EMM
creating opportunities

BIRRIWA SOLAR AND BATTERY PROJECT

Submissions Report

ACEN | Australia

Birriwa Solar
Renewable Energy from ACEN

Prepared for ACEN Australia Pty Ltd

September 2023

Birriwa Solar and Battery project

Submissions Report

ACEN Australia Pty Ltd

J210553 Birriwa Solar and Battery Project - Submissions Report

September 2023

Version	Date	Prepared by	Reviewed by	Comments
Final	28 September 2023	Rachel Dodd Jennifer Summersby	Nicole Armit	Final submission to DPE

Approved by

Nicole Armit
Director
28 September 2023

Level 3 175 Scott Street
Newcastle NSW 2300

Executive Summary

ES1 Background

ACEN Australia Pty Ltd (ACEN) proposes to develop the Birriwa Solar and Battery project, a large scale solar photovoltaic (PV) electricity generation facility along with battery storage and associated infrastructure (the project), located approximately 15 kilometres (km) south-east of Dunedoo, in the Central-West Orana region of New South Wales (NSW). The project is within the Mid-Western Regional Local Government Area (LGA), with part of the access route from the Castlereagh Highway situated within the Warrumbungle Shire LGA.

The project is State significant development (SSD) pursuant to Schedule 1, Section 20 (electricity generating works and head or co-generation) of State Environmental Planning Policy (Planning Systems) 2021. Accordingly, a development application and environmental impact statement (EIS) was submitted for the project to the NSW Department of Planning and Environment (DPE) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979*. The EIS for the project was publicly exhibited from 14 October 2022 to 10 November 2022.

Following the public exhibition of the EIS, 92 submissions were received from the public, councils and special interest groups. In addition, 14 public agencies provided advice. This submissions report is required by DPE in response to the matters raised in these submissions, in accordance with Section 59(2) of the Environmental Planning and Assessment Regulation 2021.

ES2 Submissions received

The majority of submissions received by DPE following the public exhibition of the EIS were individual submissions from the general public. Of the 92 received, 88 submissions were from the public (noting that two of these were duplicate submissions), two from councils and two were from special interest groups. In addition, 14 public agencies made submissions providing advice on the project.

The most commonly raised key matters from public submissions included:

- concerns over the potential loss of prime agricultural land
- general visual amenity impacts
- concerns over the potential for declining land and property values
- impacts on lifestyle
- impacts on local businesses and the economy
- cumulative impacts from other renewable developments within the Central West Orana (CWO) Renewable Energy Zone (REZ), including accommodation availability for construction workers.

The most commonly raised matters from councils and special interest groups included:

- fire impacts (including potential bushfire risk from the solar and BESS infrastructure)
- lack of infrastructure and manufacture detail relating to the PV arrays
- general impacts on flora and fauna
- cumulative impacts from other renewable developments
- accommodation availability.

ES3 Actions taken since EIS exhibition

ES3.1 Project refinements

As noted above, one of the key issues raised in the submissions on the project related to the availability of accommodation in the region to house construction workers during the construction phase of the project. In response, and following the ongoing engagement with the local community, project landholders, government agencies and other stakeholders, ACEN is proposing to amend the project to include a temporary construction workers accommodation facility in the project's design.

An amendment report has been prepared to describe this proposed design response. The amendment report provides an assessment of the impacts associated with the revised project design, i.e. the addition of the temporary construction workers accommodation facility, as well as a refinement to the solar and BESS development footprint (inclusion of approximately 5 ha of land which is no longer threatened derived native grassland). This submissions report should be read in conjunction with the amendment report.

ES3.2 Stakeholder engagement

Stakeholder engagement on the project has been comprehensive to date and reflects the importance ACEN places on this aspect to its business. Since the lodgement of the EIS, ACEN has continued to engage with stakeholders including local authorities, government agencies, the local community and neighbouring landholders, as the project design is refined in response to matters raised.

ACEN has actively responded to community members who expressed concerns about the project in submissions, offering one-on-one meetings; property inspections; phone calls and/or exchanging emails. This consultation has included the provision of additional information and responses to specific concerns relating to matters such as visual amenity, stormwater runoff, and the proposed project technology. Furthermore, ACEN held an information stand at the Dunedoo show on 11 February 2023, to provide an opportunity for members of the public to discuss the project with ACEN staff.

Engagement with government agencies has focused primarily on the content of the submissions provided during their review of the EIS and the amendments to the project. Specifically, these responses have been the subject of further engagement with DPE, the Energy Corporation of NSW (EnergyCo), Mid-Western Regional Council, Warrumbungle Shire Council, Transport for New South Wales, and DPE – Biodiversity Conservation and Science Directorate.

ES3.3 Additional technical assessments

Additional technical investigations have been undertaken in response to submissions received on the project after the public exhibition of the EIS. The additional investigations include the following:

- Biodiversity (Appendix F.1 of the amendment report) – updates to the Biodiversity Development Assessment Report (BDAR, EMM 2023a) in response to matters raised in submissions, as well as updates to reflect additional field surveys conducted since submission of the EIS, and an assessment of the proposed amendment, i.e. the accommodation facility. The updates of the BDAR did not change the conclusion of the assessment.

- Aboriginal cultural heritage (Appendix B of this report) – updated text within the Aboriginal Cultural Heritage Assessment Report (ACHAR, OzArk 2023) in response to submissions and matters raised. The updates to the ACHAR did not change the conclusion of the assessment.

- Traffic and transport – a desktop over size over mass (OSOM) assessment report (Appendix D of this report) and a scaled strategic design (Appendix E of this report) of the proposed access road intersection were prepared in response to submissions and matters raised.

- Additional technical assessments to inform the amendment report (EMM 2023b) – additional aspects investigated included visual amenity, Aboriginal heritage, historic heritage, noise and vibration, soils, erosion and agriculture, social and bushfire.

ES4 Evaluation and conclusion

In response to submissions received on the project and based on the outcomes of engagement with key stakeholders, amendments have been made to the project since the public exhibition of the EIS; notably the addition of a temporary workers accommodation facility. The amendment report accompanies this submissions report and describes changes to the project that have been made since the submission of the EIS and provides a summary of the impacts associated with the amended project.

The inclusion of the temporary accommodation facility to house construction workers will substantially reduce the significance of key social impacts, which would otherwise be experienced by the community due to the project, as demonstrated by the addendum social impact assessment prepared for the amendment (EMM 2023c). In particular, it will substantially reduce and generally avoid the impacts that a construction workforce would otherwise have on the availability of short-term accommodation in the local and regional area.

Additional work has also been undertaken to respond to submissions received on the EIS. No further major changes were required to the solar and BESS components of the project as a result of the submissions. The description of the project and the project evaluation and justification, as presented in the EIS, remain a true and accurate reflection of the project for which approval is sought.

The project is considered to be justified and in the public interest because:

- It is suitably located due to several factors, notably its location within the CWO REZ. In addition, the study area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (flat to gently undulating topography and predominantly cleared, agricultural land), absence of biophysical strategic agricultural land and relatively few neighbours living within close proximity. Further, the project's proximity to the proposed CWO REZ transmission link and Merotherie Energy Hub means that there will be infrastructure within the immediate area with the capacity to export the electricity generated by the project to the grid.

- The design of the project has been an iterative design and environmental assessment process to ensure impacts have been avoided and minimised as much as possible. This has included refining the design in consultation with neighbouring landholders, local and NSW Government agencies, registered Aboriginal parties and the local community.

- The project will not result in significant biophysical, social or economic impacts, and the EIS and amendment report have concluded that any residual impacts can be appropriately managed and/or offset in accordance with NSW Government policy.

- The benefits of the project are in the public interest and will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation, it aligns with Commonwealth and NSW Government electricity policies and strategies and regional plans, it will provide ongoing economic benefits for both the local economy within the Mid-Western Regional LGA and the Warrumbungle Shire LGA and more broadly, the regional economy within the Central West.

TABLE OF CONTENTS

Appendices

Tables

Figures

1 Introduction

1.1 Background

ACEN Australia Pty Ltd (ACEN) proposes to develop the Birriwa Solar and Battery project, a large scale solar photovoltaic (PV) electricity generation facility along with battery storage and associated infrastructure (the project). The solar component of the project will have an indicative capacity of around 600 megawatts (MW) and will include a centralised battery energy storage system (BESS) of up to 600 MW for a two hour duration (1,200 MWh). The project will power the equivalent of approximately 260,000 average households.

The project site is located approximately 15 kilometres (km) south-east of Dunedoo, in the Central-West Orana region of New South Wales (NSW), in the localities of Birriwa and Merotherie (refer to Figure 1.1). The project is located within the Central-West Orana (CWO) Renewable Energy Zone (REZ), the first REZ to be declared in Australia, and is within the Mid-Western Regional Local Government Area (LGA), with part of the access route from the Castlereagh Highway situated within the Warrumbungle Shire LGA. The CWO REZ will unlock 3 gigawatts of new network capacity by the mid-2020's, enough to power 1.4 million homes. New transmission infrastructure will enable generators participating in the REZ to export electricity to the rest of the network.

The key objective of the project is to deliver up to 600 MW of much needed renewable energy into NSW. In doing so, the project will play an important part in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through both construction-phase and operational-phase employment opportunities and associated social and economic benefits.

The project is State significant development (SSD) pursuant to Schedule 1, Section 20 (electricity generating works and head or co-generation) of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Accordingly, a development application (DA) and environmental impact statement (EIS) was submitted for the project to the NSW Department of Planning and Environment (DPE) under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The EIS for the project was publicly exhibited from 14 October 2022 to 10 November 2022.

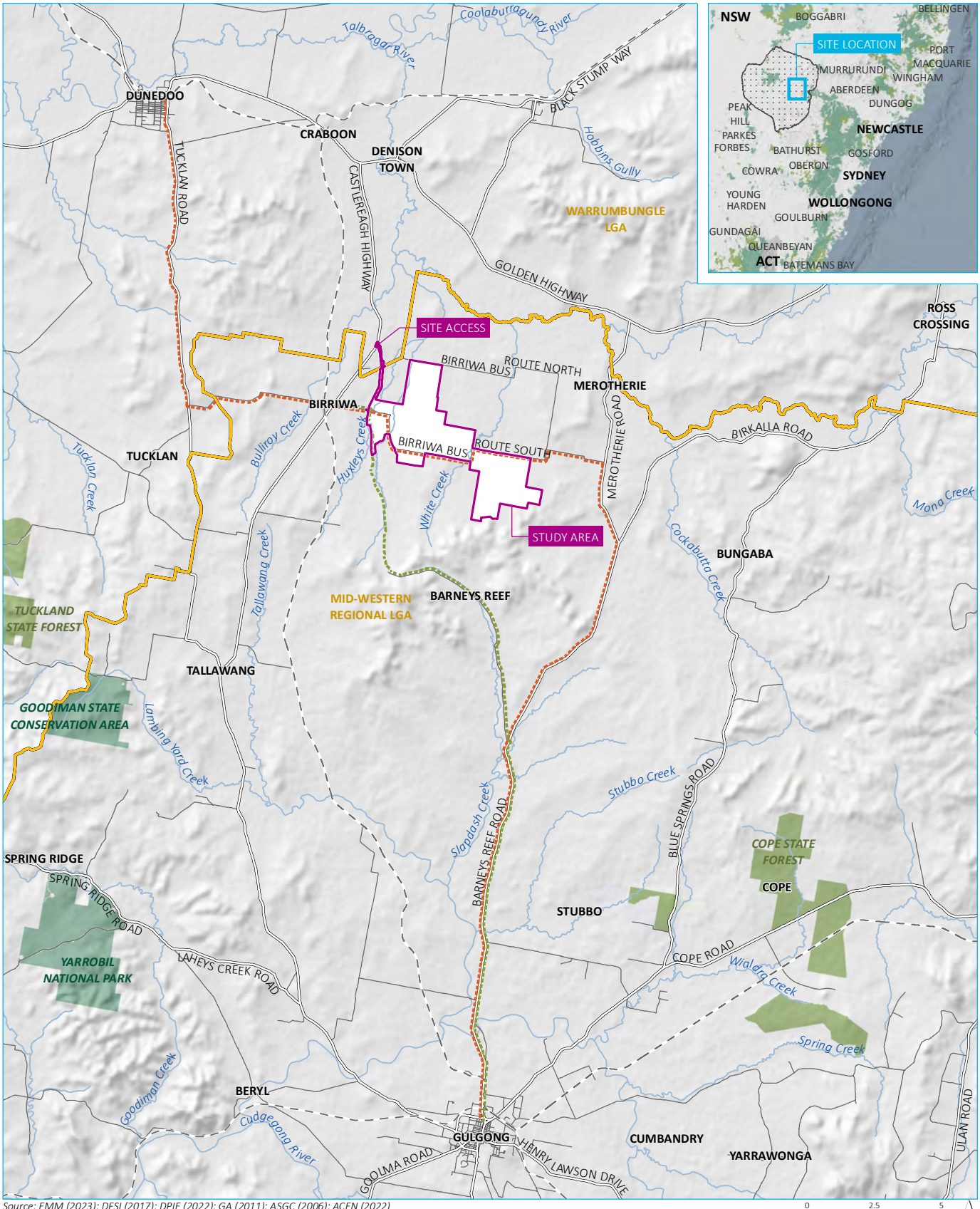
Following the public exhibition of the EIS, 92 submissions were received by DPE, including from the general public, councils and special interest groups This submissions report is required to be submitted to DPE in response to the matters raised in these submissions, in accordance with Section 59(2) of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation).

1.2 Project overview

A detailed description of the project is provided in Chapter 3 of the EIS (EMM 2022a). An overview of the project is shown in Figure 1.2. The project will comprise the following key components:

- Installation of approximately 1 million solar PV panels and associated mounting infrastructure.
- A BESS with a capacity of up to 600 MW and a storage duration of up to 2 hours (1,200 MWh).
- An on-site substation with a connection voltage of up to 500 kilovolt (kV).
- Electrical collection and conversion systems, including inverter and transformer units, switchyard, control room and staff car park.
- Underground and aboveground cables.
- An operational infrastructure area, including demountable and permanent offices, amenities and equipment sheds.

- Internal access roads.
- A temporary construction compound (during construction and decommissioning phases).
- An access route upgrade from Castlereagh Highway to the project site via Barneys Reef Road and Birriwa Bus Route South.



Source: EMM (2023); DFSI (2017); DPIE (2022); GA (2011); ASGC (2006); ACEN (2022)

0 2.5 5 km

GDA 1994 MGA Zone 55

N

\\emmsvr1\EMM3\2021\P210553 - Birriwa Solar and Battery Project\GIS\02_Maps_EIS\EIS002_RegionalLocation_20220720_04.mxd 11/04/2023

KEY

- Study area

Existing environment

- Rail line
- Major road
- Minor road
- Named watercourse
- Local government area
- Central West Orana Renewable Energy Zone (see inset)
- NPWS reserve
- State forest

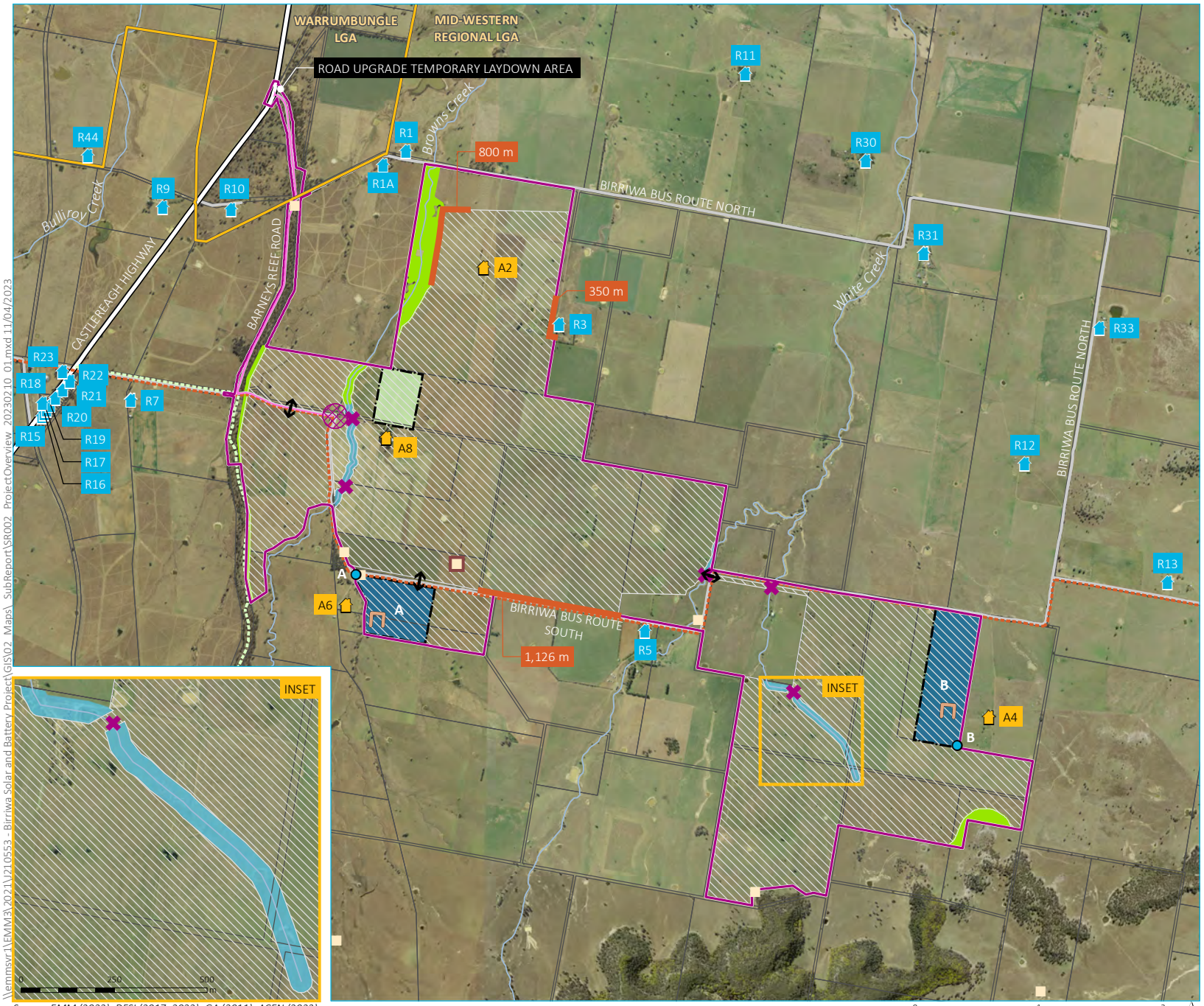
Central West Cycle (CWC) Trail

- CWC main route - Gulgong to Dunedoo
- CWC alternate route - Slap Dash Creek side trail

Regional context

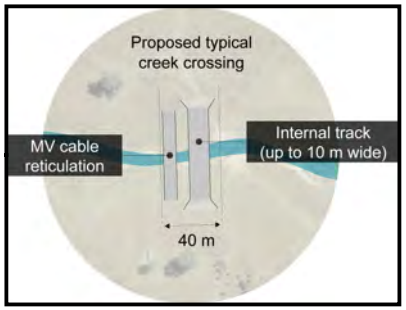
Birriwa Solar and Battery Project
Submissions report
Figure 1.1

EMM creating opportunities



KEY

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



Project overview

Source: EMM (2023); DFSI (2017, 2022); GA (2011); ACEN (2023)

\\emmsvr1\EMM3\2021\J210553 - Birriwa Solar and Battery Project\GIS\02_Maps_SubReport\SR002_ProjectOverview_20230210_01.mxd 11/04/2023

Birriwa Solar and Battery Project
Submissions report
Figure 1.2

EMM creating opportunities

1.3 Purpose of this report

ACEN received correspondence from DPE on 10 November 2022 requiring responses to the matters raised in the submissions to the EIS (EMM 2022a). Accordingly, this submissions report has been prepared by EMM Consulting Pty Limited (EMM) in accordance with the *State Significant Development Guidelines – Preparing a Submissions Report* (DPIE 2022a) (the Submissions Report Guidelines). The purpose of this report is to consider and respond to submissions made by various agencies, organisations, and the general public, in relation to the project.

