Community Centre, which provides case management, programs, resources and support for infants, children and young people 0 – 17 years old and their families. Services include after-school programs, outreach picnics and groups, and school holiday activities. There is also a domestic violence committee offered through the WINS community centre which provides domestic violence services and associated agencies network to provide support, community development and networking opportunities in the local area for children and families experiencing domestic violence.

iii Youth community services

Within the local area, youth community services are located in Wellington. As stated above, WINS Community Centre provides case management, programs, resources and support for infants, children and young people 0 – 17 years old and their families. Youth community services are also provided by the Wellington Police Citizens Youth Club (PCYC), which provides recreational and sporting activities for children and young people 2 – 25 years old. Bernardos 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.

Youth services are also available through Dubbo Regional Council, where youth workers provide information, assistance and referral to appropriate services for children and young people. Various programs provide consultation with children and young people, encouragement of participation in a wide range of recreational activities and development of leadership skills.

Joblink Plus in Wellington 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.

iv Housing and homelessness services

There are two identified housing and homelessness services operating within the local area which are offered through multi-service providers in Wellington SSC. Bernardos Western NSW offers a Reconnect program for children and young people 12 to 18 years old and their families where the young people are becoming disconnected from their families, school and/or work and are at risk of becoming homeless. WINS Community Centre offers Community Information, Referral and Resources which includes information and referral for housing.

Housing and homelessness services which service the local area are primarily located in the regional area in Dubbo SSC, and include:

- Orana Support Service (crisis accommodation, transitional accommodation and support, tenancy support);
- DCJ Housing Services (tenancy management, Aboriginal housing, private rental assistance, community housing, public housing);
- Uniting (crisis support, case management, and referral); and
- Compass Housing Services (community housing, specialist disability accommodation).

v Employment services

There are six identified employment service providers in the local area, all located in Wellington SSC. Two of these services (Sureway Employment and Training, and Joblink Plus) provide Jobactive – 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 six identified providers in include career transition assistance, disability employment services, financial counselling, the 'ParentsNext' program, and skills checkpoint programs. TAFE NSW – Wellington also provides counselling and career advice.

vi Women's services

Women's services in the local area identified in sections above include the 'Beyond Barbed Wire' program, and Aboriginal women's health programs. Within the local area there is also a War Widows' support group called 'Laurel Ladies' and a Country Women's Associated (CWA) Wellington branch which offers opportunities for friendship, personal growth and pursuit of key social issues for women in the community.

A.7 Workforce and income

A.7.1 Employment

The unemployment rate in the local area is 11.9%, which is higher than both the regional area and NSW. In particular, the substantial level of unemployment in Wellington SSC reflects the high levels of disadvantage and low levels of advantage in Wellington SSC which ranked in Decile 1 for each of the SEIFA indexes (see Section A.4.3). Wellington SSC also has much lower levels of Year 12 completion (29.5%) compared to NSW (59.1%) which may also significantly contribute to the high levels of unemployment in the area. The youth unemployment rate in the local area (18.3%) is higher than the rate within the regional area (12.3%) and NSW (13.6%). Unemployment and labour force participation rates are presented in Table A.20.

Table A.20 Unemployment and labour force participation rates, 2016

	Unemployment rate	Youth unemployment rate	Labour force participation rate (15 years and older)
Wellington SSC	13.7%	21.1%	41.6%
Montefiores SSC	3.8%	0.0%	52.1%
Wuuluman SSC	0.0%	0.0%	6.3%
Local area	**11.9%**	**18.3%**	**36.7%**
Regional area	**5.9%**	**12.3%**	**59.3%**
NSW	**6.3%**	**13.6%**	**59.2%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

In the local area the top three occupations are community and personal service workers (20.4%), labourers (14.7%) and technicians and trades workers (14.2%). The significant proportion of community and personal service workers throughout the local area corresponds to the prevalence of health care and social assistance being the top industry of employment in both the regional area (15.4%) and the local area (18.2%).

The high proportion of community and personal service workers in the study area aligns with the population in both the local and regional area which requires a greater assistance than that in the rest of NSW 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 (see Section A.3). Occupations within the study area are presented in Table A.21.

Table A.21 Occupations, 2016

Occupations	Wellington SSC	Wuuluman SSC	Montefiores SSC	Local area	Regional area	NSW
Managers	7.0%	29.4%	11.5%	**8.5%**	**8.5%**	**13.5%**
Professionals	12.9%	17.6%	15.4%	**13.5%**	**13.5%**	**23.6%**
Technicians and trades workers	14.0%	11.8%	15.4%	**14.2%**	**14.2%**	**12.7%**
Community and personal service workers	21.6%	0.0%	18.5%	**20.4%**	**20.4%**	**10.4%**
Clerical and administrative workers	10.0%	13.7%	10.6%	**10.2%**	**10.2%**	**13.8%**
Sales workers	10.6%	5.9%	8.8%	**10.2%**	**10.2%**	**9.2%**
Machinery operators and drivers	7.7%	5.9%	6.6%	**7.5%**	**7.5%**	**6.1%**
Labourers	14.8%	19.6%	13.2%	**14.7%**	**14.7%**	**8.8%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.7.2 Income

There is significant variation across the individual and household median weekly incomes in the SSCs which comprise the local area and regional area. Within the local area, median weekly individual income was the highest in Wuuluman SSC ($699) and lowest in Wellington SSC ($458). The median weekly household income was the highest in Montefiores SSC ($1,625) and lowest in Wellington SSC ($781). The median individual incomes in Wellington SSC and Montefiores SSC ($458 and $612 respectively) were both lower than the regional area and NSW individual median incomes. While Wuuluman SSC has the highest individual median income ($699), both Wuuluman SSC and Wellington SSC had household median incomes ($1,125 and $781 respectively) that were slightly to significantly lower the regional area and NSW household median income.

This reflects the SEIFA scores within the local area, which suggest very high levels of advantage and low levels of disadvantage in Wuuluman SSC compared to other suburbs across NSW (see Section A.4.3), as well as higher levels of disadvantage and lower levels of advantage in Wellington SSC (see Section A.4.3). Median incomes in the study area are presented in Table A.22.

Table A.22 Median income, 2016

	Individual (median income $ weekly)	Household (median income $ weekly)
Wellington SSC	458	781
Montefiores SSC	699	1,125
Wuuluman SSC	612	1,625
Regional area	**660**	**1,272**
NSW	**664**	**1,486**

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.

A.8 Housing and accommodation

A.8.1 Housing type and structure

The most common housing type and structure within the local area in 2016 was separate houses (98.2%), followed by other dwelling (1.2%) (ABS 2016a). The proportion of occupied dwellings in the local area (85.3%) is similar compared with the regional area (86.0%) and NSW (90.1%). Housing type and structure is presented in Table A.23.

Table A.23 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
Wellington SSC	82.5%	5.4%	2.1%	9.2%	1,827	84.9%
Montefiores SSC	95.7%	0.0%	1.4%	1.9%	229	90.8%
Wuuluman SSC	100.0%	0.0%	0.0%	0.0%	42	71.4%
Local area	**84.3%**	**4.6%**	**2.0%**	**8.2%**	**2,098**	**85.3%**
Regional area	**84.6%**	**6.0%**	**6.9%**	**1.9%**	**19590**	**89.2%**
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.

Within the local area there is a higher proportion of lone person households (35.8%) compared to NSW (23.7%), and a lower proportion of family households (61.9%) compared to NSW (72.1%). However, family households constitute the majority of household composition in the local area, regional area, and NSW. Household composition in the study area is presented in Table A.24.

Table A.24 Household composition, 2016

Household type	Family households	Group households	Lone person households
Wellington SSC	60.0%	3.4%	37.0%
Montefiores SSC	73.6%	1.4%	27.4%
Wuuluman SSC	86.7%	0.0%	20.0%
Local area	**61.9%**	**3.1%**	**35.8%**
Regional area	**70.6%**	**3.1%**	**26.4%**
NSW	**72.1%**	**4.2%**	**23.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.8.2 Tenure

At the time of the 2016 Census most dwellings in the local area were owned outright (36.2%). In the regional area and NSW most dwellings were owned with a mortgage (33.8% and 32.3% respectively). However, the proportion of homes that are rented in Wellington SSC (36.5%) is significantly higher than Wuuluman SSC (10.0%), Montefiores SSC (20.2%), the regional area (30.7%) and NSW (31.8%). While the proportion of homes owned outright is significantly higher in Wuuluman SSC and Montefiores SSC (63.3% and 41.8%). This data aligns to the median total personal and household weekly income, where Wuuluman SSC had the largest household income, and Wellington SSC had the lowest weekly household and personal income. The higher proportion of homes owned outright in Wuuluman SSC may reflect the high median household weekly income, whilst the low proportion of homes owned outright and high rental tenancy in Wellington SSC may reflect the low personal and household weekly income that fell beneath the local area, regional area and NSW. Tenure within the study area is presented in Table A.25.

Table A.25 Tenure (based on total private dwellings), 2016

	Owned outright	Owned with a mortgage	Rented	Other tenure
Wellington SSC	34.9%	22.8%	36.5%	1.0%
Montefiores SSC	41.8%	35.1%	20.2%	0.0%
Wuuluman SSC	63.3%	40.0%	10.0%	0.0%
Local area	**36.2%**	**24.5%**	**34.2%**	**0.8%**
Regional area	**31.4%**	**33.8%**	**30.7%**	**1.2%**
NSW	**32.2%**	**32.3%**	**31.8%**	**0.9%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.8.3 Mortgage repayment and rent

Rent and mortgage repayments constitute a significant proportion of household costs. Within the regional area, median mortgage repayments are lower within Wellington SSC ($1,000 per month) Montefiores SSC ($1,517 per month) and Wuuluman SSC ($1,539 per month) compared to NSW ($1,986 per month).

Within the local area, rent payments are lower compared to the NSW average of $380 per week. However, there is some variability across the local area, ranging from a relatively higher median rent payment in Montefiores SSC ($250 per week) to a relatively lower median rent payment in Wellington SSC ($180 per week) and Wuuluman SSC ($0 per week). Mortgage and rent repayments are presented in Table A.26.