This report also describes the additional stakeholder and community engagement activities that ACEN has carried out since EIS lodgement and continues to carry out. Following the ongoing engagement with the local community, project landholders, government agencies and other stakeholders, ACEN has refined the proposed project design to respond to the key issues raised. Specifically, a temporary construction workers accommodation facility has been included in the project's design.

An amendment report has been prepared to describe this proposed design response. The amendment report provides an assessment of the impacts associated with the revised project design, i.e. the addition of the temporary construction workers accommodation facility, and has been submitted to DPE with this report. This submissions report should be read in conjunction with the amendment report.

It is also noted that the broader context relating to the CWO REZ has been updated since submissions were made on the project. EnergyCo has released additional information, through the submission of a scoping report, which provides clarity on the location of the CWO REZ network infrastructure (RNI) including the proposed location of the Merotherie Hub, main 500 kV transmission lines and 330 kV transmission lines network extension connecting to the CWO REZ generators' 'gates'. EnergyCo are working closely with ACEN to plan connections into the network. EnergyCo are also working with generators and other key stakeholders to develop strategies to manage cumulative impacts within the REZ and deliver community benefit initiatives. Although EnergyCo has released additional information relating to the proposed REZ transmission project, this does not change the project's design response to submissions. Additional environmental investigations undertaken by EnergyCo are summarised in responses to various submissions, particularly relating to cumulative impacts.

Following lodgement of this submissions report, DPE will prepare its assessment report, considering the submissions received, and the project's design response to these submissions. The NSW Independent Planning Commission is declared to be the consent authority for the project under Section 4.5(a) of the EP&A Act by operation of Section 2.7 of the State Environmental Planning Policy (Planning Systems) 2021 because:

- The project is SSD under Section 4.36 of the EP&A Act.
- Warrumbungle Shire Council (one of the councils of the area in which parts of the development is to be carried out) has made a submission objecting to the project.
- At least 50 submissions have been made by way of objection (other than from a council).

2 Analysis of submissions

2.1 Summary of submissions

Following the public exhibition of the EIS, 92 submissions were received by DPE from the public, councils and special interest groups. The majority of submissions were individual submissions from the general public. Of the 92 received, 88 submissions were from the public (noting that two of these were duplicate submissions), two from councils and two were from special interest groups. In addition, 14 public agencies made submissions providing advice on the project.

Submissions are available to view on the NSW Government's Major projects website at: https://pp.planningportal.nsw.gov.au/major-projects/projects/birriwa-solar-farm. A submissions register is provided in Appendix A of this report, which summarises all submissions received. A summary of submissions, including the total number of submissions who oppose, support or commented on the project, is provided in Table 2.1.

Table 2.1 Summary of submissions received

Source/type	Object/oppose	Support	Comment	Advice	Total
Council and special interest groups	3	-	1	-	4
Public	84	-	4	-	88
Sub-total	**87**	**-**	**5**	**14**	**92**
Government agency	-	-	-	14	14
Total	**87**	**-**	**5**	**14**	**106**

Note: The type of submission has been categorised by DPE on the major projects website (NSW Government 2022) (i.e. object, support and comment).

The following State government agencies or other stakeholders relevant to the project provided a submission on the project offering advice:

1. Department of Primary Industries – Agriculture
2. Department of Primary Industries – Fisheries
3. Department of Planning and Environment – Heritage NSW
4. Department of Planning and Environment – Water NSW
5. Department of Planning and Environment – Biodiversity, Conservation and Science Directorate (BCS)
6. Department of Planning and Environment – Hazards
7. Crown Lands
8. Fire and Rescue NSW
9. NSW Rural Fire Service
10. Transport for NSW (TfNSW)

11. Mining, Exploration & Geoscience – GSNSW

12. Australian Rail Track Corporation (ARTC)

13. TransGrid

14. Sliding Spring Observatory (Australian National University).

All government agency submissions provided comments and/or advice on the project, with no objections received. Five agencies acknowledged the project and did not provide further comment (Australian Rail Track Corporation; Transgrid; Sliding Spring Observatory; DPE – Crown Lands; and the Department of Regional NSW – Mining Exploration and Geoscience).

The following councils and special interest groups provided a submission on the project:

1. Mid-Western Regional Council (comment)

2. Warrumbungle Shire Council (object)

3. Uarbry Tongy Lane Alliance (object)

4. Save our Surroundings (object).

2.2 Response methodology

All submissions received were collated and categorised based on who they were from, in accordance with the following categories:

- State or Commonwealth government agencies
- other (including councils and special interest groups)
- general public submissions.

The submissions were reviewed, and the key issues raised in each submission identified.

2.3 Categorisation of issues

Matters raised in the submissions have been classified as one of the following five **broad categories** in accordance with the submissions report Guidelines:

1. The project (such as the project study area, the physical layout and design, key uses and activities, timing).

2. Procedural matters (such as the level of quality of engagement, compliance with the Secretary's Environmental Assessment Requirements (SEARs), identification of relevant statutory requirements).

3. The environmental, social or economic impacts of the project (such as amenity, air, biodiversity, heritage).

4. The justification and evaluation of the project as a whole (such as consistency of the project with Government plans, policies or guidelines).

5. Issues that are beyond the scope of the project assessment (such as broader policy issues) or not relevant to the project.

Each of these categories have been divided into **sub-categories**, such as biodiversity, air quality, bushfire, cumulative impacts etc. and then **key matters raised** as outlined below in Table 2.2 and Table 2.3.

2.4 Summary of matters raised in council and special interest group submissions

A total of four submissions were received from council's and special interest groups. Three of these submissions objected to the project and one submission (Mid-Western Regional Council) provided comment.

A list of key matters raised in the council and special interest group submissions is provided in Table 2.2. As shown, the matters raised multiple times include:

- fire impacts (including potential bushfire risk from the solar and BESS infrastructure) lack of infrastructure and manufacture detail relating to the PV arrays
- general impacts on flora and fauna
- cumulative impacts from other renewable developments
- accommodation availability.

Responses to these matters are provided in Chapter 4.

Table 2.2 Summary of matters raised by councils and special interest groups

Key matter raised	Sub-category	Quantity	Percentage
The project			
Lack of infrastructure and manufacture detail	Other matters	4	8%
Not supportive of renewable energy projects	Other matters	1	2%
Australian economy	Economic	1	2%
Procedural matters			
Inadequate engagement with neighbouring landholders	Engagement	2	4%
Approval process and engagement	Engagement	1	2%
The environmental, social, or economic impacts of the project			
Fire impacts	Hazards	4	8%
General impact on flora and fauna	Biodiversity	3	6%
Impacts from other renewable developments	Cumulative impacts	3	6%
Accommodation availability	Social	3	6%
Rehabilitation and final land use	Decommissioning	2	4%
Cost benefit analysis	Economic	2	4%
Loss of agricultural land	Land and soil	2	4%
Road upgrades and condition	Traffic	2	4%
Waste disposal, decommissioning and management	Waste	2	4%

Table 2.2 Summary of matters raised by councils and special interest groups

Key matter raised	Sub-category	Quantity	Percentage
Waste disposal, decommissioning and management	Waste	2	4%
Inadequate greenhouse gas assessment	Other matters	1	2%
Impacts on biodiversity	Cumulative impacts	1	2%
Loss of agricultural land	Cumulative impacts	1	2%
Increased traffic volumes	Cumulative impacts	1	2%
Visual	Cumulative impacts	1	2%
Waste disposal, decommissioning and management	Decommissioning	1	2%
Property value/insurance costs	Economic	1	2%
Impacts on heritage items	Heritage	1	2%
Agricultural assessment	Land and soil	1	2%
Employment	Social	1	2%
Increased traffic volumes	Traffic	1	2%
Waste disposal, decommissioning and management	Traffic	1	2%
Management and mitigation	Waste	1	2%
Sewerage management	Waste	1	2%
Management and mitigation	Water	1	2%
Water supply	Water	1	2%
Contamination	Water	1	2%

Note: * the percentage has been rounded, so does not add up to 100%.

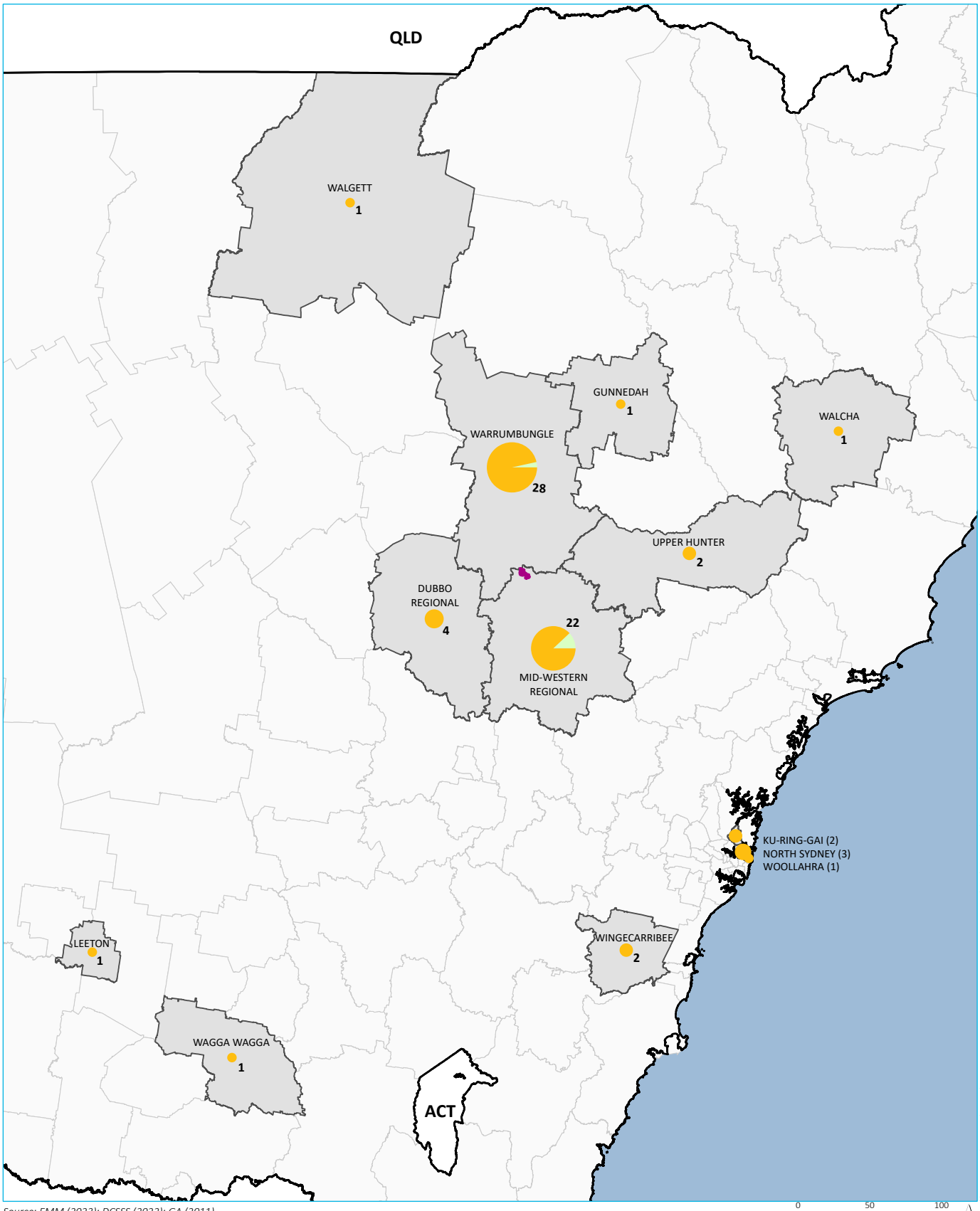
2.5 Public submissions

2.5.1 Origin of public submissions

The number of community submissions were analysed by their locality and distance from the project study area. Public submissions came from 30 different locations. Of these 30 locations:

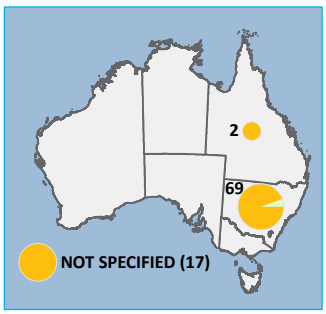
1. 13% are from the local area (i.e. <5 km from the project study area)
2. 52% are from the regional area (5–100 km from the project area)
3. 16% comprise broader community interest (>100 km from the project study area)
4. 19% of the public submissions did not disclose their location.

The origin of public submissions is shown in Figure 2.1.



\\emmsvr1\EMM3\2021\P210553- Birriwa Solar and Battery Project\GIS\02_Maps_SubReport\SR001_Submissions_20230116_01\SR001_Submissions_20230713_02.aprx

Source: EMM (2023); DCSSS (2022); GA (2011)



KEY

- Study area
- Local government area- submission provided
- Local government area- no submission provided

Submission type

- 6 Total number of submissions in area
- Comment
- Object

Origin of public submissions

Birriwa Solar and Battery Project
Submissions Report
Figure 2.1

EMM
creating opportunities

2.5.2 Summary of matters raised in public submissions

A list of the matters raised within the public submissions and the section of this report in which they have been addressed is provided in Table 2.3.

No public submissions in support (as categorised by DPE) of the project were received during the EIS exhibition period.

Figure 2.2 provides a graphical representation of key matters raised and sub-categories in public submissions and includes the number of submissions received in relation to the key matter.

The most commonly raised key matters in public submissions include:

- concerns over the potential loss of prime agricultural land
- general visual amenity impacts
- concerns over the potential for declining land and property values
- impacts on lifestyle
- impacts on local businesses and the economy
- cumulative impacts from other renewable developments within the REZ, including accommodation availability for construction workers.

Table 2.3 List of matters raised in public submissions

Key matter	Sub-category	Quantity	Percentage	Relevant section where submission is addressed
The project				
Concerns that the project is too large.	Other impacts	8	2%	Section 5.15.7
Concerns over the suitability of the site including proximity to residences, unable to aerial crop, and distance from community infrastructure.	Other impacts	7	2%	Section 5.15.6
Lack of infrastructure detail including manufacturing detail.	Other impacts	6	1%	Section 5.15.3
Procedural matters				
Inadequate engagement with neighbouring landholders.	Engagement	10	2%	Section 5.12.1
Rushed approvals approach and timing without comprehensive community consultation across governments strategic and tactical goals and objectives.	Engagement	2	0.5%	Section 5.12.2
Inadequate/complex EIS in terms of the impact on agricultural land as well as complexity of the documentation on public exhibition.	Other impacts	2	0.5%	Section 5.15.2
The environmental, social, or economic impacts of the project				
Concerns over loss of prime agricultural land.	Lands and soil	49	12%	Section 5.8.1

Table 2.3 List of matters raised in public submissions

Key matter	Sub-category	Quantity	Percentage	Relevant section where submission is addressed
General visual amenity impacts.	Visual	23	6%	Section 5.2.1
Concerns over land and property values and increased insurance costs for properties within the site.	Economic	22	5%	Section 5.13.1
Impacts on lifestyle.	Social	22	5%	Section 5.11.1
Impacts on local businesses and economy.	Economic	20	5%	Section 5.13.4
Combined impacts from other renewable developments within the REZ.	Cumulative impact	17	4%	Section 5.14.1
Negative impact on casual labour due to the demand and supply of the local workforce.	Social	14	3%	Section 5.11.5
Concerns over electromagnetic field (EMF) and the effects of the solar panels and battery storage in proximity to neighbouring properties.	Hazards	13	3%	Section 5.5.1
Concerns around the increased risk of fire from the PV solar arrays.	Hazards	12	3%	Section 5.5.3
Concerns on the soil erosion and run-off impact.	Lands and soil	11	3%	Section 5.8.2
Negative direct and indirect impacts on the surrounding community.	Social	11	3%	Section 5.11.2
Increased traffic volumes.	Traffic	11	3%	Section 5.3.1
Concern over the end of life of the solar panels and infrastructure including responsibility, waste disposal, decommissioning and management.	Decommissioning	9	2%	Section 5.10.1
Potential impacts on tourism.	Social	9	2%	Section 5.11.7
Concerns over the concentration of toxic chemicals used in solar panels and the risk of contamination.	Hazards	9	2%	Section 5.5.2
General impact on flora and fauna.	Biodiversity	8	2%	Section 5.1.2
Lack of transparency and the cost benefit of the project.	Economic	8	2%	Section 5.13.2
Concern that there is not enough accommodation to supply the construction workforce.	Social	8	2%	Section 5.11.4
Economic impacts of removal and alternative use of 1,330 ha agricultural land.	Economic	6	1%	Section 5.13.3
Noise impacts on neighbouring properties.	Noise	6	1%	Section 5.7.1
Concerns over mental health and wellbeing.	Social	6	1%	Section 5.11.3
Cost of upgrading roads and maintenance.	Traffic	5	1%	Section 5.3.2
Selection of viewpoints and visual impact assessment methodology.	Visual	5	1%	Section 5.2.2

Table 2.3 List of matters raised in public submissions

Key matter	Sub-category	Quantity	Percentage	Relevant section where submission is addressed
Glare.	Visual	5	1%	Section 5.2.3
Lack of detail regarding the generation of greenhouse gas emissions from the project.	Other matters	5	1%	Section 5.15.1
Biosecurity.	Biodiversity	4	1%	Section 5.1.1
Impacts on heritage items.	Heritage	4	1%	Section 5.4.1
Safety of road users.	Traffic	4	1%	Section 5.3.3
Flooding impacts.	Water	4	1%	Section 5.9.1
Detail required on final land use and rehabilitation plan.	Decommissioning	3	0.7%	Section 5.10.2
Food security and supply due to agricultural land being used for renewable energy projects.	Social	3	0.7%	Section 5.11.6
Impacts on groundwater.	Water	3	0.7%	Section 5.9.2
Lack of accommodation for construction workforce.	Cumulative impact	3	0.7%	Section 5.14
Inaccurate detail regarding previous bushfires in the area.	Bushfire	2	0.5%	Section 5.6.1
Cumulative visual impacts.	Cumulative impact	2	0.5%	Section 5.14.3
Cost of waste management.	Economic	2	0.5%	Section 5.13.5
Water to be used for dust suppression.	Water	2	0.5%	Section 5.9.3
Infrasound.	Noise	1	0.2%	Section 5.2.4
The justification and evaluation of the project				
Disagree with the benefit of renewable energy on climate change.	Other impacts	7	2%	Section 5.15.5
Concerns that the power created from the project will not be consumed locally.	Other impacts	6	1%	Section 5.15.4
Cost of energy.	Other impacts	2	0.5%	Section 5.15.8

Note: * the percentage has been rounded, so does not add up to 100%.