Table A.26 Mortgage repayment and rent, 2016

	Mortgage repayments (median mortgage repayments $ monthly)	Rent payments (median rent $ weekly)
Wellington SSC	1,000	180
Wuuluman SSC	1,539	0
Montefiores SSC	1,517	250
Regional area	**1,500**	**250**
NSW	**1,986**	**380**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

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.

As data for the total local area median mortgage repayments and rent payments was not available, housing affordability in the area has been understood by comparing Wuuluman SSC, Montefiores SSC and Wellington SSC with the regional area and greater NSW.

As exhibited by Table A.27, Montefiores SSC has a smaller proportion of households with rent payments greater than or equal to 30% of their household income compared to the regional area or NSW. However, Wellington SSC had a higher proportion of households with rent payments greater than or equal to 30% of their household income compared to the regional area, and equal to NSW.

Within the local area, both Montefiores SSC and Wellington SSC had a smaller proportion of households with mortgage payments greater than or equal to 30% of their household income compared to NSW. Wellington SSC in particular has a low proportion of households where mortgage payments are greater than or equal to 30% of household income. Housing affordability in the study area is demonstrated in Table A.27.

Table A.27 Housing affordability, 2016

	Households where rent payments are greater than or equal to 30% of household income (%)	Households where mortgage payments are greater than or equal to 30% of household income (%)
Wuuluman SSC	NA	
Montefiores SSC	6.2%	5.8%
Wellington SSC	12.9%	3.3%
Local area	**NA**	
Regional area	**9.8%**	**5.1%**
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.
2. Data for housing affordability in Wuuluman SSC was not available.

A.8.4 Housing and rental market trends

i Mortgage repayment and rent trends

Within the study area mortgage repayments and rent growth rates varied. Mortgage repayment and rent growth rate data was not available for all SSCs due to changing ABS structures. Therefore, analysis of mortgage repayment and rent growth rates is limited to the SSCs and LGAs where data is available. Overall, between 2006 – 2016 there has been an increase of mortgage repayments within the study area. This aligns with trends in greater NSW where mortgage repayments between 2006 – 2016 have increased by 30.9%. Within the local area, mortgage repayment rates between 2006 – 2016 for Wellington SSC were higher (35.7%) than greater NSW (30.9%).

Across the regional area, rent repayments between 2006 – 2011 generally increased. In the same period, rent payments rates were low in Wellington SSC but increased by 62.2%, which was lower than trends for greater NSW (81.0%). Mortgage and rent repayment growth rates in the study area are presented in Table A.28.

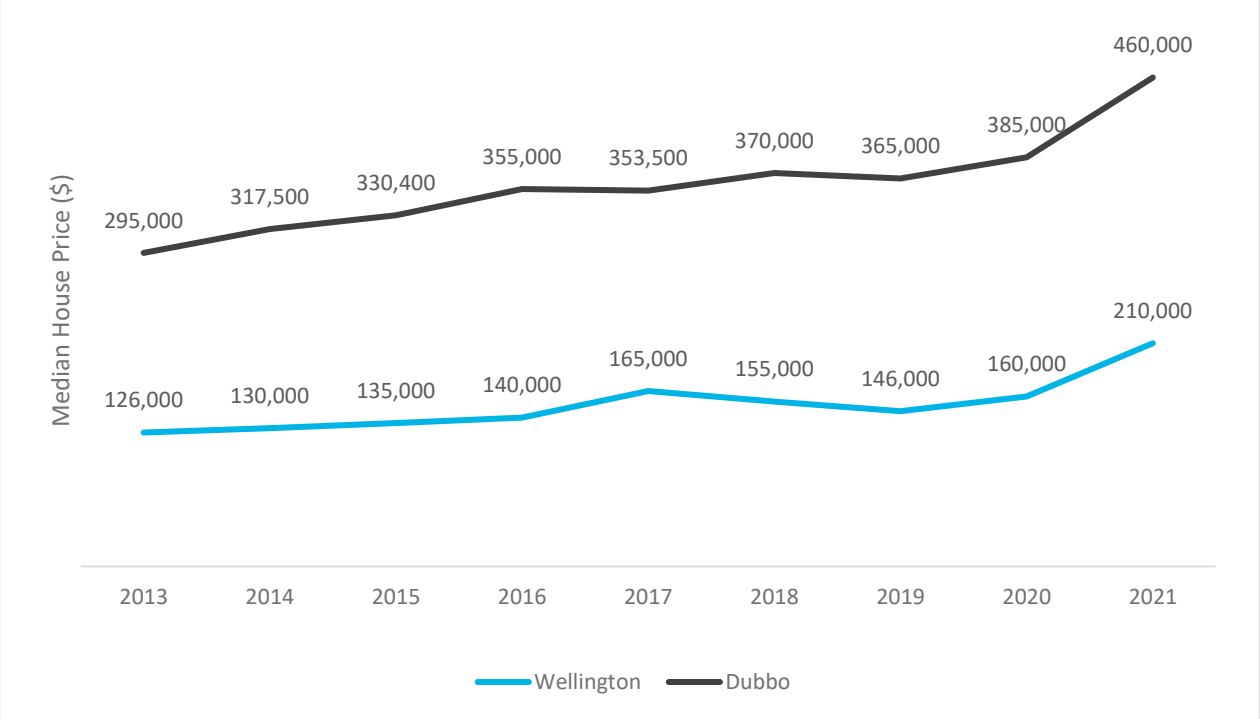
Table A.28 Mortgage repayment and rent growth rates, 2006 – 2016

	Mortgage repayments			Rent payments		
	2006 – 2011	2011 – 2016	2006 – 2016	2006 – 2011	2011 – 2016	2006 – 2016
Wellington SSC	29.3%	4.9%	35.7%	26.1%	28.6%	62.2%
Wuuluman SSC				NA		
Montefiores SSC				NA		
Local area				**NA**		
Regional area	**25.8%**	**0.0%**	**25.8%**	**25.0%**	**25.0%**	**56.3%**
NSW	**31.4%**	**-0.4%**	**30.9%**	**42.9%**	**26.7%**	**81.0%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

ii Median property prices

Housing prices data is not available for all of the suburbs within the local area. Based on the housing price trends of Wellington SSC and Dubbo SSC, housing prices in the regional area have generally been increasing from 2013 – 2021, with a significant spike between 2020 – 2021. Median housing price trends for the local area are demonstrated in Figure A.11.



Source: realestate.com.au/neighbourhoods.

Figure A.11 Median house price, 2013 – 2021

iii Residential vacancy rates

The local area has a total of 45 properties for sale and 28 properties to rent. The large majority of these properties are located in Wellington SSC, with 44 properties for sale and 28 for rent. Properties for sale in selected suburbs within the local area are presented in Table A.29.

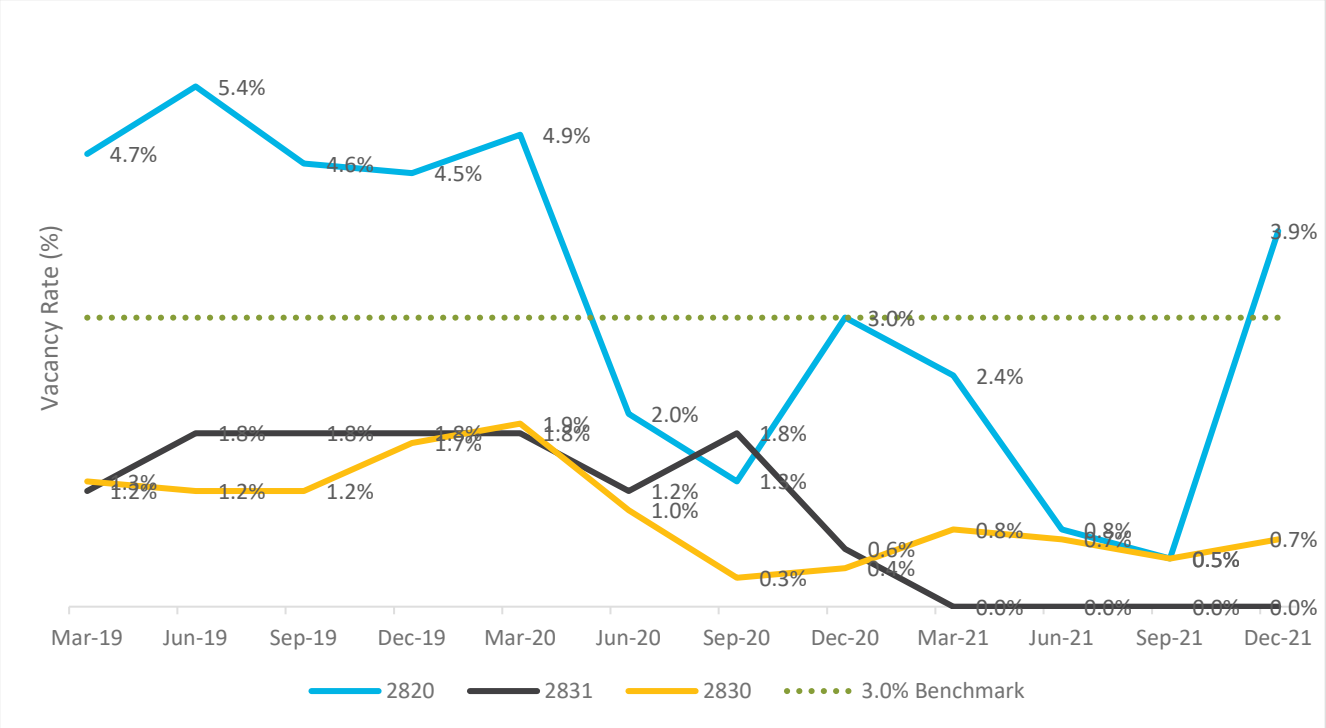
Table A.29 Properties for sale and rent in the local area, 25 February 2022

Suburb	Number of properties for sale	Number of properties for rent
Wellington SSC	44	28
Montefiores SSC	1	0
Wuuluman SSC	0	0
Total	**45**	**28**

Source: REA Group 2021.

According to 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% are low and indicate a tight rental market with an undersupply of affordable rental options while vacancy rates above 3% indicate an oversupply of rental options. A rental market with a vacancy rate of 3% is considered at equilibrium (Brewsters Property Group n.d.).