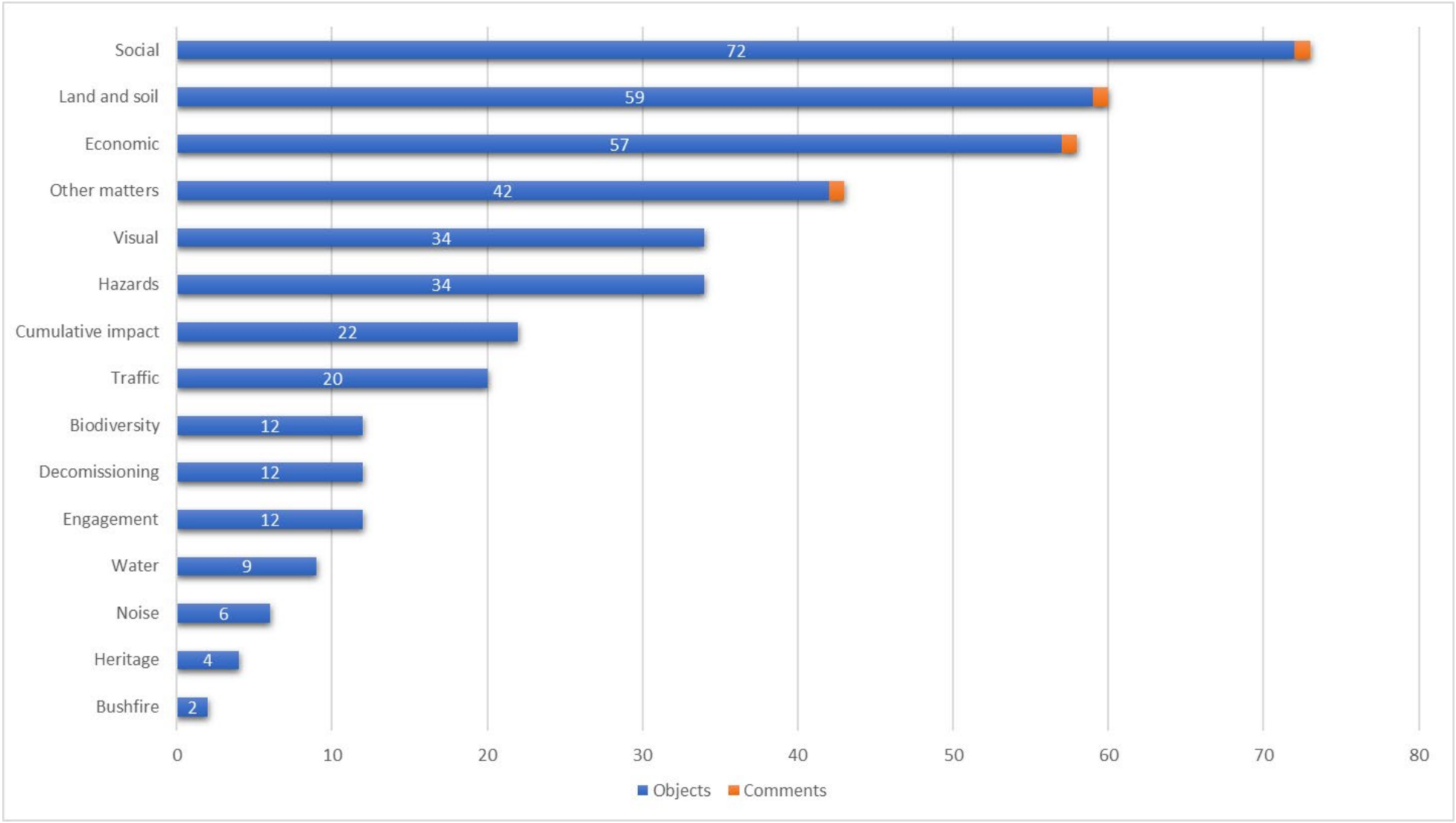


Figure 2.2 **Sub-categorisation of public submissions**

3 Actions taken since exhibition

3.1 Project amendments

In response to matters raised in submissions and outcomes of ongoing engagement with the local community, government agencies, project landholders, and other stakeholders, ACEN has made amendments to the project, as follows:

1. The addition of a temporary accommodation facility, on an adjacent property south-east of the original project study area presented in the EIS (refer to Figure 4.1), to provide temporary accommodation for up to 500 construction staff during the construction phase of the project.

2. A refinement to the development footprint associated with the solar component of the project, to include the south-eastern corner (approximately 5 ha). This area was conservatively mapped as derived native grassland (DNG) of plant community type (PCT) 80 (and therefore a threatened ecological community) and previously excluded from the EIS and BDAR. Subsequently, this area has been surveyed by EMM ecologists since submission of the Environmental Impact Statement (EIS) and Biodiversity Development Assessment Report (BDAR), and is confirmed as low condition DNG of PCT 479 (rather than DNG of PCT 80), and therefore does not need to be avoided on the basis of ecological constraints.

The temporary accommodation facility will be suitable to accommodate up to 500 people (construction workforce). The accommodation facility will have the potential to expand, enabling capacity for up to 1,000 people subject to future approvals, to accommodate a workforce from future ACEN developments within the CWO REZ, if deemed required and subject to future accommodation needs.

This amendment report has been prepared to describe these proposed amendments. This amendment report provides an assessment of the impacts associated with the revised project amendments.

3.2 Consultation

Stakeholder engagement on the project has been comprehensive to date and reflects the importance ACEN places on this aspect to its business. Since the lodgement of the EIS, ACEN continues to engage with stakeholders including local authorities, government agencies, the local community and neighbouring landholders, as the project design is refined in response to matters raised. An overview of the engagement activities carried out during and after the public exhibition of the EIS is provided in Section 3.2.1 and Section 3.2.2.

3.2.1 Community consultation

Throughout both the preparation of the EIS and the public exhibition process, in those instances where a community member expressed they had not been contacted or learned of the project sooner, ACEN has actively responded, offering one-on-one meetings; property inspections; phone calls and/or exchanging emails. Submissions raised by community members expressing concerns relating to a perceived lack of consultation are discussed further in Section 5.12.1 of this report.

The following additional consultation was undertaken as part of the preparation of the response to submissions and amendment reports with community members:

- Further consultation with community members who expressed concern in their submission on the project relating to the extent of consultation, was undertaken by ACEN in late January and early February 2023. The matters discussed as part of this consultation are summarised in Table 3.2.

- ACEN held an information stand at the Dunedoo show on 11 February 2023, to allow members of the public to discuss the project. Approximately 25 members of the public interacted with the ACEN representatives, and matters discussed are summarised in Table 3.1.
- ACEN held a public community information day on 6 July 2023 to discuss the project and the amended project (i.e. inclusion of the accommodation facility). Seven members of the public interacted with ACEN and their representatives, and matters discussed are summarised in Table 3.2.
- A three page, paid advertisement was placed in the Dunedoo Diary, that contained information about the community information session (6 July 2023), as well as a two page information sheet on the accommodation facility.
- An editorial piece from the Gulgong Business Chamber, in the July edition of the Gulgong Gossip featured information about ACENs accommodation facility.
- A briefing with State Member for Dubbo on 30 June to discuss ACENs projects as well as the accommodation facility.
- EnergyCo also held community sessions in mid-February 2023 providing additional information about the CWO REZ. Information provided to the public included the location of the proposed Merotherie Hub, located approximately 1.5 km west of the Birriwa project, and the location of proposed CWO RNI, including the proposed 500 kV main transmission line and 330 kV transmission line network extensions connecting to the CWO REZ' generators' gates.
- As part of the addendum social impact assessment for the amended project (Appendix F.5 of the amendment report), interviews were also undertaken with community members. Outcomes of these interviews, and how matters raised have been addressed, are summarised in Section 6.2.8 and Appendix F.5 of the amendment report.

A summary of the community engagement undertaken post-submission of the EIS on the project, the matters raised, how these matters have been addressed, is provided in Table 3.1.

.

Table 3.1 Summary of community engagement

Community member/group	Engagement method and date	Key aspects discussed	Response to key aspects including section where this has been addressed in the submissions report or amendment report
Dunedoo community	Information booth at the Dunedoo Show: • 11 February 2023.	ACEN held an information stand at the Dunedoo show on 11 February 2023, to allow members of the public to discuss the project. Approximately 25 members of the public interacted with the ACEN representatives, and matters discussed included: • Cumulative impacts with the CWO REZ infrastructure (i.e. transmission lines and Energy Hubs) and other SSD projects within the CWO REZ (addressed in Section 5.14). • Reasons why the NSW Government selected the CWO region for the development of a REZ (this was described in Chapter 1 of the EIS). • Consultation fatigue and confusion between the NSW Government's roles and private generators' roles in the CWO REZ (addressed in Section 5.15). • Community concerns relating to the changes in the visual landscape (addressed in Section 5.2 and Section 5.14.3). • Community concerns relating to the use of good agricultural land (addressed in Section 5.8).	Refer to Section 4.8, 5.2, 5.3, 5.5, 5.8, 5.11, 5.14 and 5.15 of this submissions report where each matter is discussed and addressed.

Table 3.1 Summary of community engagement

Community member/group	Engagement method and date	Key aspects discussed	Response to key aspects including section where this has been addressed in the submissions report or amendment report
Community information day	Community information day on 6 July 2023 regarding the addition of the accommodation facility. Seven members of the public interact with ACEN and their representatives.	Matters discussed included: • The availability of essential services (police, doctors, water, sewerage) (addressed in Section 5.14.6). • Safety risks potentially associated with an accommodation facility near rural residential areas (traffic, personal safety, waste) (addressed in Section 5.3.3, Section 5.5.1, and Section 5.14.6). • Fire risks and the ability for RFS to manage (addressed in Section 4.8). • The benefit of including an accommodation facility in the project avoids impacts on tourist accommodation (addressed in Section 5.11.7). • Feedback that an accommodation facility should be located near a township rather than isolated, to allow for potential benefits of re-use of the accommodation, and ongoing economic development opportunities. • Concerns about the impacts from the project as a whole, including traffic, bushfire, community impacts, availability of essential services, and cumulative impacts of the REZ (addressed in Section 5.14).	Refer to Section 4.8, 5.2, 5.3, 5.5, 5.8, 5.11, and 5.14 of this submissions report where each matter is discussed and addressed.
Community members	Further consultation with the identified community members who expressed concern relating to the extent of consultation undertaken within their submissions was undertaken in late January and early February of 2023.	This consultation comprised providing additional information and responding to specific concerns relating to matters such as visual amenity, stormwater runoff, and the proposed technology. Furthermore, these stakeholders were provided with direct contact details for ACEN representatives and were added to ACENs stakeholder database to ensure they will remain up to date with project information going forward.	Refer to Section 5.2, 5.9 and 5.15 of this submissions report where each matter is discussed and addressed.

Table 3.1 Summary of community engagement

Community member/group	Engagement method and date	Key aspects discussed	Response to key aspects including section where this has been addressed in the submissions report or amendment report
Associated landowners	Email and letter: • 27 June 2023.	ACEN engaged with associated landowners regarding the accommodation facility. ACENs engagement included the following aspects: • Accommodation facility proposal. • Invitation to the community session held on the 6 July 2023. Key issues raised include: • No comments or objections relevant to this Development Application were raised.	
Non-associated landowners	Phone call, email, letter, and meetings: • 7 February 2023 • 6 June 2023 • 9 June 2023 • 15 June 2023 • 23 June 2023 • 27 June 2023 • 5 July 2023.	ACEN contacted non-associated landowners to provide information regarding the proposed accommodation facility. ACENs engagement included the following topics: • Accommodation facility proposal. • Invitation to the community session held on the 6 July 2023. • Revised Neighbour Payment Benefit Scheme (NPBS), where applicable. Key issues raised include: • Cumulative impacts of the REZ. • Decommissioning obligations. • Erosion and stormwater runoff. • Security around the accommodation facility. • Population increase in the region. • Confusion regarding Energy'Co's and ACENs accommodation facility. • Commercial discussions with neighbours regarding potential involvement in the project at a larger stage.	Comments relating to the social aspects of the accommodation facility are addressed in Section 6.2.8 of the amendment report. Decommissioning is discussed in Section 3.4.4 of the amendment report. ACEN will continue to liaise with EnergyCo and Council regarding legacy options.

Table 3.1 Summary of community engagement

Community member/group	Engagement method and date	Key aspects discussed	Response to key aspects including section where this has been addressed in the submissions report or amendment report
Associated and non-associated landowners and community in general	Public information session at Dunedoo Memorial Hall: 6 July 2023	ACEN held a community meeting to inform members of the community regarding the proposed accommodation facility. Generally, positive feedback about the project and workforce accommodation was received, particularly on the benefits of the accommodation and economic development opportunities. Key issues raised include: • Traffic and road impacts. • Security around the accommodation facility. • Water sources for the accommodation facility. One Landowner relies on underground water for grazing purposes. • Cumulative impacts. • Concerns about hosting another accommodation facility in the community as the Merotherie workers camp has been announced. • Biodiversity impacts. • Concerns about vulnerable women in the community due to male population increase. • Post-construction waste. • Community benefits. • Social impacts on tourism and businesses. • Potential re-use of the accommodation facility, such as alternative forms of housing. • Concerns regarding infrastructure like sewerage system. • Bushfire hazards.	Comments relating to the social aspects of the accommodation facility are addressed in Section 6.2.8 of the amendment report. Comments relating to traffic are addressed in Section 6.2.3 of the amendment report. This submissions report responds to Council's concerns relating to waste disposal from the project (refer to Section 4.11.4). Utility services required for the accommodation facility are outlined in Section 3.4.3 of the amendment report. Key comments relating to bushfire management are addressed in Section 6.2.9 of the amendment report and the Bushfire Assessment Report (Appendix F.6 of the amendment report). Decommissioning is discussed in Section 3.4.4 of the amendment report. An agreement on a planning agreement (PA) has been reached between ACEN and the two councils, as follows: A PA has been agreed to with Mid-Western Regional Council to a value of 1.5% of the project's capital expenditure. Both councils have then agreed that contributions made under the PA will be distributed between Mid-Western Regional Council and Warrumbungle Shire Council, as agreed between the councils. ACEN will continue to liaise with EnergyCo and Council regarding legacy options.

3.2.2 Agency consultation

Engagement with key regulatory stakeholders continued post exhibition of the EIS and is summarised in Table 3.2.

Table 3.2 Summary of stakeholder engagement

Stakeholder group	Engagement method	Key outcomes
DPE	Video-conference: • 25 January 2023 • 16 February 2023 • 23 March 2023 • 24 May 2023 • 15 June 2023 • 19 July 2023.	ACEN and EMM continued to engage with DPE during the public exhibition of the EIS and as part of the preparation of this submissions report and the amendment report. Meetings were held generally on a monthly basis to discuss the status of the submissions report and the amendment report and general approach to responding to issues raised, as well as ACEN's strategy relating to the accommodation facility.
EnergyCo	Video conference	ACEN and EnergyCo have had on-going discussions as part of the CWO REZ' Candidate Foundation Generator process. Meetings were held generally on a fortnightly basis to discuss key issues around the development of the CWO REZ, including cumulative impacts of the REZ infrastructure and private generation, community consultation, schedule of development, and technical considerations. A meeting was held with EnergyCo on 7 February 2023 regarding construction worker accommodation. EnergyCo requested consideration should be provided to infrastructure that can be repurposed by the local community once the project is completed, such as more permanent dwellings that can be relocated.
TfNSW	Email	EMM consulted with TfNSW via email on 16 November 2022 to request additional traffic data that was mentioned by TfNSW in their submission.
DPE – Biodiversity Conservation and Science Directorate	Phone call and email correspondence	EMM consulted with BCS on 3 February 2023 to confirm the approach to responding to BCS' recommendations. BCS confirmed the process and approach will be accepted as consistent with the transitional arrangements when reviewing the project at the submission stage. EMM further consulted with BCS on 12 June 2023 to gain concurrence on the proposed methodology for the additional owl surveys to be undertaken. EMM consulted with BCS on 19 July 2023 to provide an overview on the responses to BCS's recommendations within the submissions report, as well as an update and overview on the surveys and impacts assessed as part of the accommodation facility.

Table 3.2 Summary of stakeholder engagement

Stakeholder group	Engagement method	Key outcomes
Mid-Western Regional Council	Meetings and correspondence	Several meetings and written correspondence have been undertaken between Mid-Western Regional Council and ACEN representatives. Council raised concerns and requested additional information regarding the project's evolving approach for accommodation and the required workforce, in particular the management approach to the cumulative impacts of surrounding renewable projects within the REZ. Two additional letters were received from Mid-Western Regional Council in addition to their initial submission on the project, referencing the lack of waste disposal infrastructure; as well as a request for ACEN to executive a planning agreement with Council to the value of 1.5% of the project CAPEX spend to offset community impacts. A copy of the letter from Mid-Western Regional Council regarding the project CAPEX is included in Appendix F. The comments outlined in the correspondence referencing the lack of waste disposal have been included and responded to within Mid-Western Regional Council submissions (Section 4.11). A meeting was held between Mid-Western Regional Council and ACEN representatives on 26 June 2023 to discuss the proposed accommodation facility and access to the accommodation facility, as well as the key commercial terms of a Planning Agreement (PA) with Council. ACEN has agreed to a PA prior to construction commencement to the value of 1.5% of the project CAPEX. Letters between Mid-Western Regional Council and ACEN outlining the outcomes of the meeting are included in Appendix F. The amendment report discusses in detail the requirements of Mid-Western Regional Council regarding the accommodation facility. The key insights are as follows: • Medical staff should be available at the accommodation facility to reduce strain on local health services. • Licensed social area should be available onsite to reduce the number of workers using local pubs. • The accommodation facility should be capable of scaling up to meet increasing demand for worker accommodation in the region. • The accommodation facility should be located away from townships to minimise social impacts on local communities. • The number of beds required should be calculated using a realistic local workforce estimate of 10%. • The accommodation facility cannot rely on Council services for water, sewage and electricity. • MWRC noted that the site selected for the accommodation facility aligned with its preferences and gave in principle support for the proposed site and accommodation facility.

Table 3.2 Summary of stakeholder engagement

Stakeholder group	Engagement method	Key outcomes
Warrumbungle Shire Council	Video conference	A meeting was held between Warrumbungle Shire Council and ACEN representatives on 27 February 2023, to discuss the VPA, accommodation issues and other issues raised in Council's submissions. This submissions report (refer to Section 4.12) and the amendment report address these issues. A further meeting was held between Warrumbungle Shire Council and ACEN representatives on 10 July 2023 to provide a project update and to inform council of the key commercial terms of a VPA with Mid-Western Regional Council. As discussed at this meeting, ACEN understands contributions of the VPA will be distributed between Mid-Western Regional Council and Warrumbungle Shire Council to reflect the degree to which these communities will be impacted by the Birriwa Solar and BESS project, and that this distribution will be agreed between the Mayors and General Managers of the councils. The amendment report discusses in detail the requirements of Warrumbungle Shire Council regarding to the accommodation facility. The key insights are as follows: • Council raised that the impacts on townships within the Warrumbungle Shire should be accounted for in the social impact assessment and planning agreement for the project, particularly in relation to the accommodation facility. • Council suggested that the accommodation facility should be located near townships to realise economic benefits. • The accommodation facility should feature underground utilities (water, gas, electricity and telecommunications networks) that can be connected to future permanent accommodation developments. • Interested in understanding how the accommodation facility can involve local businesses without adversely impacting the local community. • Would like ACEN to consider how legacy options can benefit communities within the Warrumbungle Shire LGA.
NSW Department of Communities and Justice	Video conference: 6 February 2023	ACEN met with NSW Department of Communities and Justice where the following was discussed: • Efforts to reduce demand on hotels and motels increases availability for crisis accommodation. • At the time of consultation, regional NSW has 0.1% average vacancy rate in rentals across the region. Wait lists for Department of Communities and Justice housing have doubled, with roughly 900 people needing housing assistance in the next 3 to 6 months.
RFS	Meeting on 19 July 2023	A meeting was held with NSW RFS on 19 July 2023 where the following was discussed: • The risk associated with REZ infrastructure development and cumulative impacts, such as the increase in ignition sources. • Opportunities to increase firefighting capacity for increased bushfire protection.

Table 3.2 Summary of stakeholder engagement

Stakeholder group	Engagement method	Key outcomes
Crown Lands	Discussion between ACEN and Crown Lands to obtain landowner consent on 17 August 2023.	The NSW *Crown Lands Act 1989* provides for the administration and management of Crown land in the eastern and central divisions of NSW. Crown land may not be occupied, used, sold, leased, dedicated, reserved, or otherwise dealt with unless authorised by this Act. Crown Land road parcels have been identified within the accommodation facility development footprint. Similar to the solar and battery project and EIS, Crown roads within the accommodation facility development footprint will require closing or an application for tenure, which will be undertaken in consultation with NSW Crown Lands in parallel with the assessment process for the project.

3.3 Further technical assessments and investigations

In response to submissions received from government agencies, further assessment of the impacts of the project including biodiversity, traffic and heritage were undertaken to address the following issues discussed below.

Additional technical assessments to inform the amendment report (EMM 2023b) were prepared. Additional aspects investigated included: visual amenity, Aboriginal heritage, historic heritage, noise and vibration, soils, erosion and agriculture, social and bushfire.

3.3.1 Biodiversity Development Assessment Report

To address matters raised by BCS, the Biodiversity Development Assessment Report (BDAR) has been updated. The updated BDAR is included in Appendix F.1 of the amendment report (EMM 2023a). Updates to the BDAR include:

- Assessment of the impacts of the proposed accommodation facility (i.e. amended project).
- Deployment of V1.2 benchmarks into the BAM-C (31/1/23) has reduced overall credit requirements for the project. Overall credits have been reduced by 20 (refer to Section ES9 and Table 8.10).
- Three separate biodiversity assessment method calculator (BAM-C) cases, which align with each of the proposed credit retirement stages (the solar and BESS development footprint, road upgrade corridor and accommodation facility development footprint), have been submitted to allow for the retirement of credits for each stage independently. Subsequently, tables within the BDAR have been updated to separate the different vegetation zones into the proposed credit retirement stages (refer to Table 4.5, Table 5.9, Table 6.10, Table 6.11, Table 6.12, Table 6.13, Table 6.14, Table 6.15, Section 6.7).
- Update of Table 4.8 to reflect survey effort within the exotic vegetation and provide further description of conditions (including addition of Photograph 4.3 and 4.4 to provide further description of condition of exotic grassland).
- Minor updates to Table 5.2 to reflect changes to habitat constraints that have occurred in the BAM-C for a small number of species (Regent Honeyeater, Gang-gang Cockatoo, Swift Parrot).
- Update to text in Section 5.3.3 to justify targeted flora survey and methods.
- Update to text in Section 5.3.4 on targeted flora survey results regarding reference sites (including Photograph 5.3 and 5.4).

Apart from the small credit reduction due to the deployment of the V1.2 benchmark into the BAM-C, despite the revisions, the findings of the BDAR remain unchanged to that presented in the EIS. Further detail on the updated BDAR and responses to specific matters raised by BCS on the project is provided in Section 4.6.

3.3.2 Traffic and transport

To address matters raised by TfNSW, the following additional investigations were undertaken:

- A scaled strategic design of the proposed access road intersection has been provided and included in Appendix E.
- A desktop over size over mass (OSOM) assessment report has been prepared for the delivery of infrastructure to the site in response to a TfNSW comment (refer to Section 4.10.3 of this report) and is presented in Appendix D of this report.
- Responses to specific matters raised by TfNSW on the project is provided in Section 4.10.

3.3.3 Heritage

To address matters raised by Heritage NSW, the following were undertaken:

- A revised Aboriginal Cultural Heritage Assessment Report (ACHAR) is provided in Appendix B to address specific matters raised by Heritage NSW on the project (Section 4.4).
- Responses to specific matters raised by Heritage NSW on the project is provided in Section 4.4.

Despite the additional assessment undertaken, the findings of the ACHAR remain unchanged to that presented in the EIS.

4 Response to agency and council submissions

4.1 Introduction

A submissions register is provided in Appendix A, which summarises all submissions received from government agencies, as well as the public and other organisations.

As noted in Section 2.1, 14 government agencies provided advice on the project, and four submissions were also raised by council and special interest groups (as categorised in Section 2.1, including: Uarbry Tongy Lane Alliance, Save our Surrounding, Warrumbungle Shire Council, and Mid-Western Regional Council).

Each of the relevant matters raised by the agencies and council and special interest groups listed above have been addressed in the sections below. The submissions received from these agencies and council and special interest groups that required no further consideration are outlined in Table 4.1.

Table 4.1 No further response required

Agency	Submission	Response
Australian Rail Track Corporation (ARTC)	ARTC has no objections to the proposed development. ARTC noted that DPE should consider the State Environmental Planning Policy (SEPP) (Infrastructure) 2007 and *Development Near Rail Corridors and Busy Roads – Interim Guideline*, when determining the development application.	ARTC's submission did not contain any matters for further consideration in this report. It is noted that both the State Environmental Planning Policy (SEPP) (Infrastructure) 2007 and *Development Near Rail Corridors and Busy Roads – Interim Guideline*, have been considered in the EIS.
Sliding Spring Observatory (SSO)	SSO has no objections to the project. Sliding Spring Observatory noted although the EIS did not appear to include a detailed lighting plan (the number of luminaires, and the amount of light they emit), Appendix G of the EIS outlined the measures that will be implemented during the project to minimise upward light spill, using as a guidance the Dark Sky Planning Guideline. The impact on the night-sky brightness above SSO from the project is expected to be negligible, so the Observatory has no objections to the project.	Sliding Spring Observatory's submission requires ongoing consideration of the impact of any proposed lighting and light spill to be minimised to achieve compliance with the Dark Sky Planning Guideline.
DPE – Crown Lands	Crown Lands noted that it has no further comments at this time.	Crown Land's submission did not contain any matter for further consideration in this report.
Department of Regional NSW – Mining, Exploration and Geoscience (MEG) – Geological Survey of NSW (GSNSW)	MEG-GSNSW noted it has no comments or issues to raise in relation to resource sterilisation and the proposed project.	MEG-GSNSWs submission did not contain any matter for further consideration in this report.
Transgrid	Transgrid provided a response to the EIS, noting that their Environmental Assessments team were yet to provide any advice on the project. The response confirmed the project is not a customer project, and the customer will need to engage Transgrid via a Connection Processes Agreement to facilitate a connection to Transgrid's network and will need to include all new connection assets as part of its approval, however, no further comments were made until the project becomes a *customer project*.	Transgrid's submission did not contain any matters for further consideration in this report.

Comments from the other government agencies are summarised in the sub-sections below, with each respective comment followed directly with a response.

4.2 Department of Primary Industries – Agriculture

DPI Agriculture consider there to be an outstanding issue with the EIS in relation to land management of the site during operations.

It is stated that sheep grazing at about 25% of current stocking for groundcover management is proposed. However, there are no specific details on the reinstatement of vegetation post construction or how the site will be managed because of seasonal conditions etc. agriculturally.

To overcome this the following condition is suggested: Establish and maintain groundcover at a minimum of 70% to prevent soil erosion by the development of a groundcover management plan. This will include detail on final construction reinstatement of land and undertake appropriate vegetation establishment and management that achieves from current and potential impact of the proposal on the site as per the *Meat and Livestock Guide 2.02 – Assessing Groundcover*.

DPI Agriculture considered that the EIS addressed the requirements related to land use, soils and erosion assessment, including the agricultural productivity aspect and the impact on neighbouring lands.

ACEN acknowledges the Department of Primary Industries – Agriculture's suggestions.

Prior to the commencement of construction, a soil and water management plan (SWMP) will be prepared for the project in accordance with industry standards including the guideline *Managing Urban Stormwater: Soils and Construction* (Landcom 2004). The SWMP will be implemented prior to and during construction and operation of the project and will describe the various management strategies to minimise erosion and sedimentation impacts, which will in turn assist in maintaining vegetation cover across the project site. As suggested by DPI – Agriculture, the SWMP will include measures to ensure an adequate groundcover is maintained across the project site to support sheep grazing, as per the guidance provided in the guideline *Meat and Livestock Guide 2.02 – Assessing Groundcover.*

At the end of the project design life, the site will be rehabilitated to a condition as near as practicable to the condition that existed prior to construction of the project and in consultation with the landowner. Species for rehabilitation will include cover crops, legumes and pasture species as agreed with the landowner.

The above was addressed in the land resources and the water resources chapters of the EIS, specifically Sections 6.8.4 and 6.9.4, and Chapter 7 of the *Land Use, Soils and Erosion Assessment* (EMM 2022b, attached as Appendix L to the EIS).

4.3 Department of Primary Industries – Fisheries

DPI Fisheries reviewed the EIS and provided recommendations on fish passage and riparian buffer zones. DPI Fisheries noted:

The design of new or upgraded bridges, culverts, and waterways crossings should be in accordance with the document *Why do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings* (NSW Fisheries 2003) and the *Policy and Guidelines for Fish Habitat Conservation and Management* (Update 2013). Consideration should also be given to the detailed design of any scour protection below watercourse crossing structures to ensure that fish passage is not impeded.

DPI Fisheries policy advocates the use of terrestrial buffer zones as per the *Policy and Guidelines for Fish Habitat Conservation and Management* (Update 2013) available on the Department's website, which states that "NSW DPI will generally require riparian buffer zones to be established and maintained for developments or activities in or adjacent to TYPE 1 or 2 habitats or CLASS 1-3 waterways." Where disturbance is inevitable, environmental management plans should be prepared to minimise the extent of the disturbance footprints and re-establish riparian and aquatic habitat features.

In line with the DPI Fisheries request, ACEN included the following commitment in the EIS (refer to Section 3.3.1iii, Section 3.3.2i, Section 7.6.1 and Table 4.1 of the EIS):

> All waterway crossings will comply with the *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI 2003) and Guidelines for Watercourse Crossings on Waterfront Land (DPI 2012).

As stated in the EIS, the project will require works within waterfront land, including upgrades of existing road crossings and/or establishing new crossings over watercourses within the study area. These works will be undertaken in accordance with *Policies and Guidelines on Fish-Friendly Waterway Crossings* (DPI undated), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013) and *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018).

Three local drainage lines, Huxleys Creek (second order), Browns Creek and White Creek (both third order), traverse the study area, flowing in a northernly direction into the Talbragar River. Being third order streams, a riparian buffer of 30 m either side of the drainage line has been applied to Browns Creek and White Creek in the project design.

4.4 Department of Planning and Environment – Heritage NSW

4.4.1 Aboriginal Cultural Heritage Assessment Report

Section 5 of the ACHAR chose to use data from the Dubbo area, rather than more recent archaeological data from the Mudgee and Ulan areas, which have been subject to extensive archaeological investigations. In accordance with Requirement 1a of the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) please provide a more detailed and up to date synthesis of the archaeological and ethnohistory of the region and describe and evaluate the existing predictive models for the region. Following an assessment of reports from the Ulan area, please update the predictive model and assess any update to the model to the results of the survey. If the predictive model indicates a greater potential for sub-surface deposit than currently envisioned, then additional work may be required.

Data from the Dubbo area was chosen for the Aboriginal Cultural Heritage Assessment Report (ACHAR) prepared for the project as the flat, plain landforms present within the project study area are more representative of the landforms surrounding Dubbo and Dunedoo, as opposed to the more undulating landforms associated with sandstone escarpments surrounding Mudgee and Ulan. Nonetheless, additional assessments from the Mudgee and Ulan areas have been included in Chapter 5 of the revised ACHAR (provided in Appendix B of this report).

The updated data in Chapter 5 has been incorporated into the predictive modelling in Section 5.5 of the revised ACHAR and used to analyse the results of the survey in Sections 6.6 and 6.8.

Following a re-evaluation of the predictive modelling, OzArk maintains that test excavation is not required within the project study area based on the results of the survey. Further reasoning for this is outlined in Section 6.6 of the ACHAR (Appendix B).

One of the project's Registered Aboriginal Parties (RAPs) requested that additional survey of the project area be conducted prior to construction activities commencing owing to low visibility during initial surveys. In response, the ACHAR outlined that additional survey is not required as the predictive model anticipates that much of the project area has low potential for Aboriginal objects. This response may require adjustment based on the outcomes of the re-evaluation of the predictive model.

Consideration of this comment has been made following a re-evaluation of the predictive modelling. However, OzArk maintains that test excavation is not required within the project study area based on the results of the survey. Further reasoning for this is outlined in Section 6.6 of the ACHAR (Appendix B).

Heritage NSW notes that the Aboriginal Heritage Information Management System (AHIMS) search is greater than 12 months old at the time of submission. Heritage NSW requires, as per Requirement 1b of the Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010), that AHIMS searches be less than 12 months old.

The results of the AHMIS search presented in the EIS identified 86 sites within the search area. An updated AHIMS search was completed on 8 January 2023 over the same area as the search completed for the EIS on 1 September 2021. This search results returned 94 sites. The additional eight sites are all those recorded as part of the assessment for the project. Therefore, no additional sites were identified by the updated AHIMS search than those discussed in the EIS.

The results of the 8 January 2023 AHIMS search are presented in Section 5.3.1 and Appendix 3 of the updated ACHAR (refer to Appendix B of this report).

Section 6.6 of the ACHAR outlines that there is limited potential for in situ subsurface archaeological deposit owing to disturbances caused by farming activities. However, there are extensive number of cases where such disturbances have not removed the potential for in situ archaeological deposit. The *Birriwa Solar and Battery project: Land use, Soils and Erosion Assessment*, dated July 2022, notes that within the project area A horizon soils present to varying depths (≥50 cm). The identification of surface artefacts across the project area with very low surface visibility, coupled with varying depths of A horizon soils indicate that there may be greater potential for further archaeological material than identified in the ACHAR. Please provide greater explication on the potential archaeological deposit (PAD) across the project area and along Brown and White Creeks, and justification on why test excavations should not occur prior to construction across the project area. If adequate justification is not provided, Heritage NSW recommends that test excavations occur prior to any construction impacts in the project area.

Cultivation redistributes artefacts both horizontally and vertically within the soil profile and ultimately destroys the integrity of artefact assemblages within the top 20 cm to 25 cm of the soil profile; and can move artefacts in excess of 8 m per season of cultivation (as discussed in Section 4.2 of the ACHAR). As such, deposits within the top 25 cm of the soil profile within the project study area have no integrity. Soil deposits across the project study area have potential to be greater than 25 cm, and this was evidenced near White Creek OS-1 (see site description in Section 6.4 of the ACHAR). However, it is considered unlikely that deposits present at greater depths will have conservation value given the lack of differentiation across the landforms; areas deemed unsuitable for occupation (i.e. poorly draining, low-lying areas or sloping landforms) and the lack of tangible evidence within areas of exposure and erosion along the creek lines.

The ACHAR recommends that an Aboriginal Cultural Heritage Management Plan (ACHMP) be developed and implemented for the project. Heritage NSW recommends the ACHMP should be included in the Conditions of Approval and that an ACHMP be created and approved by Department of Planning and Environment prior to any development activities occurring within the project area.

As stated in the ACHAR, an ACHMP will be prepared and implemented for the project. Dot point 1 in Chapter 10 of the ACHAR has been amended to state that the ACHMP must be approved by the DPE prior to construction activities occurring within the project development footprint.

The ACHAR and EIS must take into consideration secondary impacts (e.g. road grading, road widening, public road upgrades, compaction, erosion) to areas of PAD, artefact sites, and scarred trees within and adjacent to the project area. While the ACHAR notes that direct impacts to all bar one site will be avoided, long-term conservation options must be taken into account and included in the Management and Mitigation options. Avoidance of ACH does not denote its long-term conservation and protection. Included in the conservation measures should be details of the protection measures put in place for Barneys Reef Road ST-1.

As outlined in Section 1.3 of the ACHAR and Section 3.1 of the EIS, road grading, road widening and public road upgrades are proposed activities that will be undertaken for the project and therefore impacts associated with these activities have been considered in the ACHAR with regards to the recorded Aboriginal sites. None of the Aboriginal sites will be impacted by these activities.

To ensure the long-term conservation and protection of Aboriginal sites, Section 9.2.3 of the ACHAR (refer to Appendix B of this report) has been updated to include a commitment to permanent fencing of stone artefact sites (isolated finds, artefact scatters and PADs) to ensure they are not inadvertently harmed during the operation of the project.

Mitigation measures for potential erosion and compaction impacts associated with the construction and operation of the project have been assessed in the *Birriwa Solar and Battery project Land Use, Soils and Erosion Assessment* (Appendix L of the EIS) prepared by EMM (2022b). Following determination, an SWMP will be prepared which will include management measures to cover erosion and sediment control; soil preservation; dispersive subsoils; any cut and fill activities and drainage and landform design. These management measures, in combination with permanent fencing, will ensure conservation of Aboriginal sites during the construction and operation of the project.

Permanent fencing around Barneys Reef Road ST-1 is not recommended as it is located along a public road and fencing may draw unwanted attention. The site is registered on the AHIMS and therefore it will be taken into consideration during any additional future upgrades to Barneys Reef Road that could be undertaken by Mid-Western Regional Council.

If there is potential for the PADs to be impacted and/or extend further into the construction impact area, then Heritage NSW recommends test excavations to identify the nature, extent, and significance of any subsurface deposit. This will ensure that further impacts can be avoided, and the site adequately conserved.

As outlined in Sections 6.4 and 6.6 of the ACHAR, one area of PAD was identified during the survey. This PAD is associated with White Creek OS-1.

As noted in Section 8.1.2 of the ACHAR, ACEN designed the development (impact) footprint of the solar panels to avoid White Creek OS-1 (shown in Figure 6.9 of the EIS), so that this site would not be harmed by the project. As such, test excavation is not warranted and has not been undertaken.

Please clarify whether Mangarlowe IF-1 will be subject to direct or indirect impacts through the construction of the BESS and its connection point.

Mangarlowe IF-1 will not be subject to either direct or indirect impacts associated with the construction of the BESS or its connection point.

As noted in Section 9.2.3 of the ACHAR and Section 6.5.6 of the EIS, the site will be protected during the construction of the project through the use of high-visibility temporary fencing. Further, the location of the site will be shown on all appropriate plans.

Further explication is required on the determination of Barneys Reef Road ST-1 (scarred tree) as of low significance. Heritage NSW queries this determination owing to the rarity of such object across the region, its presence in largely cleared area, and as it is a non-renewable and dwindling aboriginal cultural heritage resource.

As per Requirement 23 of *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010) the recording of the site must be consistent with Aboriginal scarred trees in New South Wales, a field manual (DEC and Andrew Long 2005). As such, please provide a sketch of the tree and scar that includes the location and shape of scar, location of features (e.g. tool marks), and overall condition of the tree and scar.

The re-evaluation maintains that Barneys Reef Road ST-1 has low significance due to a lack of unique features such as tool marks and lack of associated archaeological deposits which means that the site is unlikely to greatly contribute to knowledge of past Aboriginal activities or settlement distribution in the region. Further, it is not a rare site type in the surrounding region with 35 scarred trees known to be recorded within 25 km of the project study area.