The residential vacancy rate for the local and regional area is best captured by postcodes 2820, 2831 and 2830. Overall, the residential vacancy rate in postcode 2831 and postcode 2830 has been decreasing since March 2019, with small increases in September 2020 and March 2021. The residential vacancy rate for postcode 2831 and postcode 2830 has consistently remained below the 3.0% equilibrium benchmark, while postcode 2820 dropped under the benchmark in June 2020 – Sep 2020. This indicates a lack of available rental housing (undersupply) in postcode 2831 and postcode 2830, and a growth in residential vacancy rate in postcode 2820 with a significant increase in September 2021. The residential vacancy rate trend for the local area (postcode 2820, 2831 and 2830) are available in Figure A.12.



Source: SQM Research 2021, Residential Vacancy Rates.

Figure A.12 Residential vacancy rate trends, 2019 – 2021

A.8.5 New housing and rental supply

Housing forecasts are only available at the LGA level. Forecasts for Dubbo Regional LGA have been used to provide an indication of the trends within the local area and regional area. Housing forecasts for Dubbo Regional LGA predict an increase of 2,748 required dwellings from 2016 – 2041 in response to population growth and shifting patterns in household structure and number (DPIE 2019). Household requirements and population growth forecasts in Dubbo Regional LGA are presented in Table A.30.

Table A.30 Household requirement and population growth forecasts for Dubbo Regional LGA, 2016 – 2041

	2016	2021	2026	2031	2036	2041
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)	NA	1,245	1,032	1,003	875	659

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.

Total residential building approvals in the local area are presented in Table A.31.

Table A.31 Total residential building approvals in Dubbo Regional LGA, 2012 – 2021

	2012 – 2013	2013 – 2014	2014 – 2015	2015 – 2016	2016 – 2017	2017 – 2018	2018 – 2019	2019 – 2020	2020 – 2021 April FYTD
New Houses	189	235	282	323	283	267	239	184	381
New Other Residential	57	112	58	87	86	170	80	73	78
Total	**247**	**353**	**354**	**410**	**370**	**437**	**321**	**257**	**459**

Source: ABS 2021, 8731.0 – Building Approvals, Australia.

To determine if residential building approvals in the local area will adequately support expected demand for new dwellings, the median of the total residential building approvals in the local area from 2012 – 2020, equalling 354 approvals per year, is used to create a reasonable estimation of residential building approvals into the future. The median of the total number of residential approvals from 2012 – 2020 provides a conservative estimate of the expected trends for building approvals in the local area into the future, as it takes into account the fluctuations present in the previous approval rates. Although it is possible that actual residential approval totals could be higher or lower, without complete certainty in the factors that are driving approval decisions year on year, the median provides a reasonable degree of confidence in these estimations.

The projected residential building approvals from 2016–2041 are demonstrated in Table A.32. Projected required new dwellings are lower than estimated building approvals. It is estimated that there are sufficient estimated residential building approvals to house the projected population.

Table A.32 Estimates of future building approvals in the local area, 2016 – 2041

	2016 – 2021[1]	2021 – 2026[2]	2026 – 2031	2031 – 2036	2036 – 2041
Projected required new dwellings	1,245	1,032	1,003	875	659
Estimated residential building approvals	1,844	1,770	1,770	1,770	1,770

Source: ABS 2021; DPIE 2019.

Notes: 1. 2016–2021 includes number of actual approvals from 2016– 2021.
2. Projections from 2021–2041 are based on an estimate of 354 residential approvals per year.

A.8.6 Tourist accommodation

There is very minimal tourist accommodation available within the local area, with no accommodation located in Montefiores SSC or Wuuluman SSC. Wellington SSC has the most abundant tourist accommodation in the local area, with the most significant in number being 9 hotel/motels, followed by 2 caravan parks and 1 bed and breakfast. Tourist accommodation in the local area is summarised in Table A.33.

Table A.33 Tourist accommodation, 2021

Suburb	Hotel/Motel	Caravan Park	Bed & Breakfast	Farm-stay/Homestay
		Local area		
WellingtonSSC	9	2	1	0
Montefiores SSC	0	0	0	0
Wuuluman SSC	0	0	0	0

Source: Visit NSW 2021.

A.9 Local business and industry

Across the local area, the top industries of employment are health care and social assistance (18.2%), public administration and safety (12.3%), and retail trade (10.5%). Within the local area, health care and social assistance is the largest industry of employment within Wellington SSC and Montefiores SSC (19.2% and 15.0% respectively) while agriculture, forestry and fishing is the largest industry of employment in Wuuluman SSC (49.0%). The high proportion of employment within the health care and social assistance industry in Wellington SSC and Montefiores SSC corresponds with the higher rates of populations with need for assistance in Wellington SSC and Montefiores SSC.

Table A.34 Industries of employment, 2016

Industry	Wellington SSC	Montefiores SSC	Wuuluman SSC	Local area	Regional area	NSW
Agriculture, Forestry and Fishing	4.6%	6.2%	49.0%	**6.4%**	**5.1%**	**2.1%**
Mining	0.4%	1.3%	0.0%	**0.5%**	**1.1%**	**0.9%**
Manufacturing	3.5%	4.4%	0.0%	**3.6%**	**5.8%**	**5.8%**
Electricity, Gas, Water and Waste Services	0.9%	2.2%	0.0%	**1.1%**	**1.3%**	**0.9%**
Construction	7.1%	8.4%	7.8%	**7.3%**	**8.5%**	**8.4%**
Wholesale Trade	1.5%	1.8%	0.0%	**1.5%**	**3.1%**	**3.1%**
Retail Trade	11.1%	9.3%	0.0%	**10.5%**	**10.9%**	**9.7%**
Accommodation and Food Services	9.4%	5.3%	0.0%	**8.4%**	**7.4%**	**7.1%**
Transport, Postal and Warehousing	3.9%	2.6%	0.0%	**3.6%**	**4.0%**	**4.7%**
Information Media and Telecommunications	0.3%	2.2%	0.0%	**0.6%**	**0.9%**	**2.2%**
Financial and Insurance Services	0.3%	0.0%	0.0%	**0.2%**	**1.8%**	**4.9%**
Rental, Hiring and Real Estate Services	0.5%	2.6%	0.0%	**0.8%**	**1.2%**	**1.8%**
Professional, Scientific and Technical Services	3.2%	7.0%	0.0%	**3.7%**	**4.1%**	**8.1%**
Administrative and Support Services	2.6%	1.8%	0.0%	**2.4%**	**2.7%**	**3.5%**
Public Administration and Safety	12.2%	13.2%	11.8%	**12.3%**	**7.7%**	**6.0%**
Education and Training	8.6%	10.1%	11.8%	**9.0%**	**9.3%**	**8.4%**
Health Care and Social Assistance	19.2%	15.0%	9.8%	**18.2%**	**15.4%**	**12.5%**
Arts and Recreation Services	0.6%	1.3%	5.9%	**0.9%**	**1.6%**	**1.5%**
Other Services	4.1%	2.6%	0.0%	**3.8%**	**4.4%**	**3.7%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

In 2021, there were 5,142 registered businesses in the local area, three of which employed more than 200 employees. Of these registered businesses, 97.6% were classed as small businesses employing fewer than 20 people or non-employing. Additionally, 4.4% of businesses turned over $2 million or more, with most businesses operating within the $200k to $2 million range. Registered businesses by employment size and turnover range are provided in Table A.35 and Table A.36.

Table A.35 Registered businesses by employment size, 2021

Area	Non-employing	1–19 employees	20–199 employees	200+ employees	Total
Dubbo Regional LGA (no.)	3,006	2,013	121	3	5,142
Dubbo Regional LGA (%)	58.5%	39.1%	2.4%	0.1%	5,142

Source: ABS 2020, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2016 to June 2020.

Table A.36 Registered businesses by turnover range, 2021

Area	$0 to less than $50k	$50k to less than 200k	$200k to less than $2m	$2m or more	$5m to less than $10m	$10m or more	Total
Dubbo Regional LGA (no.)	1,359	1,601	1,833	225	78	47	5,142
Dubbo Regional LGA (%)	26.4%	31.1%	35.6%	4.4%	1.5%	0.9%	5,142

Source: ABS 2020, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2016 to June 2020.

Of the 5,142 registered businesses in the regional area, 22.3% were in the agriculture, forestry, and fishing industry. The industries with the next highest proportion of registered businesses across the regional area was construction (18.8%), and rental, hiring and real estate services (9.1%). Registered businesses by industry in the regional area are presented in Table A.37.

Table A.37 Registered businesses by industry, 2021

Industry	Regional area
Agriculture, forestry and fishing	22.3%
Mining	0.3%
Manufacturing	3.2%
Electricity, gas, water and waste services	0.3%
Construction	18.8%
Wholesale trade	2.8%
Retail trade	5.3%
Accommodation and food services	5.0%
Transport, postal and warehousing	5.8%
Information media and telecommunications	0.2%
Financial and insurance services	2.2%
Rental, hiring and real estate services	9.1%
Professional, scientific and technical services	6.4%

Table A.37 Registered businesses by industry, 2021

Industry	Regional area
Administrative and support services	3.2%
Public administration and safety	0.4%
Education and training	1.4%
Health Care and Social Assistance	6.2%
Arts and recreation services	0.8%
Other services	6.2%
Total number	100.0%

Source: ABS 2020, 8165.0—Counts of Australian Businesses, including Entries and Exists, June 2016 to June 2020.

Notes: Excludes businesses with industry 'not stated'.