A sketch of Barneys Reef Road ST-1 has been added as Figure 6.16 to Section 6.4 of the updated ACHAR (refer to Appendix B of this report). The site description has been updated to include the condition of the tree and scar and note the absence of features such as tool marks.

The scientific value of Barneys Reef Road ST-1 has been re-evaluated in Section 7.2 of the updated ACHAR (refer to Appendix B of this report).

4.4.2 Construction

Please outline the proposed location of the temporary construction compound and operational infrastructure, including details of the proposed ground disturbance impacts associated with the infrastructure.

As described in the EIS (Section 3.3.1.v, Section 3.4.1.ii, and shown in Figure 1.3 of the EIS), a temporary construction compound will be established in a fenced-off area within the development footprint including:

- a project office
- containers for storage
- workshops
- parking areas
- workforce amenities
- temporary laydown areas.

The proposed location of the temporary construction compound is shown on Figure 3.1 in the EIS, which has been reproduced in this report as Figure 1.2. The area used for the construction compound within the development footprint will be revegetated or have PV modules and associated infrastructure installed once it is no longer required.

A temporary laydown area for the road upgrade is also proposed on an area previously disturbed at the entrance of Barneys Reef Road, off the Castlereagh Highway. The final location for this temporary laydown area, indicatively shown on Figure 1.2, will be defined in consultation with Warrumbungle Shire Council and Mid-Western Regional Council.

As outlined in the EIS (Section 3.3.1.iv) and shown in Figure 1.2 of this report, an operational infrastructure area will be constructed at one of two location options within the development footprint and will include the BESS, substation and supporting infrastructure.

Section 3.4.1 of the EIS outlines staging and details of construction, including site preparation and earthwork activities. Earthworks will be limited to the locations requiring resurfacing activities for temporary construction facilities (including laydown areas, construction compounds and carparking areas) and permanent operational infrastructure such as the substation, BESS and ancillary infrastructure. Resurfacing activities includes removal of topsoil, levelling of the site and vegetation clearing. A small level pad area may need to be prepared for the solar power conditioning units (PCUs) depending on which specific solution is chosen in detailed design.

Minor earthworks will also be required to prepare the development footprint for the installation of the rows of PV modules including some grading or levelling including "cutting and filling" where required. The need for heavy earthworks and compaction is expected to be low due to the flat topography of the development footprint and will be minimised as much as practicable. Farm dams would be de-watered and filled in as assessed in this EIS.

The extent of excavations and volume of fill required for the project will depend on geotechnical conditions and the final locations for infrastructure and will be determined during detailed design of the project.

As outlined in Section 1.6 of the EIS, the impact footprint associated with the project includes the development footprint and the road upgrade corridor. The impact footprint is the maximum extent of ground disturbing work, comprising approximately 1,159 ha of land, associated with construction and operation of the project.

Please clarify the extent to which underground cabling will be used and the extent of ground disturbance impacts associated with its implementation.

As described in Section 3.3.1.iii of the EIS, small corridors for medium voltage (MV) cabling may be required between land parcels in the study area. Disturbance associated with these cabling corridors will be within the development footprint or the construction footprint of public road crossings (Figure 1.2). The exact alignments will be determined during detailed design.

As outlined in Section 3.4.3 of the EIS, any underground cabling below 600 mm will remain in-situ following project decommissioning unless otherwise agreed with the landholders.

4.4.3 Creek crossings

Please clarify the nature of the creek crossings that will be implemented for the lifetime of the project and whether these crossing have the potential to impacts subsurface archaeological material associated with the watercourses.

Creek crossings are required for the provision of access to transport infrastructure across the project. The development footprint provides appropriate setbacks from all third order streams. project refinements undertaken during the preparation of the EIS further reduced the number of creek crossings required as part of the project's internal access track network.

Figure 1.2 of this report provides an insert of a typical creek crossing.

The design and construction of waterway tracks and cable crossings and all internal tracks crossing watercourses within the development footprint will be in accordance with the *Controlled Activities – Guidelines for riparian corridors on waterfront land* (DPE 2022b), *Controlled activities – Guidelines for watercourse crossings on waterfront land* (DPE 2022c) and *Guidelines for instream works on waterfront land* (DPE 2022d).

As discussed in Section 6.6 of the ACHAR, the assessment for the project examined the archaeological potential of landforms across the project study area, particularly the landforms along the watercourses. The locations of the creek crossings are considered to have low archaeological potential for several reasons, including high levels of disturbance (both man-made and natural); lack of differentiation across the landforms; and lack of tangible evidence within areas of exposure and erosion along the creek lines.

4.5 Department of Planning and Environment – Water NSW

4.5.1 Setbacks from third order creeks

DPE Water reviewed the EIS and provided recommendations on setback requirements and post approval plans.

In particular DPE required additional information to confirm that the tributary of White Creek on Lot 30 DP750755 includes a 30 m buffer, noting this setback should be provided in accordance with the Guidelines for Controlled activities on Waterfront Land – Riparian Corridors.

In accordance with the *Controlled Activities – Guidelines for riparian corridors on waterfront land* (DPE 2022b), a 30 m buffer from each edge of the creek channel for mapped third order watercourses has been included in the project design, and will be maintained to minimise potential impacts on downstream water quality and erosion.

It can be confirmed a 30 m buffer has been included for White Creek. Figure 1.2 of this report provides clarification and includes an inset of a zoomed view of the buffer surrounding White Creek.

DPE Water recommended that prior to the determination of the project ACEN ensure a setback has been provided for all third order watercourses within the site in accordance with the *Guidelines for Controlled Activities on Waterfront Land*. DPE Water also recommended post approval of the project, ACEN prepare a Soil and Water Management Plan and an Erosion and Sediment Control Plan in accordance with industry standards including the guideline: *Managing Urban Stormwater: Soils and Construction* (Landcom 2004).

A 30 m buffer from each edge of the creek channel for mapped third order watercourses has been included in the project design, as stated in the response above.

Further, as outlined in the land resources and the water resources chapters of the EIS, specifically Sections 6.8.4 and 6.9.4, prior to the commencement of construction a SWMP will be prepared for the project in accordance with industry standards including the guideline *Managing Urban Stormwater: Soils and Construction* (Landcom 2004). The SWMP will be implemented prior to and during construction and operation of the project.

The SWMP will include management measures to cover, for example:

- erosion and sediment control
- soil preservation
- dispersive subsoils
- any cut and fill activities
- drainage and landform design.

The SWMP will outline mitigation measures to be implemented during construction and operation of the project. Mitigation measures may consist of staged construction, construction outside seasons of heavy rainfall and erosion and sediment control (ESC) measures such as sediment fences and sediment basins. The SWMP will also describe ESC measures to minimise the risk of erosion from unsealed roads in the study area. Mitigation options may include rumble pads, sediment fencing and sediment basins.

4.6 Department of Planning and Environment – Biodiversity, Conservation and Science Directorate

4.6.1 Biodiversity Development Assessment Report

Clarify that all development components, which will result in loss of biodiversity values, have been included within the development footprint and are reflected in the BDAR, including asset protection zones and firefighting access requirements.

The 'subject land' within the BDAR is defined as the area subject to all proposed direct impacts (refer Table 1.1 of BDAR). All development components, including asset protection zones and firefighting access have been included within the subject land.

Justify the reasoning behind excluding lower quality habitat within the site as potential habitat for disturbance resilient threatened flora species. Alternatively, conduct further targeted survey within unsurveyed habitat or obtain an expert report.

Further justification has been provided in the updated BDAR (Appendix F.1 of the amendment report), with a brief summary also provided below. Threatened flora survey methods are discussed in Section 5.3.3 and targeted flora survey results in Section 5.3.4 of the updated BDAR. Figures 4.1 and 5.1 of the BDAR have also been updated to further show threatened flora survey effort.

The flora surveys were focused in areas of high condition plant community type (PCT) 80 (Inland Grey Box Woodland in the Riverina) and PCT 281 (White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derive Native Grassland), where native species richness was typically high. In addition, surveys were also conducted along both road verges of Birriwa Bus Route South and Barneys Reef Road (refer to Figure 4.1 and Figure 5.1 of the BDAR). This included several sections now excluded from the project following refinements. Road verges were selected for survey as they were of higher habitat quality than the adjacent pastures and cropped areas. While the road verges remain highly disturbed and dominated by exotic species, there were patches of native grasses and forbs. The verges are also fenced therefore less heavily grazed than the pastures and not subjected to regular tilling/ploughing and improvement by fertiliser. As such, these areas have the potential to act as refuges for threatened flora and considered as having potential habitat to support disturbance tolerant species such as Bluegrass (*Dichanthium setosum*).

Targeted flora surveys were also conducted in an area of derived native grassland, between Barneys Reef Road and Browns Creek (refer to transect shown in the south-east of Figure 4.1 of the BDAR). These areas were selected based on their higher native component than other pasture areas, owing to its proximity to woodland and less agricultural management, with Browns Creek acting as a natural (partial) barrier to livestock and management. This area was subsequently avoided during the project refinement and avoidance process.

The aim of selecting high condition and moderately disturbed habitats was to maximise the chances of detecting threatened flora. If any threatened species were recorded, targeted surveys would be expanded (including into lower quality habitat) to determine the extent of the population. Targeted surveys were not conducted on areas of exotic grassland or areas of PCT 80 Pasture or PCT 281 Pasture. These areas had a low native species diversity, dominated by grazing tolerant grasses and sown species. Agricultural practices included tilling/ploughing, improvement with fertiliser, hay making and livestock grazing. This has altered the original PCT irrevocably and are considered unsuitable habitat for threatened flora species, including those disturbance tolerant species, especially given that no threatened species were recorded in higher condition habitats (refer to Section 5.3.1 of the BDAR). There are also no known populations of threatened flora species adjacent to the study area, reducing the chance of local dispersal into the study area.

The BDAR should describe and justify how non-native vegetation has been determined in the subject site.

Further justification regarding the mapping of non-native vegetation is provided in Section 4.3.2 of the updated BDAR (Appendix F.1 of the amendment report). Exotic vegetation is described in Table 4.8 of the updated BDAR, with additional description of the survey effort and condition of the non-native vegetation.

In summary, a spectrum of grassland occurs within the study area, ranging from almost entirely exotic to areas where there is a mixture of exotic and native species (albeit at a low diversity). Where a mixture of native and exotic species occurred, these were assigned the most likely PCT and assigned to 'pasture'. Exotic grassland, cropping and areas of exotic trees refer specifically to the areas which are clearly dominated by exotic species. Where the dominant species were exotic, the vegetation zone was mapped within the exotic grassland (lacking a canopy stratum) or exotic trees vegetation zone. Two additional plots, and rapid vegetation assessments (RVAs) were collected in June and July of 2023 to provide additional detail on the areas mapped as 'exotic vegetation'.

4.6.2 Species credits

When determining credit staging for the project, either:

a) submit two separate BAM-C cases which align with each of the proposed credit retirement stages, or

b) split the vegetation zones into separate vegetation zones i.e., PCT 281_Pasture_Stage 1 and PCT_281_Pasture_Stage 2.

If approved, the consent for the project should include a condition specifying the plant community types, zone and biodiversity credits to be retired for each stage of the development.

Three separate BAM-C cases have been created as per the proposed staged development:

- Stage 1: road upgrade corridor
- Stage 2: solar and BESS development footprint
- Stage 3: accommodation facility development footprint.

The BDAR has been updated to reflect the three BAM-C cases (Appendix F.1 of the amendment report).

Each BAM-C case now aligns with the proposed credit retirement stage to allow for the retirement of credits for each stage independently.

Three credit reports, one for the road corridor (stage 1), one for the solar and BESS development footprint (stage 2), and one for the accommodation facility development footprint (stage 3) are provided in Appendix 10 of the updated BDAR (refer to Appendix F.1 of the amendment report).

4.6.3 Controlled action under the EPBC Act

Note that additional information may be required if the project is determined to be a controlled action under the EPBC Act, and refer to the guidance document provided in Attachment C.

It is understood that additional information may be required if the project is determined to be a controlled action under the EPBC Act.

As outlined in the BDAR, assessments in accordance with the *Matters of National Environmental Significance – Significant Impact Guidelines 1.1* (DoE 2013) concluded that the project is unlikely to result in a significant impact on the listed Matters of National Environmental Significance (MNES).

4.7 Department of Planning and Environment – Hazards

4.7.1 BESS energy storage capacity

In section ES1 of the EIS the BESS is described as a centralised BESS with energy discharge capacity of 600 MW and energy storage capacity of 1,200 MWh.

However, in Section 1.1 of the PHA the centralised BESS is described as having an energy discharge capacity of 1000 MW and energy storage capacity of 1,000 MWh. Please clarify the energy discharge and capacity for the centralised BESS for the proposed development.

It is confirmed that the project will include a centralised BESS of up to 600 MW for a 2 hour duration (1,200 MWh).

In Section 6.2 [of the *Preliminary Hazard Analysis* (Sherpa Consulting 2022) prepared for the project] the distances between BESS subunits (container, enclosure, rack) are presented. The minimum distances are described as being sourced from "*Original Equipment Manufacturers (OEM) Specifications".* The Department seeks further justification for the basis for these minimum distances, given the information below.

The Department does recognise UL 9540A testing to support the evaluation of separation distances between BESS subunits. UL 9540A testing is provided for the unique battery and BESS subunit, and its findings can only be used for that specific BESS subunit.

The Department highlights that where separation distances are based on a UL9540A test report, it is expected that the UL 9540A test report that is specific for the chosen design will be supplied during the post approval process.

The Department also appreciates that UL9540A test results may not be available for public exhibition due to commercial and privacy agreements. As such the Applicant may use the commercial in confidence UL9540A test results as the basis of modelling to determine separation distances between BESS subunits (for example a reduced heat release rate in comparison to a generic BESS subunit) with the clear understanding that supporting evidence (UL9540A test results) would be provided at post approval stage.

As such, please provide further clarification on the basis for the separation distances between BESS subunits to mitigate fire propagation.

As noted in Table 4.4 (hazard register) of the preliminary hazard analysis (PHA, refer to Appendix J of the EIS), the BESS that will be installed will be tested for compliance with relevant international and/or Australian standards and guidelines.

As part of discussions between DPE Hazards and ACEN for a previous project (New England Solar), it was noted that the UL 9540A test will be battery specific for the make and model and will be performed in accordance with the intended installation condition and/or configuration, including clearances or spacing as per manufacturer specification.

Compliance to UL 9540A has now become the minimum requirement in the industry and various BESS suppliers have model specific test results as part of their due diligence. The clearances shown in Table 6.1 of the PHA (EIS Appendix J) and demonstrated in Figure 6.1, Figure 6.2 and Figure 6.3 of the PHA were determined from OEM specifications from multiple battery manufacturers active in the utility-scale BESS market in Australia. It was assumed that the spacing/clearances from surveyed manufacturers (included in Table 6.1 of the PHA) comply with UL 9540A. The exact spacing is not able to be determined until the detailed design stage when the BESS manufacturer and specific model is selected, and their specific installation and spacing requirements are known.

Following determination of the project, once detailed design is completed and the BESS manufacturer is selected, ACEN will provide the specific UL 9540A test report for the chosen design to DPE Hazards, as is noted in DPE Hazards submission.

Based on the indicative layouts shown in Figure 6.1, Figure 6.2 and Figure 6.3 of the PHA, which show the different configuration options based on the clearances outlined in Table 6.1, ACEN has demonstrated that the designated land areas can accommodate the BESS and meet the proposed increased storage capacity.

4.7.2 Preliminary Hazard Assessment

The PHA, as one of the options, examines dedicated BESS buildings to house the battery racks. The Department seeks the following information regarding these dedicated BESS buildings:

a) In Section 6.2 of the PHA the energy discharge in each building (or compartment) is 25 MW. The Department seeks further justification on the selection of 25 MW as the basis for each room.

b) Given a dedicated BESS building will have significantly larger energy storage capacity than a containerised or outdoor enclosure BESS subunit the Department seeks further information and clarification on:

   i) the evaluation of the consequences for a fire event in a dedicated BESS building and radiant heat levels that may be generated

   ii) the selection of 2-hour fire rated firewalls used to divide the BESS into 25MW compartments

   iii) with consideration of 2-hour fire rated firewalls, demonstrate the fire from an individual building will have enough separation to prevent escalation events.

The concept design for the dedicated BESS building option presented in Figure 6.3 of the PHA assumes:

- Usage of a BESS rack suitable for use in a dedicated building with similar design features and dimensions to that of the outdoor-rated rack.
- The BESS rack will be compliant with UL 9540A to minimise fire propagation between the units.
- The same number of racks (3,312) and power conversion system (PCS) skids (276) as the outdoor rack option (as indicated in Table 2.1 of the PHA).
- Each battery room will contain 96 BESS racks (arranged in 8 rows where each row comprises 12 BESS racks) with each row connected to 1 PCS skid (consistent with the outdoor rack option).
- The BESS racks will be housed in purpose-built building(s).

ACEN is exploring three configuration options for the BESS. During detailed design, selection of the configuration option, BESS make and model, and number of racks required, will be determined. Information requested by DPE Hazards in item (b) will be provided as part of detailed design once the most suitable BESS solution has been selected.

As part of discussions with DPE Hazards, it was noted that DPE Hazards would like ACEN to demonstrate that the hazards and risks associated with the dedicated BESS building and proposed controls to address these have been considered. These are provided below.

The Department acknowledges that the dedicated BESS buildings may not be fully designed at this stage. However, the Department seeks further information on the standards and specifications that will be used in implementing controls appropriate to a dedicated BESS building. The Department considers the individual BESS building as serving a similar a function as the containers that enclose the battery racks. As such, we seek information on the following:

a) Given the information provided in NFPA 855 and FM Global DS 5-33, will an automatic sprinkler system be installed as part of the dedicated BESS buildings and, if so, please provide the standard to be used for the sprinkler system design.

b) Information on any additional smoke or fire detection, and their actions, to be installed in the building or compartment in addition to the detection described in Table 2.1 of the PHA.

c) Deflagration venting of battery electrolytes and explosive atmospheres are identified in Table 4.4 of the PHA as potential hazards. As such, the Departments seeks further information on the deflagration venting protection proposed for dedicated BESS buildings.

d) Please supply information regarding the cooling and/or HVAC systems for the dedicated BESS buildings and details of any chemicals to be used in these systems.

The Department may also require further information based on responses to the queries above.

Further context on the dedicated BESS building option is provided above.

The proposed controls considered for the dedicated BESS building, including the standards of reference, are provided below. These are in line with the BESS design considerations from Entura, which informed the content of the PHA.

i National Fire Protection Association (NFPA) 855 Standard for the Installation of Stationary Energy Storage Systems

For a BESS installed within a room, building, or walk-in unit:

- Explosion prevention systems designed, installed, operated, maintained and tested in accordance with NFPA 69 Standard on Explosion Prevention Systems.
- Deflagration venting installed and maintained in accordance with NFPA 68 Standard on Explosion Protection by Deflagration Venting.

The above is not required where approved by local authorities based on compliance to UL 9540A test or deflagration hazard study demonstrating that the flammable gas concentrations in the room, building or walk-in unit cannot exceed 25% of the Lower Flammability Limit (LFL) where gas is likely to accumulate. However, explosion prevention controls (e.g. passive exhaust ventilation, gas detectors) will still be considered.