A.10 Health and community well-being

A.10.1 Community health

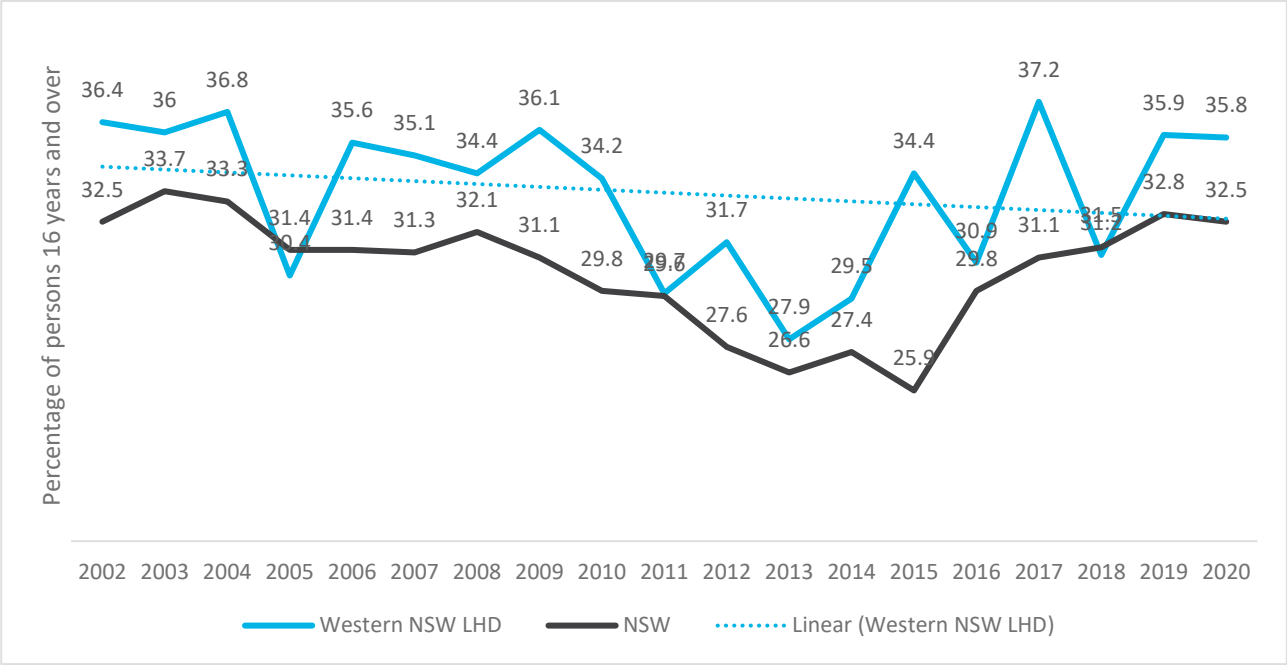
Social determinants of health, described as "the circumstances in which people grow, live, work, age, and the systems put in place to deal with illness…which are shaped by political, social, and economic forces" (AIHW 2020), indicate the health of a population. These include factors such as conditions of employment, provision of social services and support, and socioeconomic position.

i Physical health

Three major health risk factors can also be used as an indicator of population health: alcohol consumption, smoking, and obesity.

Trends for alcohol consumption at levels posing a long-term health risk were not available for the local or regional area. However, trends were available for Western NSW LHD which includes both the local and regional area. The percentage of persons aged 16 years and older who consume alcohol at levels posing a long-term health risk[1] is higher in Western NSW LHD compared to the NSW proportion, with drops in 2005 and 2018. Risky drinking in Western NSW LHD is also more volatile year-on-year compared to NSW, with greater increases and decreases. However, the trends demonstrate that the proportion of people who consume alcohol at levels posing a long-term health risk in the Western NSW LHD is decreasing at a similar rate to NSW. The proportion of people who consumed alcohol at levels considered to be a high risk to health are presented in see Figure A.13.

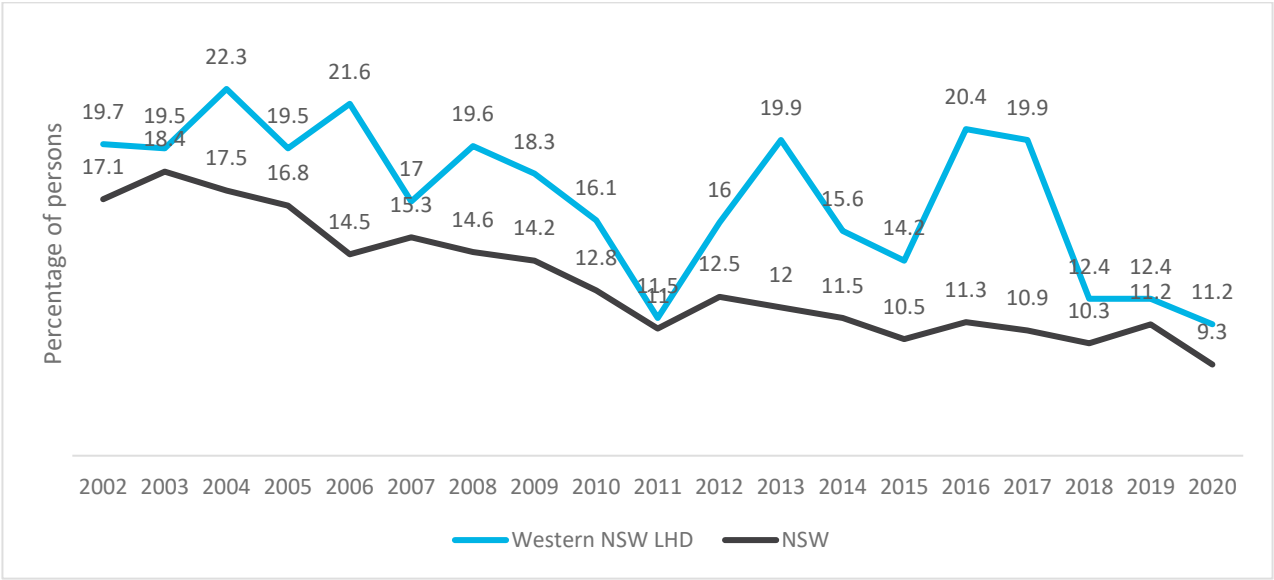
[1] High risk drinking is defined as the consumption of more than 2 standard drinks per day.



Source: NSW Health 2021, Health Statistics NSW.

Figure A.13 Alcohol consumption at levels posing a long-term health risk (proportion of persons aged 16 years and older), 2002 – 2020

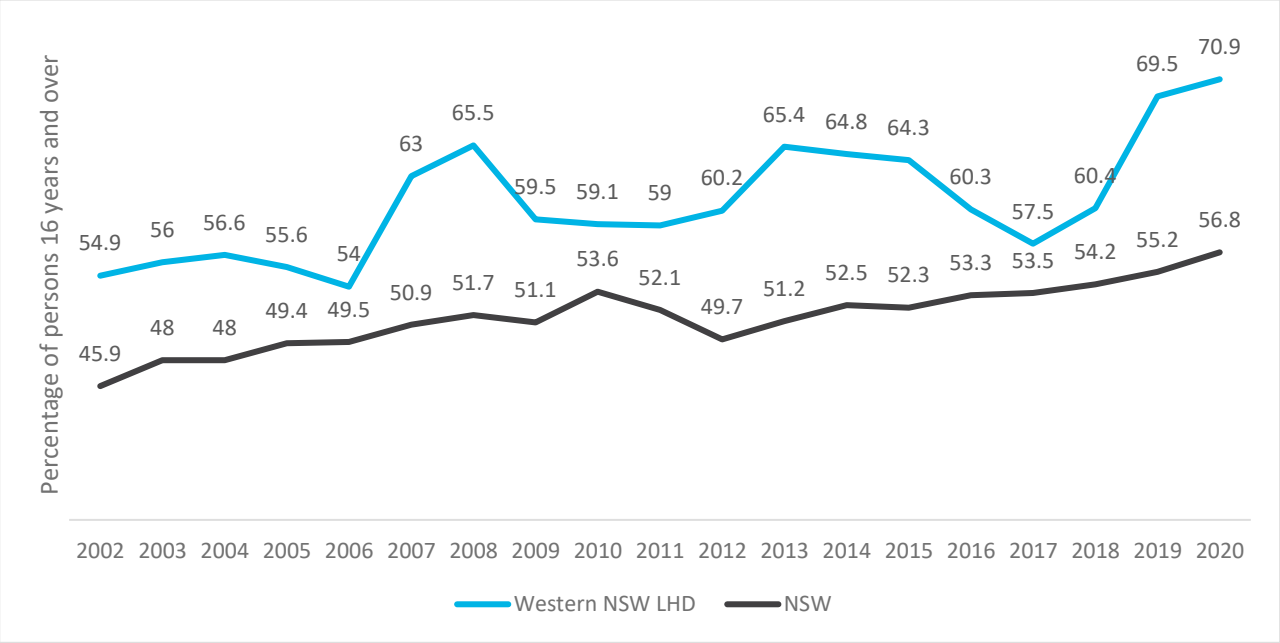
The percentage of persons who smoke in Western NSW LHD was also consistently above the NSW average from 2002 – 2020. Although the percentage of smokers has been greater in Western NSW LHD compared to NSW, with greater variability in the proportion of smokers each year, the overarching trends are decreasing at a similar rate. Daily smoking in adults is presented in Figure A.14.



Source: NSW Health 2021, Health Statistics NSW.

Figure A.14 Daily smoking in adults (proportion of persons), 2002 – 2020

Physical inactivity and overweight and obesity are significant public health problems in NSW which have been generally increasing since 2002 – 2020. There has been a much higher rate of overweight and obesity among the Western NSW LHD population compared to NSW. The data indicates that, whilst the Western NSW LHD has a higher proportion of overweight and obese persons on average compared to the rest of NSW, the overarching trend is comparable to NSW. The proportion of overweight or obese adults is presented in Figure A.15.