- Exhaust ventilation system designed to limit the maximum concentration of flammable gas to 25% LFL of the total volume of the room or enclosure or walk-in unit.
- Smoke and fire detection on areas containing BESS within the building.
- Compartmentalisation – rooms or spaces containing the BESS racks are separated from other areas of the building by fire barriers with a minimum two-hour fire resistance rating.
- Fire sprinklers (or alternative fire control and suppression system) with suppression density based on large-scale fire testing set by UL 9540A. This also includes consideration for the required fire water volume capacity as well as provision of containment system to accommodate the capacity of expected discharge for a period of 10 minutes.

- Building usage will aim to be restricted for storage and operation of the BESS and its components only, limiting the occupants in the building to only those that operate and maintain the system.
- Means of egress in accordance with local building code.

ii UL 9540A

UL 9540A applies to a BESS unit (a rack or container), that is a defined proprietary product and is typically installed outdoors. Installation of such units within a larger enclosure or purpose-built structure does not imply that that structure is UL 9540A certified, and additional requirements should be used for such purpose-built structures.

iii Australian National Code of Construction

Dedicated use building will also need to meet the requirements of the National Construction Code and regulated Australian Standards. While these do not offer specific requirements for large, dedicated use battery buildings as NFPA does, general requirements for fire rating of materials, fire detection systems and related requirements will still apply.

4.7.3 BESS design

The following is provided for information purposes. Given the knowledge developed in the past few years and concerns raised from FRNSW, fire escalation between the BESS subunits resulting in a bigger fire event is the major concern for all BESS proposals that are above 30 MW. As such, the Applicant must focus on demonstrating that the separation between BESS subunits (such as outdoor containers or racks) or the separation of individual BESS buildings are sufficient to mitigate fire escalation. Furthermore, the Applicant must demonstrate that the area available for the entire is sufficient given the separation distances between BESS subunits and/or BESS buildings. We appreciate that the proposed development has not finalised the design and that technology is rapidly developing, however, the Applicant must demonstrate the above. We are available to discuss these items with the Applicant.

ACEN appreciates the critical importance of ensuring that the separation between BESS subunits (such as outdoor containers or racks) or the separation of individual BESS buildings are sufficient to mitigate fire escalation. The PHA concluded that the proposed two BESS footprints for the project are sufficient to accommodate the proposed BESS units for all three enclosure options (i.e. containerised, outdoor rack, indoor rack within a building) and account for the required separation distances between the BESS sub-units and asset protection zones (APZs) (where required).

4.8 Fire and Rescue NSW

Fire and Rescue NSW made the following recommendations:

1. That a comprehensive Fire Safety Study (FSS) is developed. The FSS is to be developed in accordance with the requirements of Hazardous Industry Planning Advisory Paper (HIPAP) No.2 and is to meet the operational requirements of FRNSW.
2. That the development of the FSS consider the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence. The FSS should consider worst-case fire scenarios including a full BESS unit fire and demonstrate no fire propagation within the facility.
3. That the FSS be submitted, reviewed, and meet the operational requirements of FRNSW prior to any further submission being made to FRNSW; this includes: an Initial Fire Safety Report (IFSR) and / or Performance-Based Design Brief / Fire Engineering Brief Questionnaire (FEBQ).
4. That the development of a FSS be a condition of consent.
5. That a comprehensive ERP is developed for the site in accordance with HIPAP No.1.

As outlined in Section 3.6 of Appendix P to the EIS (Bushfire Assessment Report), a comprehensive FSS and an ERP will be prepared and implemented prior to and during construction and operation of the project. The ERP will be developed and operated in accordance with the requirements of Fire and Rescue NSW, including the Hazardous Industry Planning Advisory Paper (HIPAP) No.2 and the HIPAP No.1. ACEN agrees to the imposition of a relevant condition of consent requiring the development of a FSS and ERP to the satisfaction of FRNSW.

4.9 NSW Rural Fire Service

4.9.1 Emergency management and planning

A Bush Fire Emergency Management and Operations Plan must be prepared that addresses the following:

- detailed measures to prevent or mitigate fires igniting
- work that should not be carried out during total fire bans
- availability of fire-suppression equipment, access and water
- storage and maintenance of fuels and other flammable materials
- notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate
- appropriate bush fire emergency management planning.

Section 3.6 of EIS Appendix P (Bushfire Assessment Report) outlined what will be included in the ERP for the project's development. Section 3.6 of Appendix P has been reproduced below. As shown, NSW Rural Fire Service's (RFS) requirements have generally been captured in Appendix P.

The ERP should include detailed measures to prevent or mitigate fires igniting, such as:

- Hot works permits for works which may result in the ignition of fire.
- Hot works not to be carried on Total Fire Ban days, or when local authorities or the Site Manager deems weather conditions too dangerous.
- 24-hour emergency contact details including alternative telephone contact.

- Inductions for construction personnel on bushfire risk management and other fire related risks that could present at the project study area, the project bushfire contingency plan and emergency response procedures.
- Availability of fire-suppression equipment, access, and water including site infrastructure plans and site access and internal road plans.
- Identification of hazards (physical, chemical, electrical) that may impact on the firefighting operations and procedures to manage any identified hazards during firefighting.
- Management of the storage and maintenance of flammable materials and other potential fuels.
- Notification of the local NSW RFS Fire Control Centre for any works that have the potential to ignite surrounding vegetation, proposed to be carried out during a bush-fire fire danger period to ensure weather conditions are appropriate.
- Appropriate bush fire emergency management planning.
- Additional matters as agreed and required by the NSW RFS District Office.

4.9.2 Asset Protection Zones (APZ)

From the start of building works, the property around the solar arrays, battery energy storage system, operational buildings including workshop, storage facility and staff office, construction compound and storage/laydown areas must be managed as an inner protection area (IPA) for a minimum distance of 10 m in accordance with the requirements of Section 8.3.5 of *Planning for Bush Fire Protection 2019*. When establishing and maintaining an IPA the following requirements apply:

- tree canopy cover should be less than 15% at maturity
- trees at maturity should not touch or overhang the building
- lower limbs should be removed up to a height of 2 m above the ground
- tree canopies should be separated by 2 to 5 m
- preference should be given to smooth barked and evergreen trees
- large discontinuities or gaps in vegetation should be provided to slow down or break the progress of fire towards buildings
- shrubs should not be located under trees
- shrubs should not form more than 10% ground cover
- clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation
- grass should be kept mown (as a guide grass should be kept to no more than 100 mm in height)
- leaves and vegetation debris should be removed.

The requirements under Appendix 4 of the *Planning for Bush Fire Protection 2019* (PBP) will be incorporated into the Bushfire Management Plan.

ACEN acknowledges the request from RFS and the recommended minimum APZ distance. APZ specifications for solar farms are outlined in Section 8.3.5 of the PBP, which state that:

> it is recommended that a minimum 10 m APZ is formed for the structures and associated buildings/infrastructure.

ACEN has included the following commitments in the EIS (management and mitigation measure ID BUS1 and BUS2):

- a minimum 10 m wide APZ will be provided around the perimeter of project assets, including solar array and any operational buildings and storage/laydown areas as outlined within Section 8.3.5 of the PBP
- the APZ will be installed and maintained for the life of the project to the standard of an Inner Protection Area as outlined within Appendix 4 of PBP and the NSW RFS document *Standards for Asset Protection Zones*.

4.9.3 Construction

New construction to the battery energy storage system, workshop, storage facility and staff office must comply with Sections 3 and 5 (BAL 12.5) Australian Standard AS3959-2018 *Construction of buildings in bush fire-prone areas* or NASH Standard (1.7.14 updated) *National Standard Steel Framed Construction in Bushfire Areas – 2014* as appropriate and Section 7.5 of *Planning for Bush Fire Protection 2019*.

In line with the request from NSW RFS, ACEN has included the following commitments in the EIS (management and mitigation measure ID BUS4):

> All buildings (BESS, substation buildings, management and operational buildings) will provide for minimum ember protection consistent with BAL 12.5 construction standards (AS3959-2018).

4.9.4 Water supply

The provision of water must comply the following requirements of Table 7.4a of *Planning for Bush Fire Protection 2019* and the following:

- a minimum 50,000 litre minimum capacity static water supply must be provided on site
- a connection for firefighting purposes is located within an inner protection area (IPA) managed part of the site
- 65 mm Storz outlet with a ball valve is fitted to the outlet
- ball valve and pipes are adequate for water flow and are metal
- supply pipes from tank to ball valve have the same bore size to ensure flow volume
- underground tanks have an access hole of 200 mm and a hardened ground surface for truck access is supplied within 4 m to allow tankers to refill direct from the tank
- above-ground tanks are manufactured from concrete or metal
- raised tanks have their stands constructed from non-combustible material or bush fire resisting timber (see Appendix F of AS 3959)
- unobstructed access can be provided at all times
- underground tanks are clearly marked
- all exposed water pipes external to the building are metal, including any fittings
- where pumps are provided, they are a minimum 5 hp or 3 kW petrol or diesel-powered pump, and are shielded against bush fire attack; any hose and reel for firefighting connected to the pump shall be 19 mm internal diameter.

In line with the request from NSW RFS, ACEN has included the following commitments in the EIS (management and mitigation measure ID BUS5):

> 50–80 kL steel tank dedicated water storage will be strategically located in consultation with NSW RFS, to allow for permanent emergency water supply and ease of access.

The *Planning for Bushfire Protection (PBP) 2019* states that construction and operation of a solar farm should include availability of fire suppression equipment and water supply, as was noted in Section 3.4 of Appendix P (Bushfire Assessment) of the EIS.

A dedicated static water supply for bush firefighting purposes swill be provided at strategic locations with the solar farm, having consideration for essential equipment and accessibility e.g. near a main entrance near a substation/BESS area.

Fast fill options and easily accessible fill points will be provided, such as 65 mm Storz fittings for hydrant stands or direct link to tanks, with a hardstand access capable of supporting weight and turning capacity for a fully loaded fire truck (23 tonne).

These commitments will be included in the ERP in consultation with NSW RFS.

4.10 Transport for NSW

4.10.1 Road upgrade

The proposed CHR and AUL turn treatments and associated upgrade works within the road reserve of Castlereagh Highway will require TfNSW concurrence (with the Roads Authority, Warrumbungle Shire Council) under Section 138 of the *Roads Act 1993*. In addition to this, ACEN will be required to enter into a 'Works Authorisation Deed' (WAD) with TfNSW, or other suitable arrangement as agreed to by TfNSW.

Under Section 138 of the *Roads Act 1993*, a scaled strategic design of the Castlereagh Highway/Barneys Reef Road intersection, with identified channelized right turn (CHR) and auxiliary left-turn (AUL) treatments, will be prepared in consultation with TfNSW and Warrumbungle Shire Council.

If the development is approved, ACEN will enter a 'Works Authorisation Deed' (WAD) with TfNSW or other suitable arrangement as agreed by TfNSW as part of the development approval conditions and before the works are undertaken.

Appendix C to the EIS provides a concept design of the Barneys Reef Road upgrade, however this document does not include the abovementioned proposed upgrade works at the key intersection of Castlereagh Highway and Barneys Reef Road. TfNSW requires additional information regarding the proposed intersection upgrade works, of Castlereagh Highway and Barneys Reef Road, to ensure that any impacts of the works on the classified road network and associated environmental approvals are identified and addressed prior to determination.

TfNSW highlights that in determining the application under Part 4 of the EP&A Act, it is the consent authority's responsibility to consider the environmental impacts of any road works which are ancillary to the development, such as (inter alia) removal of trees, relocation of utilities, stormwater management, etc.

It is recommended that the Consent Authority request the applicant to provide a scaled strategic design of the proposed access addressing the below points for consideration, showing:

- Plans, cross sections and long sections, demonstrating the full scope of works required for any upgrade to the Castlereagh Highway and Barneys Reef Road intersection. Including but not limited to provision of:
  - The intersection upgrade including the identified CHR and AUL turn treatments, designed and constructed in accordance with the relevant Austroads Guidelines, Australian Standards and related TfNSW Supplements, with 3.5 m lane widths, 1 m wide centre line, 2 m sealed shoulders (addition to turning lanes), 1 m verge and 6:1 or flatter batters.
  - Extent of the existing and/or proposed sealed road surface along Barneys Reef Road from the intersection connection.
  - removal of trees, relocation of utilities, stormwater management, etc.
- Safe Intersection Sight Distance (SISD) requirements in accordance Austroads Guide to Road Design Part 4A with for a design speed of 110 km/h are achieved in both directions at the intersection with Castlereagh Highway.

- Swept path diagrams, demonstrating that all required design vehicles (including Over Sized Over Mass (OSOM)) will be able to safely and efficiently arrive and depart the key intersection in both directions to access the site, travelling wholly within the required travel lanes and no additional works will be required to accommodate those vehicles.
- Note: The design needs to comply with TfNSW Strategic design requirements for DAs. To assist you in preparing the designs, please refer to link: https://roads-waterways.transport.nsw.gov.au/business-industry/partners-suppliers/documents/planningprinciples/strategic-design-fact-sheet-02-2022.pdf

As requested by TfNSW, the scaled strategic design drawing of the Castlereagh Highway and Barneys Reef Road intersection has been prepared and is included in Appendix E.

An assessment of the safe intersection sight distance (SISD) was also undertaken within the EIS and is summarised in Section 5.4 of the TIA (Appendix H of the EIS).

A swept path analysis has been conducted as part of the OSOM desktop assessment (Appendix D of this report).

4.10.2 Cumulative impacts

A number of large scale/renewable developments, within close proximity to the project site, that have recently been approved or are in planning stage, have not been considered in the assessment and may have overlapping construction timeframes with the project. TfNSW request further assessment is required to demonstrate the extent of the investigations undertaken.

A cumulative impact assessment was undertaken and described in Section 6.14 of the EIS, with reference to the *Cumulative Impact Assessment Guidelines for State Significant Projects (DPE 2022e)*. As outlined in Section 6.14 of the EIS, the assessment included consideration of:

- Incremental impacts – impacts of the existing baseline condition of each relevant assessment matter.
- Combined incremental assessment – combined effect of the different impacts of the project.
- Issue-specific cumulative assessment – impacts of the project together with the impacts of other relevant future projects on specific issues with an identified area.
- Combined cumulative assessment – considering the combined effect of the different cumulative impacts of the project with other relevant future projects on key matters in identified areas.

Proposed, approved, under construction and operational renewable energy developments known at the time of EIS preparation within, and in the vicinity of, the CWO REZ are shown in Figure 2.4 of the EIS and described in Table 6.35 of the EIS, with the listed developments known within approximately 25 km of the study area. Cumulative impacts are explained further in Section 6.14.3. of the EIS and in the addendum report (EMM 2023b).

As acknowledged in Section 4.4 and Section 4.5 of the traffic impact assessment prepared for the project (Appendix H of the EIS), development in the vicinity of the project has the potential to generate cumulative traffic impacts with the project. Based on the known developments in the area at the time of writing the EIS, the proposed projects with the greatest potential to generate cumulative traffic impacts with the project are expected to be the Tallawang Solar Farm and Barneys Reef Wind Farm, which have the potential to have construction periods that overlap with the project. These two projects were included in modelling undertaken for the traffic impact assessment of the project.

These projects are expected to require increased heavy vehicle movements during construction. In particular, it is expected that heavy and light vehicle movements would use the Castlereagh Highway and the intersection between Castlereagh Highway and Barneys Reef Road, and therefore there is potential for cumulative traffic impacts at this intersection. A cumulative mid-block level scenario was completed to assess the cumulative construction traffic (refer to Section 4.5 of the Traffic Impact Assessment (TIA, EMM 2022c)), which found that the Castlereagh Highway is expected to operate at a level of service (LOS) C during the cumulative construction traffic scenario. At this LOS, the Castlereagh Highway has the potential to efficiently cater for the additional vehicular traffic generated by the project as well as construction of the Tallawang Solar Farm and Barneys Reef Wind Farm.

As noted in Section 6.14.1 of the EIS, the potential cumulative impacts are likely to occur if the peak construction periods of these projects overlap. Further consideration of each of the identified projects will be undertaken in the subsequent phases of the project as the construction timeframes for each of the projects becomes more certain.

In addition to those projects identified in the EIS, SEARs have recently been released for the Narragamba Solar Project, which is proposed approximately 2 km south-east of the accommodation facility study area. It is noted that access to the Narragamba Solar Project will be via the Golden Highway and Merotherie Road. Access to the project, including to the accommodation facility, will be via the Castlereagh Highway and not Merotherie Road. Therefore, cumulative traffic impacts with Narragamba Solar are not anticipated.

A range of mitigation measures with respect to traffic movements are proposed as part of the project, including the implementation of a construction traffic management plan (CTMP), which will incorporate adaptive management measures to ensure that potential cumulative impacts can be effectively managed and minimised as far as practical.

The cumulative impact assessment undertaken in the EIS focuses on the traffic impacts of cumulative traffic passing the key intersection, however further assessment is required to consider spatial, temporal and linked cumulative impacts, including but not limited to addressing the impacts on:

- accommodation availability
- infrastructure
- services
- worker transportation (shuttle buses)
- cumulative traffic along the identified Heavy Vehicle and OSOM transport routes.

Section 6.14.3 (assessment of cumulative impacts) of the EIS discusses cumulative impacts with respect to the following:

- employment and workforce
- housing and short-term accommodation availability
- population change
- services, amenity and infrastructure
- traffic and public safety
- services.

The following sections provide an overview of the cumulative impacts discussed in Section 6.14.3 of the EIS and particularly those listed in TfNSWs comments including accommodation availability, infrastructure, services, cumulative traffic and worker transportation.

i Accommodation availability

As noted in Section 1.3, to respond to issues raised relating to the availability of accommodation for construction workers, the project has been amended to include a temporary accommodation facility to accommodate these workers. Based on the outcomes of a site selection process considering factors such as biodiversity constraints, flooding constraints, topography, site access and proximity to the project, an area has been identified as suitable for the construction and operation of a temporary accommodation facility south-east of the project study area, as shown in Figure 4.1.

In relation to access and traffic movements, the accommodation facility will be accessed via the solar and BESS development footprint, using the primary vehicle access point on Barneys Reef Road, through to a new internal access track between the solar and BESS development footprint and the accommodation facility. An amendment report has been prepared to assess the impacts of the accommodation facility and its access from the existing project access point and internal access track, including a traffic impact assessment, considering the cumulative traffic movements with this amended aspect of the project, as well as other relevant proposed developments in the area.

Key outcomes detailed in the amendment report include:

- Travel between the solar and BESS development footprint and the accommodation facility during construction will be via a shuttle bus along the internal access track.
- It is estimated that 360 heavy vehicle movements associated with the establishment of the accommodation facility will occur over a period of time (around 3–7 months). The peak daily movements associated with the accommodation facility construction will therefore be considerably less than the peak daily movements assessed as part of the EIS (240 daily movements during peak solar and BESS construction). Therefore, no additional traffic impacts associated with the project amendment, beyond what was assessed in the EIS in relation to heavy vehicle movements, are anticipated. The estimated daily number of traffic movements during the operation of the accommodation facility (for the delivery of water and fuel, and the collection of sewage and waste) will be negligible (up to 18 movements per day) and can be accounted for in the vehicle movements assessed in the EIS.
- With the addition of the accommodation facility, the majority of the construction workforce will no longer be travelling from local accommodation during the peak construction period, and therefore the assumed number of light vehicle movements in the EIS during peak construction per day will be substantially reduced.

ii Services, amenities and infrastructure

The Social Impact Assessment (SIA) prepared for the project as part of the EIS considered the direct and indirect impacts of the project on the regional area, and in particular the possibility for population changes as a result of the project, which could lead to impacts on the use of local public amenities and services.