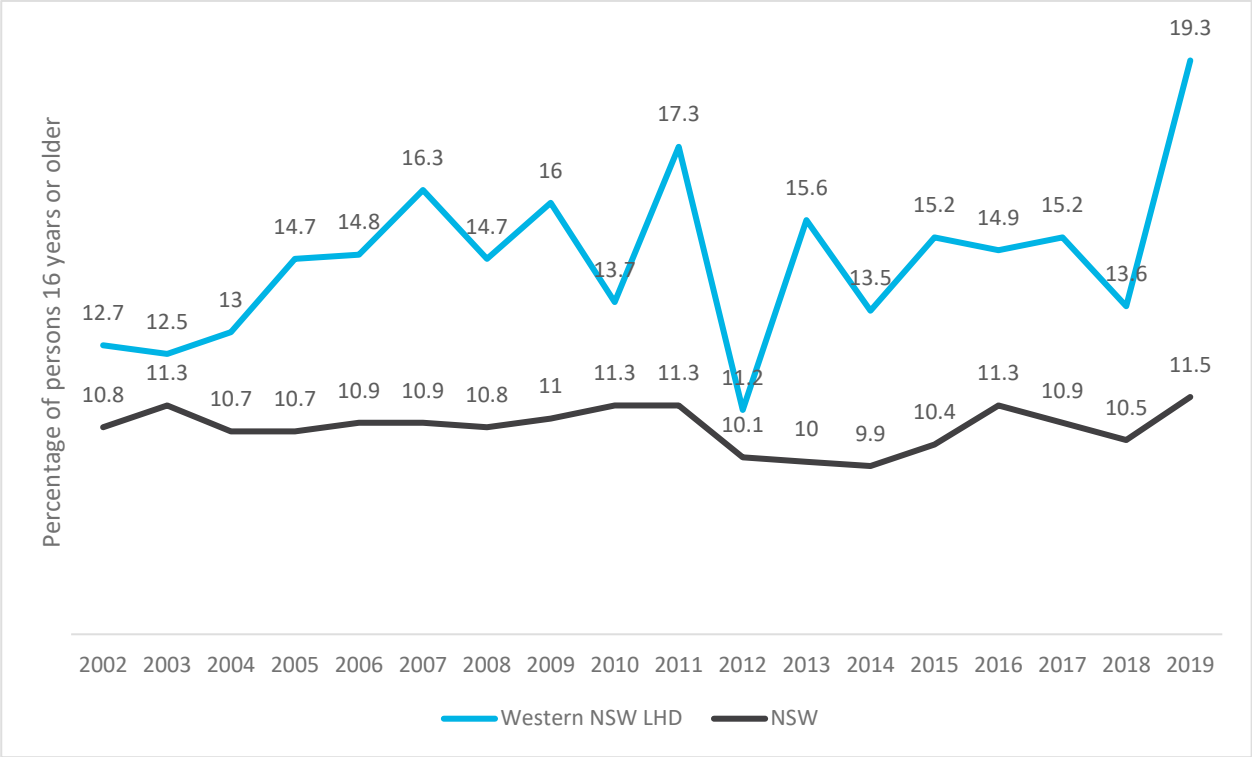


Source: NSW Health 2021, *Health Statistics NSW*.

Figure A.15 Overweight or obese adults (proportion of persons aged 16 years and older), 2002 – 2020

ii Asthma

Data for asthma in persons aged 16 years and over is presented in Figure A.16. Trend data for prevalence of asthma in the Western NSW LHD indicates that asthma has been more prevalent in the Western NSW LHD compared to the whole of NSW from 2002 – 2020 (NSW Health 2021). Approximately 19.3% of adults within Western NSW LHD reported prevalence of asthma in 2019 compared to 11.5% of adults across NSW.



Source: NSW Health 2021, *Health Statistics NSW*.

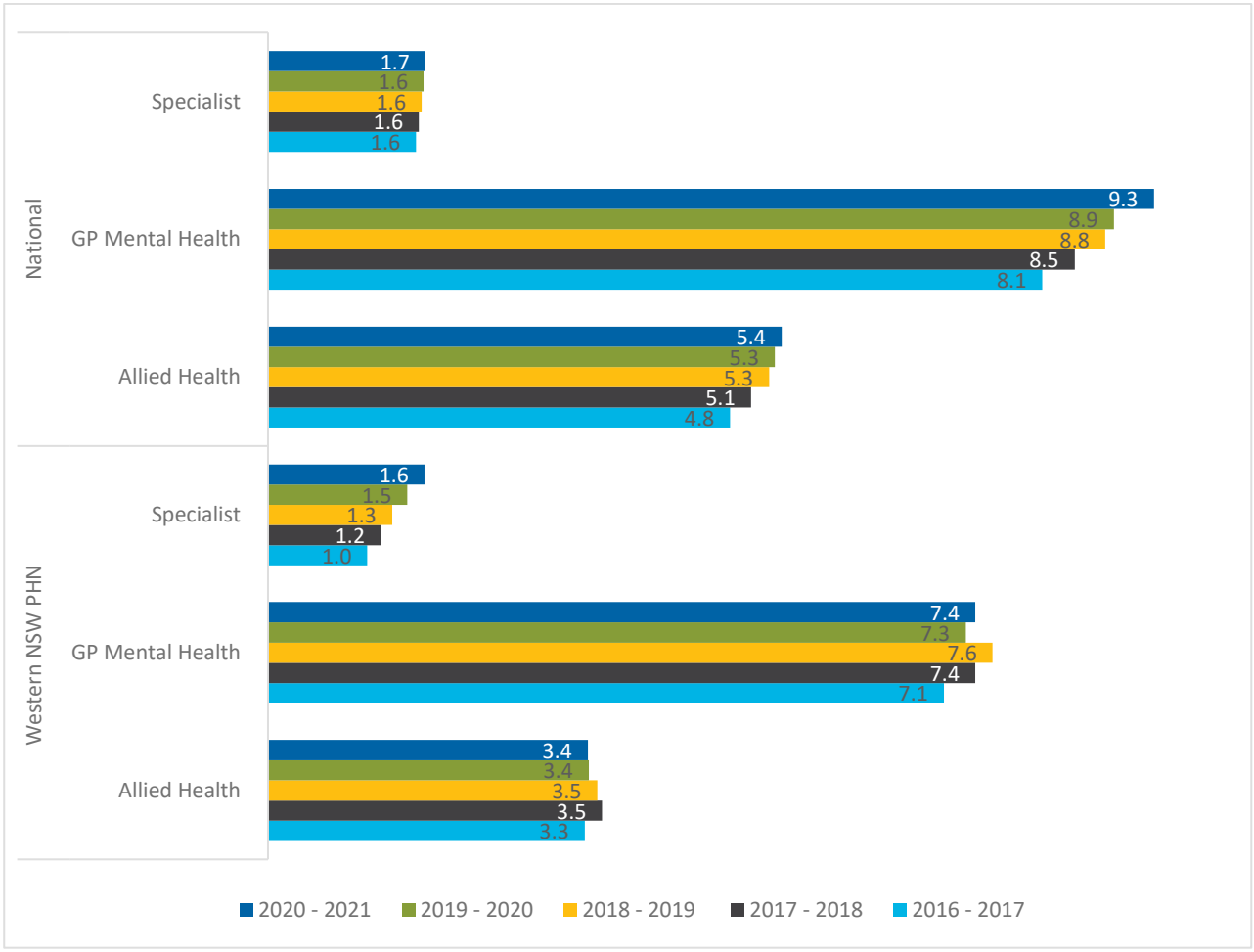
Figure A.16 Prevalence of asthma in persons aged 16 years and older, 2002 – 2019

Although the data indicates that the Western NSW LHD community experiences a lower level of physical health compared to NSW, the health trends do not indicate any significant increases in physical health indicators specific to the Western NSW LHD compared to NSW.

iii Mental health

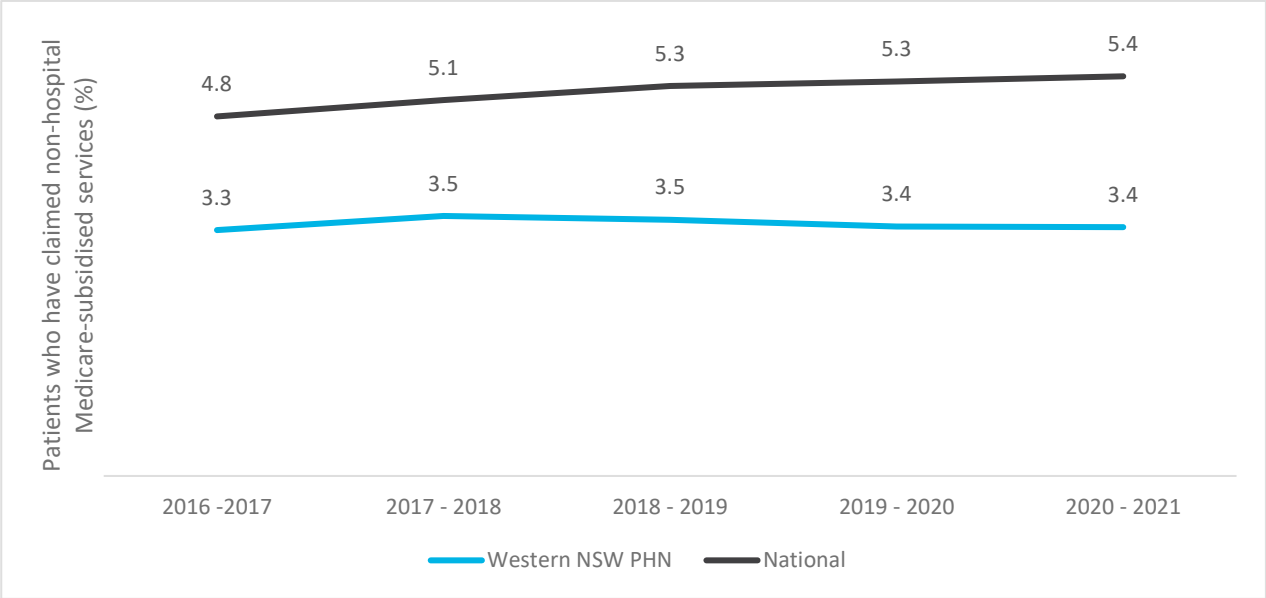
The local and regional areas fall within the Western NSW PHN, with data concerning patients of mental health services collected by Australian Institute of Health and Welfare (AIHW). The following data represents from the PHN demonstrates the number of patients residing within the Western NSW PHN who have claimed non-hospital Medicare-subsidised services, specifically mental health related Allied Health services, GP mental health and specialist mental health services (AIHW 2021).

When comparing the national percentage of patients with residents in Western NSW PHN, the proportion of patients within Western NSW PHN accessing GP mental health services is lower than the national proportion of patients accessing GP mental health services (see Figure A.18). The proportion of patients within the Western NSW PHN accessing allied health is lower than the national proportion, with a slight increase in 2017-18 and 2018-19 before slightly declining again from 2019-21 (see Figure A.20).The proportion of patients within the Western NSW PHN accessing specialist health services is relatively consistent with the national proportions, with patients who accessed specialist mental health services increasing slightly in Western NSW PHN from 2016-21 (Figure A.19). This suggests similar rates of mental health issues within the Western NSW PHN and greater NSW.



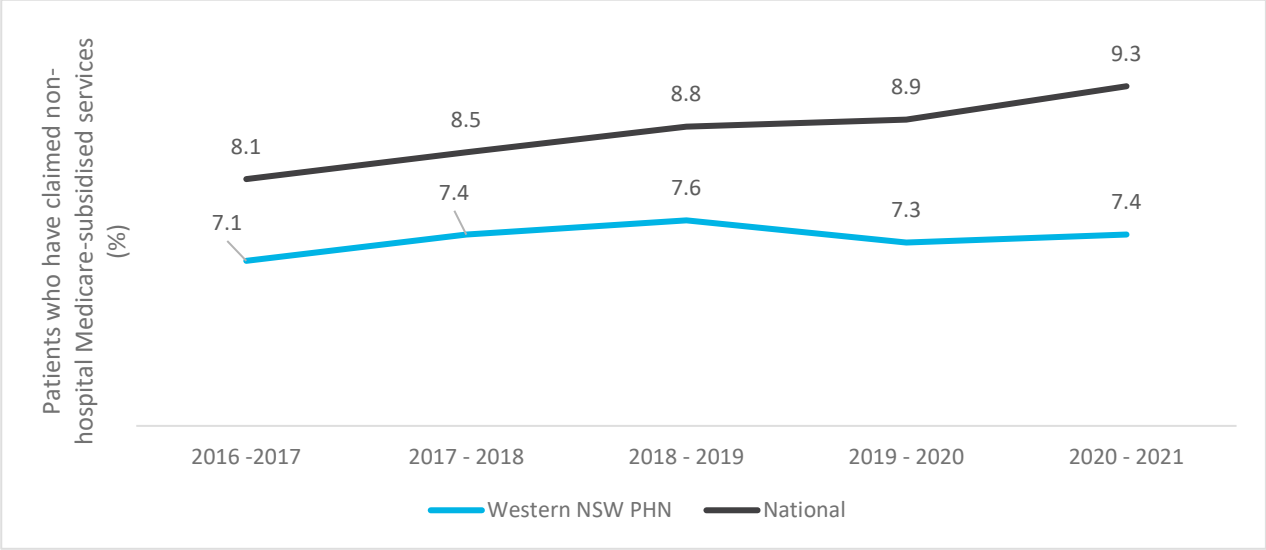
Source: AIHW 2019, Medicare-subsidised services, by PHN area: 2013–14 to 2017–18.

Figure A.17 Patients who have claimed non-hospital Medicare-subsidised mental health services in Western NSW PHN, 2016 – 2021



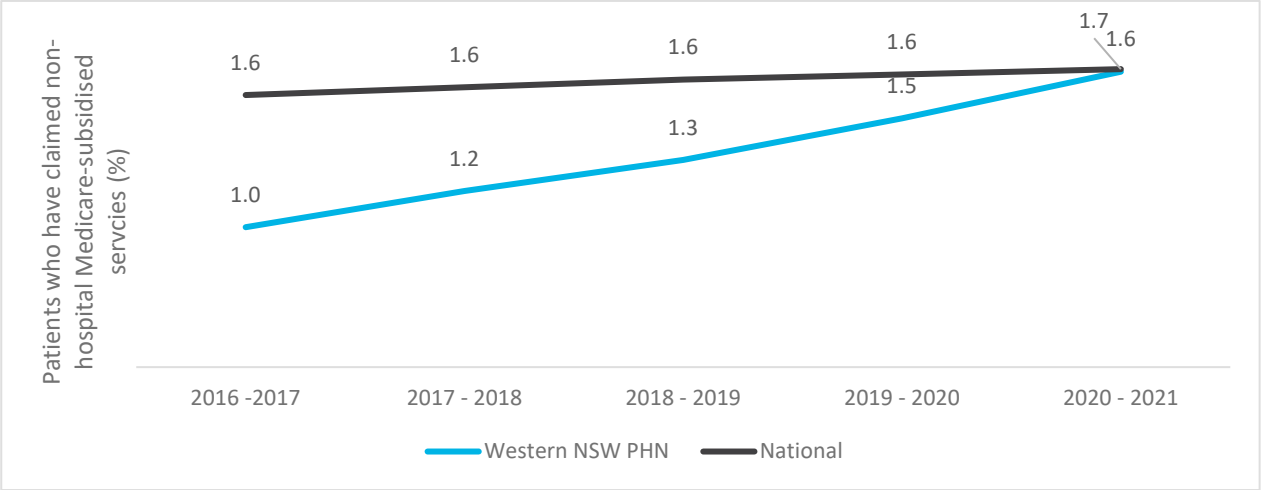
Source: AIHW 2021, Medicare-subsidised services, by PHN area: 2013–14 to 2017–21.

Figure A.18 Patients who have claimed non-hospital Medicare-subsidised GP mental health services, 2016-2021



Source: AIHW 2019, Medicare-subsidised services, by PHN area: 2013–14 to 2017–2021.

Figure A.19 Patients who have claimed non-hospital Medicare-subsidised specialist mental health services, 2016 – 2021



Source: AIHW 2019, Medicare-subsidised services, by PHN area: 2013–14 to 2017–2021.

Figure A.20 Patients who have claimed non-hospital Medicare-subsidised Allied Health services, 2016-2021

A.10.2 Voluntary work

Both Wellington and Wuuluman (16.7% and 4.0% respectively) have volunteering rates below the regional area and NSW. In Montefiores, the volunteering rate (21.5%) is significantly higher than those in the regional area and NSW. The proportion of persons who volunteered in the study area is presented in Table A.38.

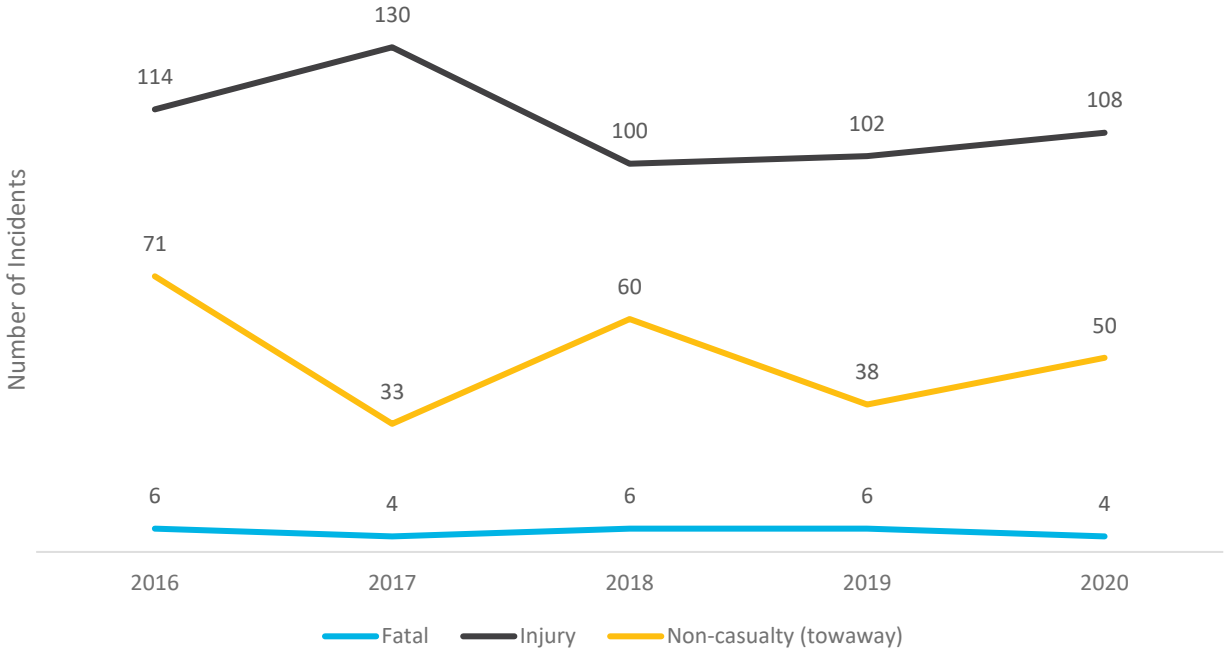
Table A.38 Volunteering rates, 2016

Location	Did voluntary work through an organisation or group (last 12 months)
Wellington SSC	16.7%
Montefiores SSC	21.5%
Wuuluman SSC	4.0%
Local area	**15.0%**
Regional area	**19.9%**
NSW	**18.1%**

Source: ABS 2016, Census of Population and Housing: General Community Profiles.

A.10.3 Road incidents

Overall, road incidents resulting in injury and non-casualty (towaway) have decreased in the regional area from 2016 – 2018, with a slight increase from 2018 – 2020. Most crashes result in some level of injury, however fatal crashes have remained fairly stable. Crash trends data is only available at the LGA level. Crash trends for Dubbo Regional LGA are presented in Figure A.21.

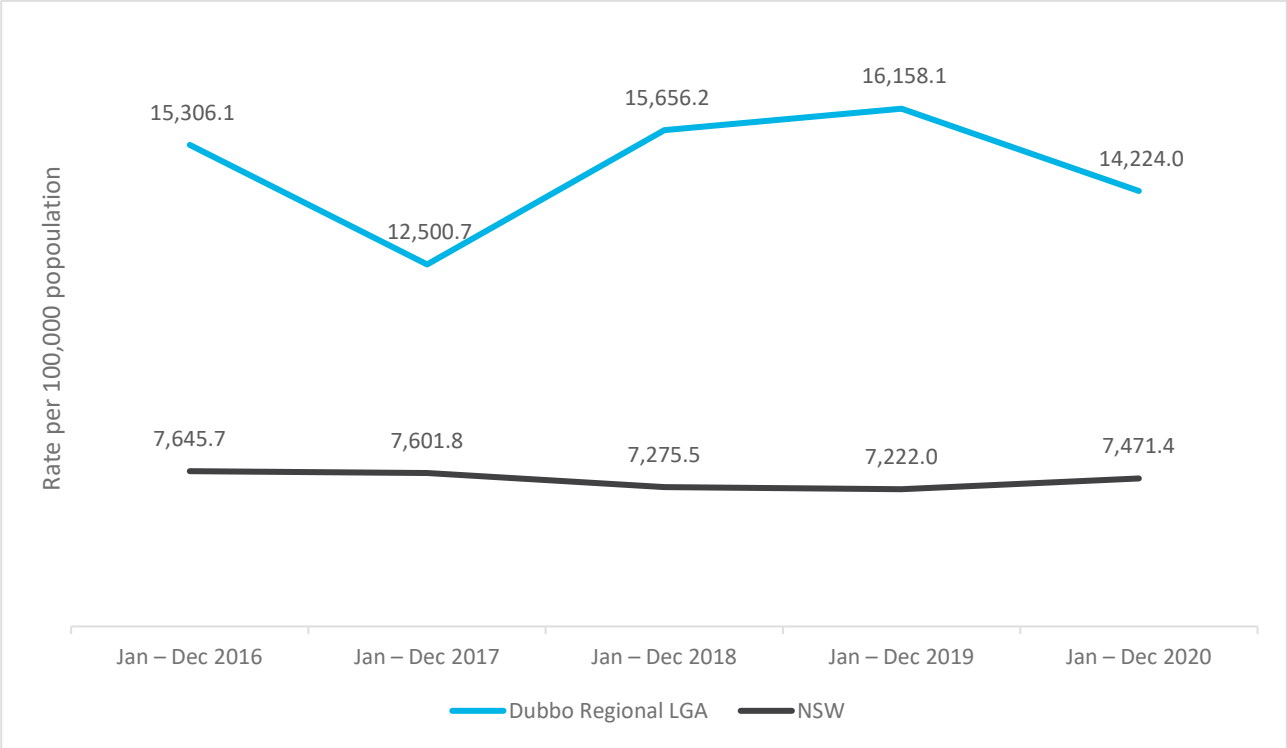


Source: TfNSW 2021, *Interactive Crash Statistics*.