The SIA for the project found that given the small size of the operational workforce, the project is unlikely to make any noticeable impact on the size of the permanent population in the communities of the local area, and therefore would not impose any pressure on local public amenities and services (refer to Section 7.2.2 of the SIA).

The SIA also considered the potential impacts of population change associated with an influx of non-local hires during the construction phase of the project. A number of scenarios were considered to account for varying accommodation options for construction workers. These scenarios concluded that the population change in the Warrumbungle Shire LGA could range between 0.4% and 0.2%. Conversely, the SIA estimated a change in the Mid-Western Regional LGA of between 2.1% to 3.0%. It is not expected that this population change will significantly impact on traffic infrastructure relevant to the project, and in particular the Castlereagh Highway via which the project site will be accessed. The TIA (Appendix H of the EIS) found that given the low volumes of traffic currently using the highway, it will still be able to efficiently cater for the additional temporary construction-phase vehicular traffic generated by the project and other nearby developments.

The addition of the accommodation facility to the project further reduces the potential for impacts to infrastructure and services in the local and regional areas from the influx of construction workers. The accommodation facility will include a kitchen, dining room, licensed social area, gymnasium, recreation area, medical centre and laundry.

The provision of a medical centre and first aid station with an onsite nurse has been included in the facility design to reduce pressure on local health service providers. Provision of onsite security will also assist in reducing the likelihood of incidents and police callouts.

The addendum SIA noted that landholders identified that towns in the area are dependent on a stable population to support services and social infrastructure. There was a related desire for long-term positives from the workforce accommodation facility. If more people move to towns and live there permanently in the operational stage of the broader project, it could pave the way for more social infrastructure and permanent resources such as a new supermarket. With the amendment, ACEN has a better ability to respond to targeted infrastructure requirements and manage their relationships with service providers.

iii Traffic and public safety

The greatest potential for cumulative impacts of future projects and the project in relation to traffic are expected to be associated with construction of the Tallawang Solar Farm and Barneys Reef Wind, which have the potential to have construction periods that overlap with the project.

It is expected that heavy and light vehicle movements from the Tallawang Solar farm and Barney Reef Wind Farm would use the Castlereagh Highway, and the intersection between Castlereagh Highway and Barneys Reef Road.

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

Notwithstanding, a range of traffic related mitigation measures are proposed as part of the project, including the implementation of a CTMP, which will incorporate adaptive management measures to ensure that potential cumulative impacts can be effectively managed and minimised as far as practical.

It is understood that the potential cumulative traffic impacts of the project associated with the OSOM vehicle route and any essential road upgrades along the delivery routes will be addressed by EnergyCo. Additional details will be provided by EnergyCo prior to construction of the project.

Temporary workforce accommodation and traffic associated with workers (shuttle bus) travelling between the accommodation and the project site is further detailed in the amendment report. It is estimated that there will be approximately 13 shuttle bus trips per day (26 movements) transporting the construction workforce. With the amended project and addition of the accommodation facility, the majority of the workforce will no longer be travelling from local accommodation during the peak construction period, and therefore the assumed number of light vehicle movements during peak construction per day in the EIS will be substantially reduced from the estimated 720 light vehicle movements per day.

4.10.3 Report and assessment

Executive Summary (ES3) and Appendix A, of the EIS, identify the Castlereagh Highway and Intersection Traffic Counts which were undertaken over a limited period (three days), for only two hours in each the AM and PM periods. TfNSW note, this can only be considered as supplementary data and should not be used as the sole source of the background traffic data for which the traffic calculations, SIDRA analysis and turn warrant assessments are based on, as the collection is considered incomplete and does not demonstrate the overall traffic behaviour of that location or demonstrate where changes in trends may occur.

TfNSW's own recorded data for the Castlereagh Highway (HW18), 700 m south of the intersection with the Golden Highway (approximately 6 km north of the key intersection), demonstrates a daily traffic volume of 766 vpd which includes a much higher percentage of heavy vehicles, at 18.2% than the 12% stated throughout the TIA (in reference to peak hour traffic counts). Further assessment is required by ACEN, using reliable traffic data to inform the background traffic, heavy vehicle percentages and outputs of the traffic calculations, SIDRA analysis and turn warrant assessments. The TfNSW traffic surveys can be provided for reference, if required.

TfNSW traffic surveys were requested by EMM to address this submission. TfNSW tube count traffic survey data was subsequently received for the week starting 18 to 25 June 2021. Table 4.2 below compares the traffic count data from EMM traffic counts conducted on typical weekdays between 7 to 9 December 2021 (Tuesday to Thursday), as reported in the EIS, and the TfNSW traffic counts[1] for typical weekdays i.e. Tuesday to Thursday. The volumes listed below are two-way traffic volumes. TfNSW traffic counts data is included in Appendix C.

Table 4.2 Traffic volumes comparisons between EMM traffic counts and TfNSW traffic counts

Peak hour	EMM traffic counts	TfNSW traffic counts			
	Total	Tuesday	Wednesday	Thursday	Average volume
AM	54	42	44	58	48
PM	50	54	53	64	57

As can be seen in Table 4.2, the peak hour volumes from EMM traffic counts and the TfNSW traffic counts (average volume) have only minor difference (6 vehicles in AM peak hour and 7 vehicles in PM peak hour). These differences in hourly volumes are not significant in terms of either the intersection traffic capacity or the peak hour levels of service for any of the roads or intersections considered in the assessment.

The differences in the heavy vehicle percentages between EMM traffic counts (12%) and TfNSW traffic counts (18.2%) when applied to the peak hour volumes gives either 7 vehicles from the EMM counts (12% of 54) or 11 vehicles from the TfNSW counts (18.2% of 57). The maximum potential difference in heavy vehicles during the peak hours is 4 vehicles, which would be up to 2 heavy vehicles per hour in each direction. These differences are again very minor in terms of any overall effect on either the intersection traffic capacity or the peak hour levels of service for any of the roads or intersections considered in the assessment.

[1] TfNSW traffic count data provided to EMM via email 17 November 2022.

The traffic calculations and assessments presented in the EMM TIA report (Appendix H of the EIS) including SIDRA analysis and turn warrants assessments are based on peak hour traffic calculations. Furthermore, the calculations and assessments also include cumulative traffic scenarios from other projects with significantly higher overall peak hour traffic volumes than either the EMM or TfNSW baseline traffic counts (several hundred vehicles per hour in some cases). Hence the identified differences in baseline traffic volumes discussed above are not expected to have any material effect on the findings and conclusions of the TIA.

Overall, based on the comparison and minor peak hour traffic volumes differences of EMM and TfNSW traffic counts, the traffic assessments in the TIA are considered to be reliable and no further adjustment to these assessments is required.

Further information is required regarding the OSOM vehicles and the equipment they are proposed to transport to site (transformers, prefabricated buildings etc).

Footnote #2 at the bottom of Page 22 of the TIA, refers to Exempt OSOM vehicles being classified as Heavy Vehicles within the traffic assessment rather than OSOM vehicles. However, as the specific loads and associated vehicle types of the OSOM activities is not clarified, it is unclear what traffic impacts this reference may have. Further details are required to clarify the vehicle types and associated loads (dimensions, mass etc) this refers to, including which transport route they are proposed to take.

The overall dimensions of the OSOM vehicle convoy is expected to be up 71 m long, 4.880 m wide and 5.480 m high. The transformer is expected to weigh up to 150 tonnes (t) with the Gross Combination Mass (GCM) up to 240 t.

The origins of the OSOM and heavy vehicles for transformer and other infrastructure delivery may be from the Port of Newcastle, Port of Brisbane, or Port Botany. A desktop OSOM assessment report has been prepared for the project based on a transport route from the Port of Newcastle and is presented in Appendix D of this report. It is also understood that the potential cumulative traffic impacts associated with the REZ relating to the OSOM and heavy vehicle routes, and any essential road upgrades along the delivery routes, will be addressed by EnergyCo.

Figure 3.5 in the EIS demonstrates two potential transport routes from the ports of Botany Bay and Newcastle. Section 6.4 of the EIS indicates that majority (75%) of the Heavy Vehicles will arrive to site from the Newcastle Port and via the Golden Highway route, with the remaining (25%) proposed to travel to site from the Sydney region, via the Great Western Highway route. However, the route for the OSOM vehicles is not yet confirmed. Until this can be confirmed, the swept paths and relevant traffic impacts associated with the OSOM movements along both transport routes, must be addressed.

A desktop OSOM assessment report has been prepared showing the OSOM vehicle route from the Port of Newcastle to the project study area in Birriwa. The OSOM assessment report has been presented in Appendix D.

4.10.4 Construction Traffic Management Plan

In addition to the proposed commitments of inclusion in the Construction Traffic Management Plan (CTMP), TfNSW recommend that the CTMP further identifies the access restrictions and requirements to all staff, contractors and visitors, and directly addresses the consultation, impacts to and management of the project traffic in relation to the Central West Cycle Trail. TfNSW acknowledges and further recommends that the CTMP be developed in consultation with TfNSW, Mid-Western Regional Council, Warrumbungle Shire Council and be approved by the Consent Authority. It is further recommended that the applicant undertake consultation with TfNSW with sufficient lead time to ensure any recommended changes or additions can be implemented prior to construction works commencing.

It is acknowledged that the proposed commitments and TfNSW recommendations will be included in the CTMP, which will be prepared post approval.

4.10.5 Consultation

TfNSW note, there is a level crossing for the Gwabegar railway line along the southern classified road transport route on the Castlereagh Highway, near Birriwa. ARTC are the Rail Infrastructure Manager (RIM) at this location. The Consent Authority should ensure ARTC has had the opportunity to review and provide comment regarding rail related matters.

ARTC were consulted by the DPE in their letter dated 14 October 2022. ARTC responded in their letter submission dated 10 November 2022, in which they did not raise any objections to the project.

4.11 Mid-Western Regional Council

4.11.1 Workforce accommodation

The EIS notes there will be an estimated 800 workers during the peak construction period, which is expected to run for a period of approximately 28 months. The EIS has proposed that accommodation be sourced from surrounding towns such as Mudgee and Gulgong during this period.

Council are strongly concerned with this aspect of the project as there is currently a severe shortage of appropriate accommodation in both these towns for tourism, made worse by the competing demands placed upon accommodation availability by State Significant Developments (SSD) and other major project construction workforces for developments approved by Council.

This shortage/competition will be particularly evident during the construction phase which coincides with the peak construction periods of several other SSD projects in the region that are either approved or in the assessment/consultation phase, with more projects being planned every day aiming to meet the objectives of the Renewable Energy Zone, including:

- Wollar Solar (400 workers)
- Stubbo Solar Farm (400 workers)
- Burrendong Wind Farm (450 workers)
- Tallawang Solar Farm (430 workers)
- Barney's Reef Wind Farm (340 workers)
- Bellambi Heights Solar (400 workers)
- Bowdens Silver (320 workers)
- Local Coal Mine expansions (250 workers)
- Valley of the Winds Farm (400 workers)
- Central-West Orana REZ Transmission project (workers 650).

In total, the projects above require 4,040 workers with the majority needing to be housed in the Mid-Western Regional LGA and does not account for the workforces of additional significant projects such mine expansions, the Inland Rail and other significant local construction projects approved by Council. Considering, Council strongly objects to the utilisation of accommodation within the Mid-Western Region.

Firstly, it is noted that the project's peak construction workforce has been revised since submission of the EIS, and it is anticipated to be up to 500 people rather than 800, assuming that the peak construction activities of the solar and BESS infrastructure will now be scheduled so that they do not occur at the same time.

ACEN acknowledges Council's concern relating to the availability of accommodation in the region for construction workers. Since the submission of the EIS, ACEN has continued to engage with key stakeholders, including council, local landholders, EnergyCo and DPE regarding this issue. As a result of this engagement and further consideration of the accommodation needs of the project in light of proposed development in the CWO REZ, the project has been amended to include a temporary facility to accommodate construction workers for the project. As described in Section 1.3, an amendment report (EMM 2023b) has therefore been prepared and submitted in conjunction with this submissions report, which describes the amended project and assesses the impacts and benefits of the inclusion of the accommodation facility to the project.

As described in the amendment report (EMM 2023b), based on the outcomes of a site selection process which considered key factors such as biodiversity constraints, flooding constraints, topography, site access and proximity to the project, an area has been identified as suitable for the construction and operation of a temporary accommodation facility approximately 2.5 km south-east of the project study area, as shown indicatively in Figure 4.1.

The workers accommodation facility will accommodate up to 500 construction workers and will cover an area of approximately 23 ha. Access to the accommodation facility will be via the primary vehicle access point to the project on Barneys Reef Road with an internal access track providing access from the solar and BESS study area to the accommodation facility. No additional road upgrades will be required beyond those assessed in the EIS. Council provided in-principle support for the location of the accommodation facility at a meeting on 26 June 2023 (refer to Appendix D of the amendment report).

As part of the amendment report, technical assessments have been prepared to fully consider the impacts of the accommodation facility, including on biodiversity, heritage, land and soils, flooding, traffic, visual amenity, noise, waste management and heritage, as well as the social impacts and benefits of the accommodation facility.

Additional impacts identified in the amendment report and proposed mitigation measures are summarised as follows:

- No listed vegetation communities will be impacted by the accommodation facility. The accommodation development footprint comprises of grassland; specifically, 23.51 ha of PCT 479 (Narrow-leaved Ironbark derived native grassland) and 8.56 ha of PCT 281 (Rough-Barked Apple – red gum – Yellow Box woodland – pasture) will be impacted by the accommodation facility. This vegetation removal does not require offsetting under the NSW Biodiversity Offset Scheme (BOS). For the purposes of assessing species credits, the biodiversity assessment also assumed presence of the Superb Parrot (*Polytelis swainsonii*) in some small areas which were not surveyed for this species, due to project timing constraints. Offsets have been adjusted for the project and are detailed in the updated BDAR (Appendix F.1 of the amendment report).

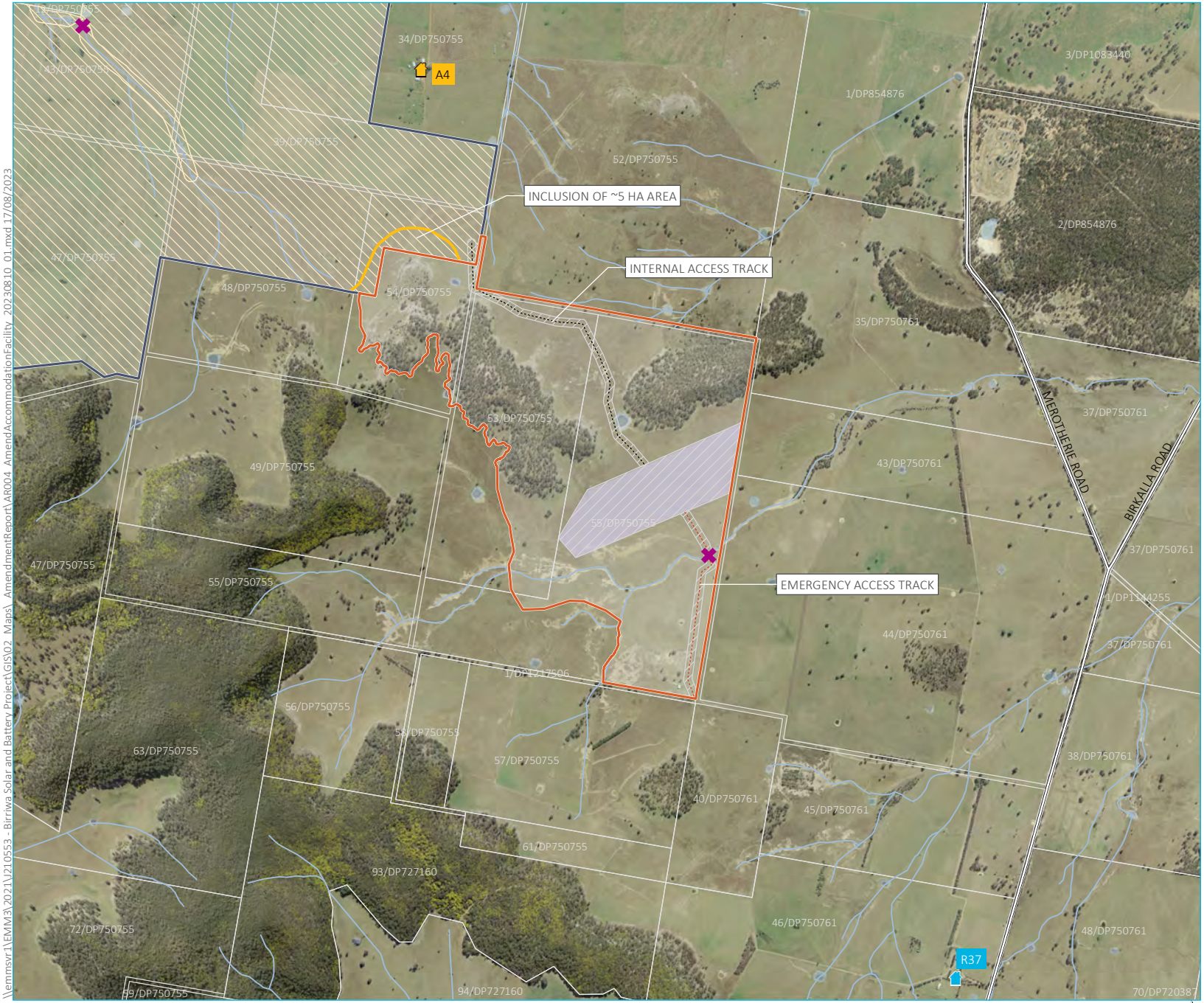
- The proposed amendments will result low visual impact ratings to all assessed viewpoints, and the 11 residences located within 4 km of the accommodation facility. No moderate or high visual impact ratings have been identified. No additional mitigation measures are required.

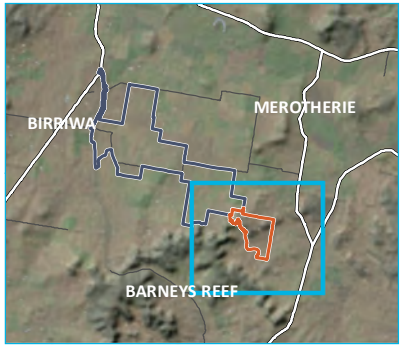
- One additional Aboriginal cultural heritage site (Winora IF-2) may be impacted by the proposed internal access track. If this site cannot be avoided, it will be salvaged prior to construction.

- Soil and erosion impacts are consistent with those identified in the EIS. An additional 25 ha of agricultural land will be removed from production, which represents a negligible impact, accounting for 0.005% of the regional annual agricultural productivity associated with livestock.

- The accommodation facility substantially reduces the significance of key social impacts which would otherwise be experienced by the community due to the project. It will also further enhance a number of social benefits associated with the project and generate new benefits. In particular is reduces impacts on regional housing availability and tourist accommodation, and reduces safety risks associated with traffic movements.

- Additional bushfire management measures for the accommodation facility have been recommended to reflect the requirements of the RFS Planning for Bushfire Protection 2019 (PBP) including the provision of asset protection zones, landscaping requirements, construction standards, emergency management, and provision of services.
- No additional impacts are expected to result from the accommodation facility for traffic, historic heritage, hazards and risk, noise and vibration, and flooding.