Figure A.21 Crash trends in Dubbo Regional LGA, 2016 – 2020

A.10.4 Community safety and crime

The Dubbo Regional LGA total offences per 100,000 population significantly decreased in Jan – Dec 2017 and spiked back up in Jan – Dec 2018 and 2019. In 2020, the rate of offences per 100,000 people has slightly dropped, although it is still significantly above NSW. The following data has been sourced from the NSW Bureau of Crime Statistics and Research (BOCSAR). Data is only available at the LGA level. The rate of total offences per 100,000 persons in Dubbo Regional LGA is presented in Figure A.22.



Source: BOCSAR 2021 — NSW Local Government Area excel crime tables.

Notes: Total excludes transport regulatory offences.

Figure A.22 Total offences rates per 100,000 population, 2016 – 2020

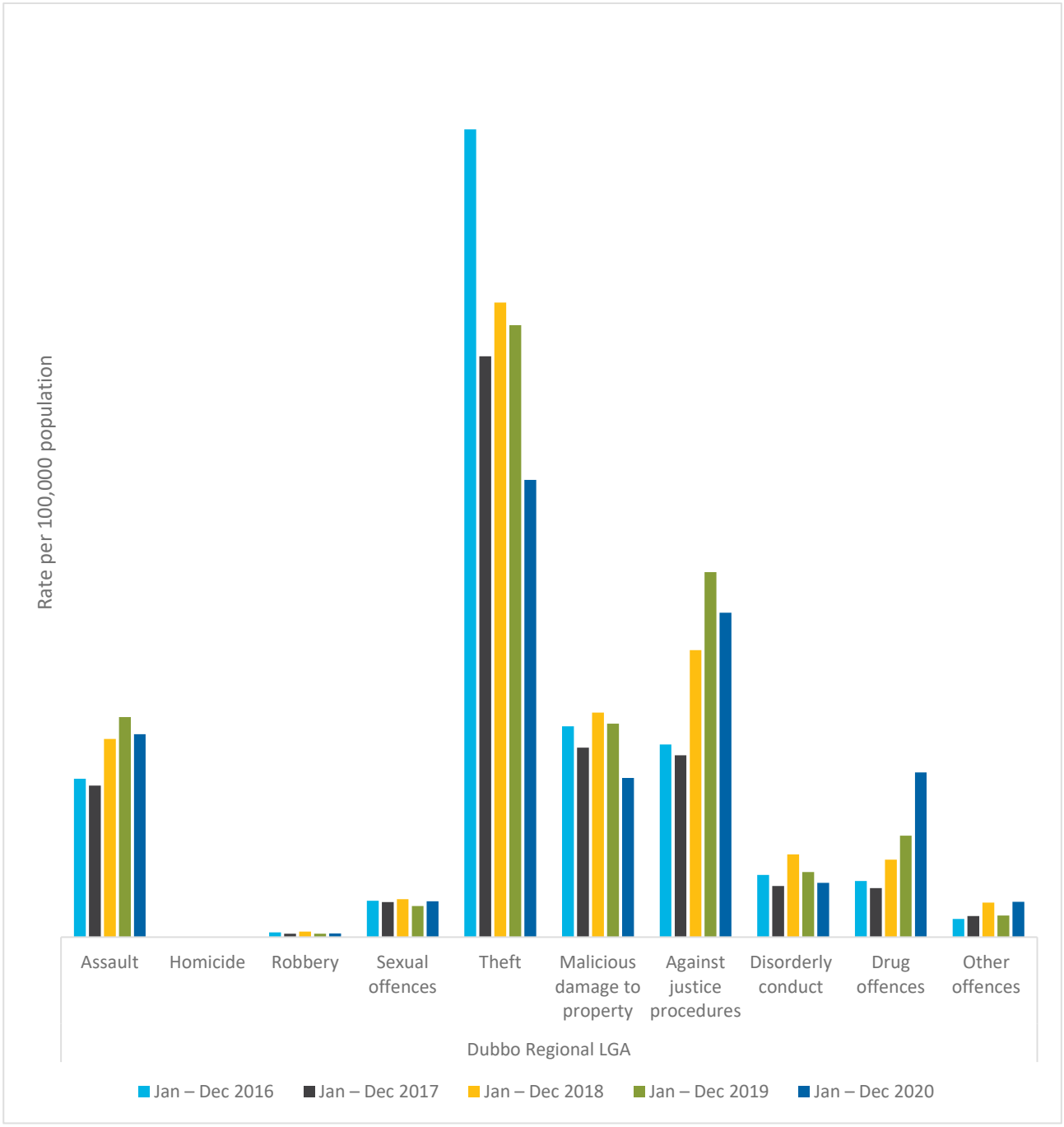
The total crime trends in Dubbo Regional LGA are significantly higher than in NSW across all areas. In particular, justice protocols, malicious damage to property, sexual offences, theft and assault are significantly high offences in Dubbo Regional LGA in comparison to NSW. Drug offences have increased in Dubbo Regional LGA, initially below the offence rate of NSW but then surpassing it in 2018. Dubbo Regional LGA has a significantly lower rate of other offences when compared to NSW.

Table A.39 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
Dubbo Regional LGA					
Assault	1,566.0	1,498.1	1,961.7	2,176.1	2,006.7
Homicide	1.9	0.0	0.0	0.0	3.7
Robbery	46.7	34.5	54.5	33.5	35.4
Sexual offences	359.9	347.2	374.3	309.0	353.7
Theft	7,989.7	5,746.8	6,278.3	6,053.7	4,523.5
Malicious damage to property	2,085.4	1,874.1	2,221.3	2,112.8	1,574.9
Against justice procedures	1,906.5	1,799.2	2,838.2	3,611.4	3,209.3
Disorderly conduct	614.7	506.4	818.2	644.1	536.1
Drug offences	554.4	485.3	767.4	1,003.4	1,630.7
Other offences	180.9	209.1	342.3	214.1	350.0
TOTAL	**15,306.1**	**12,500.7**	**15,656.2**	**16,158.1**	**14,224.0**
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
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 2021 — 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 A.23 Offences rates per 100,000 population in Dubbo Regional LGA, 2016 – 2020

A.11 Acronyms

Table A.40 Acronyms

Acronym	Full
ABS	Australian Bureau of Statistics
ACARA	Australian Curriculum, Assessment and Reporting Authority
ACECQA	Australian Children's Education and Care Quality Authority
AHMAC	Australian Health Ministers' Advisory Council
AHRC	Australian Human Rights Commission
AIHW	Australian Institute of Health and Welfare
BOCSAR	Bureau of Crime Statistics and Research
DAWE	Department of Agriculture, Water and the Environment
DCP	Development Control Plan
DPIE	Department of Planning, Industry and Environment
DUAP	Department of Urban Affairs and Planning
EIS	Environmental Impact Statement
EP&A Act	*Environmental Planning and Assessment Act 1979*
FYTD	Fiscal year-to-date
GP	General practitioner
HO	Heritage Office
IAIA	International Association for Impact Assessment
IEO	Index of Education and Occupation
IER	Index of Economic Resources
ILOC	Indigenous Locations
IRSAD	Index of Relative Socio-Economic Advantage and Disadvantage
IRSD	Index of Relative Socio-Economic Disadvantage
K10	Kessler 10
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
OSHC	outside of school hours care
PES	Post Enumeration Survey
PHIDU	Public Health Information Development Unit
PHN	Primary Health Network

Table A.40 Acronyms

Acronym	Full
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
TfNSW	Transport for New South Wales
the Project	Wellington Battery Energy Storage System
WHO	World Health Organisation

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Appendix B
Curriculum vitae

EMM
creating opportunities

Caroline Wilkins

Associate Social Scientist
EMM Consulting Pty Limited

Professional Overview

Caroline is a Social Scientist with over 20 years' experience designing, planning, implementing and evaluating major social programs in challenging operating contexts.

She brings a strong knowledge and demonstrated application of development strategies and processes and social science methodologies. Her skill set includes social research, community and stakeholder engagement, project management, evaluation, risk management, strategic planning and reporting. Caroline has also successfully managed and mentored local teams to meet project objectives.

She has worked on projects in Australia, Indonesia, Timor Leste, Vietnam, South Africa and Zimbabwe across the education, water, social services, agriculture and clean energy sectors. Caroline is a critical thinker with highly developed problem solving skills.

Qualifications and licences

Master of Social Science (International Development), RMIT University, 2005

Bachelor of Arts/Bachelor of Commerce, Deakin University, 1998

Graduate Certificate of Evaluation, University of Melbourne, ongoing

CPA Associate, CPA Australia

Member, Australian Evaluation Society

Member, Social Impact Measurement Network Australia

Specialisation

Social Impact Assessment

Social Evaluation

Representative experience

Social impact assessment/evaluation

- Oven Mountain Pumped Hydro Storage Project, Social Impact Assessment Lead, (OMPS Pty Ltd)
- Ok Tedi Mining Limited, technical assistance for Annual Report, (Ok Tedi Mining Limited)
- Wellington Battery Energy Storage System (BESS), Social Impact Assessment (AMPYR Australia)
- Sutton Forest Sand Quarry, response to submissions report and amendment report, social impact lead, (Hi-Quality Group)
- Dungowan Dam and pipeline, Social Impact Assessment Lead (Water Infrastructure NSW)
- Muswellbrook Solar Farm, Social Impact Assessment Lead (ESCO Pacific Holdings Pty Ltd)
- Boorolong Wind Farm, Social Impact Assessment Lead (CWP Renewables)
- Integra Underground Mine Closure, Social Impact Assessment Lead, (Glencore)
- Wimmera mineral sands mine, Social Impact Assessment lead (Iluka Resources Limited)

Project management evaluation

- Innovation Resource Facility, Senior Program and Grants Manager, DT Global Australia, Department of Foreign Affairs and Trade (DFAT)
- INOVASI Education Program, Operations Advisor, The Palladium Group, Indonesia (DFAT)
- KOMPAK Governance Program, Operations Manager, Abt Associates, Indonesia (DFAT)
- MAMPU Women's Empowerment Program, Grant Manager, Indonesia (DFAT)
- Zimbabwe Extension Support and Training Project, Research and Evaluation Manager, Sustainable Agriculture Technology, Zimbabwe (EU)

Chris Mahoney

Associate Director, National Technical Leader
EMM Consulting Pty Limited

Professional Overview

Chris is a highly experienced social scientist with specialist skills in the design and delivery of social performance programs, social impact assessment and community and stakeholder engagement programs. With over 25 years of professional experience across the infrastructure, resources and international development sectors, he has provided specialist social services to a wide range of complex initiatives throughout Australia and the Asia-Pacific region.

Chris has consistently demonstrated a commitment to assisting major projects manage the interface with the community in which they operate so as to attain the best possible outcomes for all parties. With an extensive body of experience to draw upon, he is able to offer genuine insights into how complex and contentious projects can achieve and maintain a social license whilst successfully balancing corporate, operational and social objectives. Such experience extends to managing multi-faceted community development programs and design and delivery of comprehensive community and stakeholder engagement programs.

Qualifications and licences

Master of Urban and Regional Planning (Environmental Planning), Griffith University

Bachelor of International Economic Relations, Griffith University

Member of the International Association of Impact Assessment (IAIA): Social Impact Assessment Group

Member of the Planning Institute of Australia (PIA)

Specialisation

Provision of Social Performance specialist advice

Delivery of Impact Assessments (SIA) for large projects

Provision of community engagement programs

Design and delivery of community development initiatives

Representative experience

Social specialist

- Valeria project, provided technical oversight of the social impact assessment and associated social impact management plan along with strategic communications and engagement support to the project. Completion of a detailed assessment of housing and accommodation options including potential utilization of the Glencore occupied township of Tieri. Implementation of an engagement program which included requirements for the Progressive Rehabilitation and Closure Plan (PRCP). Central QLD (Glencore)
- Winchester South project, lead author and project manager of the social impact assessment and social impact management plan for a proposed coal project involving developing comprehensive suite of management plans relating to housing and accommodation, workforce management, local industry procurement and community health and wellbeing, Central QLD (Whitehaven Coal)
- Meadowbrook project led author and project manager for delivery of the social impact assessment and social impact management plan for the underground expansion of the existing Lake Vermont coal mine. A focus of the SIA was analysis of the social opportunity cost of the project not proceeding and the subsequent closure of open cut operations. Project included a targeted program of stakeholder engagement informed the development of social commitments measures formalised through the social impact management plan, Central QLD (Jellinbah Resources)
- ARTC Inland Rail project, provided specialist technical assessments and expert advice as lead advisor, review of social and economic impact assessments, community development and social management plans, overseeing the development of frameworks supporting the projects monitoring and evaluation program, National (ARTC)
- Isaac Downs Coal project, author of the social impact assessment and social impact management plan in the EIS for a greenfield coal project, competed a detailed assessment of land use compatibility and potential conflict, Central QLD (Stanmore Coal)
- Wafi Golpu project, lead social performance advisor for the approvals phase of the project, responsible for the delivery of the Socio-economic Baseline and Socio-economic Impact Assessment in accordance with national and international standards, development of social management plans relating to community development, in-migration management and re-settlement, Papua New Guinea (Newcrest/Harmony Gold)
- Ravenswood Gold project, update and revision of the social impact management plan to align with the requirements of the Queensland Social Impact Assessment Guideline (2018) and document the current social context and community sentiment towards the project's planned transition. A primary objective was to design a SIMP which is a useable adaptive management tool, providing the rationale and schedule of delivery for investments in community infrastructure and other initiatives which serve to ensure the ongoing sustainability of the Ravenswood township, Central QLD (Ravenswood Gold).
- Cross River Rail project – community infrastructure assessments, lead social planner advising on the community infrastructure elements of the project precincts, preparation of detailed baseline assessments and negotiation with stakeholders, Brisbane QLD (Cross River Rail Development Authority)
- Salisbury to Beaudesert Corridor Protection Study, project manager for the delivery of engineering design and consultation programs to support the gazettal pf a passenger and freight 70 km rail corridor, involving the development of innovative engagement mechanics such as interactive web-based tools and collateral and direct engagement methods to refine project design and enable gazettal of the corridor, Brisbane, QLD (Qld Dept. of Transport)

- Warragamba Dam Raising project, lead author of the Socio-economic Impact Assessment, including delivery of multi-phased community and stakeholder engagement program and innovative assessment methodology, assessment of social vulnerability, Sydney, NSW (Water Infrastructure NSW)
- Cape York Water Planning Project, delivery of a social values assessment which included engagement with 12 communities, and the development of a decision support tool to assist the government to properly consider community values in natural resource planning processes (Queensland Department of Natural Resources)
- Frieda River project, social technical lead for the approvals phase for a large proposed open cut mine, delivery of the social impact assessment and social studies including resettlement, alluvial mining and in-migration management, Papua New Guinea (PanAust)
- PNG LNG Expansion project (P'nyang Project), development of a major gas field and pipeline including oversight across all social aspects of the project approvals process including socio-economic baseline, socio-economic impact assessment, stakeholder engagement program, health impact assessment and cultural heritage assessment, Western Province of PNG (Exxon Mobil)
- Waisoi Copper Project, technical oversight across all social elements of the environmental and social impact assessment, expansive fieldwork in 23 villages was undertaken to inform the ESIA and included implementation of stakeholder engagement programs involving studies on macro-economic effects, cultural heritage, traffic and land use, Fiji (Newcrest)
- Ok Tedi Mine Life Extension Review, gold and copper mine project involving peer review and adequacy assessment of social components of the feasibility study including community land and water resource utilization and potential health risks associated with mine life extension (OK Tedi)
- Telfer Mine, socio-economic baseline assessment of Traditional Owners of lands surrounding the mine which involved primary data collection in remote Aboriginal communities, included the preparation of a business development plan to assist in meeting ILUA obligations, Pilbara Region WA (Newcrest Mining)
- Kiribati Urban Development Program, project manager for the in-country implementation of New Zealand aid program compromising of urban development, water and sanitation, infrastructure delivery, economic development and capacity building projects, New Zealand (New Zealand Aid)
- United Nations Development Program (UNDP), social expert responsible for completing social and environmental risk assessments for climate change projects nominated by the countries for Global Environment Fund funding, Egypt, Bangladesh and Kyrgyzstan (UNDP)
- Bruce Highway Upgrade, author of the social impact assessment and social impact management plan for a major road infrastructure development, northern QLD (Department of Main Roads)
- Pacific Motorway Transit project, social impact assessment for the Pacific Motorway upgrade involving consultation with affected parties including the loss of affordable housing and an evaluation of social vulnerability (Department of Main Roads)
- Surat Basin Rail, technical lead responsible for the delivery of the social impact assessment, economic impact assessment and visual amenity assessment for a major proposed rail line, QLD (ATEC Rail Group)
- Toowoomba Pipeline project, completion of the social elements of the environmental impact statement for the construction of a 40 km pipeline, involving extensive community consultation and negotiation with landowners and Traditional Owners, Toowoomba (Toowoomba Pipeline Alliance)
- Bus Rapid Transport Project, author of the social impact assessment and the economic impact assessment of the Bus Rapid Transit System connecting inner Brisbane suburbs and the CBD (Brisbane City Council)
- Connors Range Rail Duplication, delivery of the social impact assessment and economic impact assessment for a coal rail line EIS, also co-managed delivery of the overall environmental impact assessment (Queensland Rail)
- Townsville Port Expansion, project manager for the delivery of the social impact assessment and economic impact assessment for a major port expansion project, including the development and implementation of an extensive stakeholder engagement program (North Queensland Bulk Ports)
- Legacy Way TransApex Tunnel, author of the social impact assessment for a road infrastructure project, involving design and delivery of the community consultation program supporting the project and specific consultation to inform the socio-economic impact assessment, Brisbane (Department of Transport)
- Social Infrastructure Model, development of a GIS-based social infrastructure model to determine social infrastructure gaps and the prediction of social infrastructure requirements in line with growth across the Mackay Regional Council area (Mackay Regional Council)
- Airport Link TransApex Tunnel, author of the social impact assessment for a major road infrastructure project (Department of Transport)
- Stuart Oil Shale Project, delivery of a social impact assessment addressing the proposed development of an oil shale industry, included extensive engagement with the community and key stakeholders and development of social impact management plans, QLD (Queensland Energy Resources)
- Exploration Projects, delivery of a community and stakeholder engagement program to support oil and gas exploration projects in the Otway and Cooper Basins, involved completing environmental management plans, VIC and SA (Beach Energy)
- LNG Plant Environmental Impact Statement, technical oversight of the social impact assessment and author of the social, economic and greenhouse gas assessment chapters of the EIS for a proposed LNG plant, QLD (Arrow Energy)
- Coal Infrastructure Masterplan, author of the 'social effects' chapter in the coal infrastructure master plan, QLD (Department of the Coordinator General)
- South East Queensland Priority Infrastructure Plan, preparation of policy guiding the delivery of essential infrastructure to service a region comprising 2.5 million people, involved extensive population modelling and collaborative policy development (QLD Department of Planning)

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