KEY

- Solar and BESS study area
- Accommodation facility study area
- Solar and BESS develoment footprint
- Accommodation facility infrastructure area
- Accommodation facility development footprint
- Inclusion of ~5 ha area
- Potential creek crossing point
- Associated residence
- Non associated residence
- Access track
- Emergency access track

Existing environment

- Major road
- Minor road (refer to inset)
- Watercourse/drainage line
- Cadastre
- Waterbody

Source: EMM (2023); DFSI (2017, 2023); GA (2011); UPC (2023); ABS (2023)

0 0.5 1 km

GDA 1994 MGA Zone 55

N

\\emmsvr1\EMM3\2021\210553 - Birriwa Solar and Battery Project\GIS\02 Maps\ AmendmentReport\AR004 AmendAccommodationFacility 20230810 01.mxd 17/08/2023

Location of accommodation facility

Birriwa Solar and BESS Project
Submissions Report
Figure 4.1

EMM creating opportunities

4.11.2 Economic analysis

That an economic analysis be provided to demonstrate the impact of removing 1,250 ha of agricultural land from the local economy.

An economic analysis of the potential impacts of the project on agricultural productivity was undertaken as part of the *Land use, Soil and Erosion Assessment* prepared for the project (Appendix L of the EIS). As reported in this assessment, the 1,138 ha of the development footprint, if fully developed, would encompass some 572 ha of land used for grazing and 542.9 ha for cropping, totalling 1,115 ha. Were this 1,115 ha to be developed (change of use) it would be valued between $318,168.30–$319,564.66 in annual productivity based on calculated agricultural values for the Mid-Western Regional LGA and Mudgee Region–West respectively.

The disruption to productivity will be primarily due to lack of access to the land, as opposed to a reduction of the land capability. Additionally, the project will allow for the land to still be utilised for some agricultural practice even where developed, by utilising sheep for grazing which is estimated to achieve 50% of existing stocking rates for 50% of the year.

4.11.3 Agricultural impact assessment

That an Agricultural Impact Assessment is undertaken, and should include:

- soil testing to determine the specific highest agricultural capability of the site
- identify the process, inputs and costs associated with returning the site to a condition capable of sustaining agriculture when the site is no longer used for renewable energy.

An agricultural impact assessment was undertaken for the project, and results are shown in Section 5.1.4 of the Land use, Soil and Erosion assessment (refer to Appendix L of the EIS). Soil testing was undertaken as per the SEARs, to determine the soil characteristics and consider the potential for erosion to occur, noting that verification of agricultural productivity was not required.

Whilst this approach of soil verification for agricultural capability of the site is now contained in the *Large-Scale Solar Energy Guidelines* (DPIE 2022a), the EIS was submitted prior to 31 January 2023 and the guidelines therefore do not apply. Additionally, even under the Solar Guidelines, the site is entirely on land mapped as Land Soil Capability (LSC) Class 5 and 7, not adjacent to LSC Class 1–3 and therefore would not require soil or LSC verification under the new Guidelines.

An indicative assessment of the LSC was undertaken as part of the land use, soil and erosion assessment, utilising the eSPADE database (DPIE 2020a) and DPIE (2020b). As noted above, the study area is mapped at the state scale as predominantly LSC Class 5 and minor areas of Class 7, which is land with moderately-low to low capability for productive use without resulting in land degradation. The land in the development footprint is currently used for cropping and cattle grazing, predominantly grazing.

At the end of the project design life, the site will be rehabilitated to a condition as near as practicable to the condition that existed prior to construction of the project and in consultation with the landowner at the time.

Rehabilitation will involve the removal of the solar arrays, cables within cable trenches, overhead powerlines, roads and tracks, substations, battery storage and all other infrastructure associated with the project other than that requested by the landowner to remain. Examples of infrastructure that may remain may include access roads, hard stand areas, sheds and roads and tracks.

An appropriate LSC soil assessment is recommended to be to be undertaken prior to any land disturbance, to help identify limitations for the project design particularly slope design. It would identify the depths of soil resources to be stripped and preserve for rehabilitation purposes and the soil constraints such as dispersion, nutrient status, salinity, acidity etc that would need to be managed and mitigated during the design, construction and operational phases in line with *Managing urban stormwater: soils and construction* (Landcom 2004) requirements.

4.11.4 Waste disposal and management

The potential waste facilities, Gulgong and Mudgee Waste Facility and the Birriwa Rural Waste Transfer station referenced in the EIS are not considered to be appropriate or capable to handle the disposal of waste from the project. Gulgong and Birriwa Waste Facilities are not landfill facilities, accepting mainly general residential type wastes such as household garbage, paper and cardboard. All material deposited at these facilities are transported to Mudgee's Waste Facility. The Mudgee Waste Facility has no capacity to take large quantities of material likely to be generated by the project as the capacity of the existing Waste Cell is almost exhausted. Further, Council requests consideration be given to the domestic waste produced by 800 construction workers.

Council raised concerns regarding limited capacity to dispose of waste from the project at Mudgee Waste Facility, Gulgong Waste Facility and the Birriwa Rural Waste Transfer station. It is noted that Gulgong and Birriwa Waste Facilities accept mainly general residential type waste, which are subsequently deposited to Mudgee's Waste Facility.

ACEN acknowledges this current position and concerns raised by council, and therefore, if unable to use council waste management facilities, ACEN will seek arrangements with other regional landfills. ACEN will also consider the potential use of waste transfer and recycling facilities available in other LGAs within the broader region to achieve their waste management objectives. Notwithstanding, while the project will seek arrangements with other regional landfills, ACEN will be seeking to minimise the amount of waste to landfill. No waste will be deposited on site and no waste will be accepted from other sites.

It is also acknowledged that Mid-Western Regional Council does not have a biowaste facility and this service will be sourced from an external contractor.

Waste (and spoil) disposal will be in accordance with the *Protection of the Environment Operations Act 1997* (POEO Act) and the *Waste Avoidance and Recovery Act 2001* (WARR Act). Wastes that are unable to be re-used or recycled will be disposed of off-site to an EPA approved waste management facility following classification.

The potential construction waste types, classification and proposed management are described in Section 6.13.2 of the EIS. As noted above in Table 3.2, ACEN has agreed to enter into a VPA prior to construction commencement with Mid-Western Regional Council to the value of 1.5 % of the project's capital expenditure to offset community impacts (refer Appendix F). Whilst ACEN will need to find suitable facilities to dispose of waste, we note that council will have the opportunity to use part of the VPA funds to address this issue.

The Central-West Orana REZ – Coordinating community impacts and benefits in the REZ report (EnergyCo 2023), summarises key findings of the CWO REZ in terms of expected waste volumes, existing waste facilities and further opportunities to promote effective waste management and circular economy in the REZ. Key findings from the report indicate there is sufficient landfill capacity to handle non-recyclable waste generated by the establishment of the REZ. Notwithstanding, all waste generated by the project will be minimised and managed through the implementation of a Waste Management Plan (WMP), as outlined in the EIS (management and mitigation measure ID WAS4), which will be prepared post approval of the development application and prior to construction and in consultation with Mid-Western Regional Council and DPE.

As outlined in Section 6.13.2 of the EIS, in relation to waste management ACEN will:

- Minimise and manage the waste generated by the development in accordance with the EPA's waste hierarchy objectives of avoidance, resource recovery and disposal.

- Classify all waste generated on site in accordance with the EPA's *Waste Classification Guidelines 2014*.
- Store and handle all waste on site in accordance with its classification.
- Not receive or dispose of any waste on site.
- Remove all waste from the site as soon as practicable and ensure it is sent to an appropriately licensed waste facility for disposal.

The WMP will include:

- Details of the quantities of each waste type and the proposed reuse, recycling and disposal locations.
- Details on measures to reduce the types and volumes of waste.
- Details on how the waste will be transported to disposal locations during construction and decommissioning.
- Measures to maximise reuse and recycling.

ACEN will continue to consult with Mid-Western Regional Council around specific details of the WMP throughout the life of the project. It is also noted that EnergyCo is investigating how they can best support local councils to manage waste during construction.

Significant quantities of waste generated during construction, such as cardboard packaging and wooden pallets will be suitable for reuse, recycling or alternative use (e.g. chipping of pallets for mulch), which will reduce the volume of waste going into landfill. ACEN is currently in discussions with several leading PV module suppliers to reduce the volume of plastic used in packaging (i.e. for shipping/transport of PV modules).

During decommissioning, dismantled and decommissioned infrastructure will be recycled, where possible. There are presently no dedicated recycling facilities for PV modules in Australia; however, these are expected to be established by the time the project is decommissioned, due to the value of recyclable materials in the components and as 85–96% of the PV modules are currently recyclable (IRENA 2016, Kenning 2016). Structures and equipment that cannot be recycled will be disposed of at an appropriately licensed waste management facility.

4.11.5 Decommissioning

The decommissioning and site restoration plan should include:

- The anticipated present value cost of decommissioning works, along with an explanation of the calculation of that cost (including a buffer for changes in market values/inflation).
- The physical plan for decommissioning, prepared or certified by an engineer, confirming that full remediation/restoration of the site to its former primary production use/class land capability is possible.
- Commitment to a financial security to cover the cost of decommissioning.
- Management and waste reduction initiatives as to where generated waste will be disposed and/or recycled, without impacting on local waste facilities and in accordance with:
  - *Protection of the Environment Operations Act 1997*
  - Protection of the Environment Operations (Waste) Regulation 2014
  - *Waste Avoidance and Resource Recovery Act 2001*
  - NSW Environment Protection Authority (EPA) Waste Classification Guidelines.
- The decommissioning and site restoration plan should be updated every 5–7 years to keep up with changes.

In line with the request from Council, ACEN has included the following commitments in the EIS (management and mitigation measure ID SOC10):

> ACEN will develop a decommissioning and rehabilitation plan for the project that will describe how the development footprint would be returned, as far as practicable, to its condition prior to the commencement of construction. The decommissioning and rehabilitation plan will also describe the approach to disposal/recycling of infrastructure.

4.11.6 Biodiversity

Mid-Western Regional Council offers to assist with identifying suitable native plant species and local tube stock providers for the 2.15 km of screen planting required around the solar farm. It is expected a Vegetation Management Plan should be provided to ensure it is consistent with the surrounding PCTs, furthered by the provision of a long-term high threat weed management program

In line with the request from Council, the following commitments in the EIS (management and mitigation measure ID BIO1, BIO2) include:

> A biodiversity management plan (BMP) will be prepared for the project. The BMP will document the measures to avoid and minimise direct and indirect impacts to ecological values and natural assets.
>
> Following construction, species consistent with PCT 80 and PCT 281 will be included in landscaping to increase the floristic and structural diversity of the land.

ACEN acknowledges Council's offer to assist and will consult with Council during the development of the BMP.

Further Koala studies in this area should be conducted by a suitably qualified ecologist, undertaking methods such as tracking, monitoring and sound recording to determine the range of the local Koalas and what they are using the area for i.e. breeding/feeding, before development is able to commence. This would better predict the likely effect removing vegetation would have on the resident koalas and guide a conservation plan for this particular population.

Habitat assessments and targeted surveys were undertaken as part of the BDAR in line with the Biodiversity Assessment Method (DPIE 2020c) (BAM). The Koala was recorded in the form of scats during dog detection surveys. The presence of the Koala is associated with the high condition vegetation zones of PCTs 80 and 281.

Additional and further Koala studies are not a requirement under the BAM and the current SSD approval pathway.

Offsets for the Koala will be provided in accordance with the NSW Biodiversity Offset Scheme (BOS).

4.11.7 Road upgrades

The pavement on the Birriwa Bus Route is to be of the same engineering standard as Barneys Reef Road and the existing concrete culvert it to be assessed for structural adequacy.

To accommodate the construction traffic movements associated with the project, an upgrade of Barneys Reef Road and Birriwa Bus Route South along the project access route will be required. A preliminary concept plan has been prepared in this regard (Appendix C of the EIS), in consultation with Mid-Western Regional Council and Warrumbungle Shire Council.

In line with the request from Council, the following commitments in the EIS (management and mitigation measure ID TT2) include:

> Resurfacing and widening will be completed on Barneys Reef Road and Birriwa Bus Route South in compliance with Austroads rural roads design standards, and in further consultation with relevant authorities during subsequent phases of project design and assessment.

4.11.8 Water and sewerage management

It is noted that sewage is proposed to be pumped out and disposed of at a Mid-Western Regional Council facility. Council does not have capacity for additional sewage to the anticipated volumes of this project and other SSD projects planned. Therefore, Council advises that sewage cannot be pumped out and disposed at any Mid-Western Regional Council facility unless significant funding is provided to upgrade these facilities to increase capacity.

As outlined in Section 6.13 of the EIS, there is no sewer access at the site. Therefore, it is anticipated that amenity facilities will be pumped out via tanker and delivered to the closest available sewage treatment facility or as agreed with Mid-Western Regional Council during construction. ACEN will continue to consult with Mid-Western Regional Council to determine an appropriate mechanism for treating and disposing of sewage prior to the finalisation of detailed design and construction of the accommodation facility commencing.

ACEN also notes Council's concerns regarding capacity of sewage system in relation to the anticipated volumes of this project and other SSD projects planned in the REZ.

As described above in Section 4.11.4, ACEN has agreed to enter into a VPA with Mid-Western Regional Council prior to construction commencement to the value of 1.5% of the project's capital expenditure (refer Appendix F). It is anticipated that this agreement would provide for any works Council needs to undertake to help ensure sewage facilities are sufficient.

A quality assurance program (QAP) for the treatment and provision of water to works should be provided to Council.

Water usage is described in Section 3.3.3 of the EIS. The water source will be determined during the preparation of the construction environmental management plan (CEMP) prior to construction.

ACEN will ensure that the water supply option satisfies the requirements of the NSW *Public Health Act 2010*, including any requirement for a Quality Assurance Program.

Any potable water sourced for human consumption will be sourced from an appropriate 'supplier of drinking water' consistent with the requirements of the *NSW Public Health Act 2010*. The CEMP will include the requirement to identify the selected potable water supply option and associated regulatory requirements in consultation with NSW Health.

It is not noted how the project intends to source water during both the construction phase and for matters such as landscaping. If the proponent wishes to draw from Councils water supply for any purpose it should be noted that Council does not have capacity to support this and will not be able to provide water unless significant upgrades are undertaken at Council facilities which would need to be funded by the proponent.

ACEN acknowledges that Mid-Western Regional Council's town water supply does not have capacity to support the project's needs. If council's potable water supply is not available for the project, as stated in Section 3.3.3 of the EIS, water demands for the project during both construction and operation will be sourced preferentially from:

- commercial suppliers of treated wastewater (water trucks)
- farm dams within the study area (for non-potable construction purposes to minimise use of imported water).

Water sources will be confirmed in consultation with Mid-Western Regional Council, suppliers and landholders and be subject to availability.

4.12 Warrumbungle Shire Council

4.12.1 Traffic management

Warrumbungle Shire Council requests the total heavy vehicle movements for the whole project be recalculated, as they believe they have been underestimated. Noting, the EIS estimates 218 ML of water is required for construction purposes, this stated demand suggests approximately 25,000 heavy vehicle watercart movements.

It is estimated that approximately 300 kilolitres (kL) of water per day will be required by the project (the volume of approximately 15 water trucks, which is the number included in the traffic assessment in this EIS, with a capacity of 20,000 L), equating to approximately 218 megalitres (ML) over the 28 month construction period. Most of this water will be required for dust suppression, with other minor uses including site amenities, fire protection and washing of equipment and plant.

In addition, assuming the accommodation facility is operating at full capacity (i.e. 500 people), approximately 125,000 L of water will also be required per day (assuming approximately 250 L per person). Water will be delivered weekly to the site by truck (truck capacity of 20,000 L). Based on a 20,000 L water truck, this equates to around 6 heavy vehicle trips (12 movements) per day.

Given the conservative daily and peak hourly number of construction traffic movements assessed within the EIS, the estimated daily number of traffic movements during the operation of the accommodation facility will be minimal and can be accounted for in the 240 movements already considered within the traffic impact assessment in the EIS. The heavy vehicle traffic movements during the operation of the accommodation facility will overlap with the heavy vehicle traffic movements during the construction of the solar and BESS project.

A road program needs to be developed in consultation with the road authorities and include route inspections/dilapidation surveys of all the affected local roads. Any road pavement damage which occurs during the project construction period will require restoration to their pre-construction condition at the completion of construction.

ACEN will undertake a dilapidation survey as stipulated within the project's development consent conditions and in consultation with the relevant road authority (TfNSW/councils) to the satisfaction of the Planning Secretary.

A Traffic Management Plan will be required by the Warrumbungle Shire Council and secured by way of performance bonds.

In line with the request from Council, the commitments in the EIS (management and mitigation measure ID TT3) prior to commencing construction, ACEN will prepare a detailed CTMP for the project in consultation with TfNSW and council and to the satisfaction of the Planning Secretary. ACEN will consult with both Mid-Western Regional Council and Warrumbungle Shire Council during preparation of the CTMP.

4.12.2 Infrastructure refurbishment

There will be infrastructure and equipment refurbishment (e.g. PV panels and batteries) undertaken during the 30 year life of operations. Warrumbungle Shire Council requests quantification of the scope and extent of the infrastructure and equipment refurbishment and the extent of the activity of particularly in relation to both traffic and road impacts and workforce variations.

Details of infrastructure refurbishment will be included in the operations and maintenance contract between ACEN and the contractor. Any relevant management plans will be prepared in accordance with the development consent. Consultation with local councils will be undertaken as required.

4.12.3 Economic and local contribution

Warrumbungle Shire Council seeks development contributions from ACEN via a Planning Agreement that acknowledges the tangible and intangible environmental, social and economic costs arising from the project. Such funds will be applied to a public purpose that will ensure the provision of a public benefits. As the Warrumbungle Shire LGA will be impacted by the Proposal, it requires a Planning Agreement to be negotiated with it prior to any contemplation by the NSW Government of the granting of development approval. In addition, Council requires the Agreement's key terms to be included as a specific condition within any project consent.

ACEN has agreed to enter into a VPA with Mid-Western Regional Council prior to construction commencement to make financial contributions to an amount equalling 1.5% of the project's capital expenditure to be paid in a series of instalments over the lifetime of the project. The contributions will be distributed between Mid-Western Regional Council and Warrumbungle Shire Council to reflect the degree to which these communities are impacted by the project. This distribution has been agreed between the Mayors and General Managers of the Councils. The VPA between ACEN and Mid-Western Regional Council has been discussed and confirmed with Warrumbungle Shire Council during a project meeting on 10 July 2023.

Warrumbungle Shire Council is of the view that the full quantum of development contributions be provided to it and it will manage the finances and determine how decisions are made, in accordance with standard practice widely adopted by Councils across rural NSW on many other energy and mining projects. Council is however amenable to having a management committee comprising local representatives, Council and the Proponent be involved in the funding allocation decision- making process.

Details and mechanisms regarding contributions will form part of the agreement as outlined above.

Warrumbungle Shire Council requests to see more locals benefit from training and employment on the project and it request the Proponent meet with it to reach an agreement on what number of local workers will be employed, and trained as necessary, with that commitment locked in with the EPC contractor.

EnergyCo are investigating opportunities to boost the skills of the local workforce and build capabilities in the renewable energy sector. ACEN will discuss and endorse opportunities that enable local work and training if relevant.

An Accommodation and Employment Strategy (AES) will be developed and implemented for the project in consultation with Mid-Western Regional Council and Warrumbungle Shire Council. The AES will outline ACENs proposed strategy to maximise local employment opportunities during the construction phase. ACEN will work closely with its selected lead Engineer Procurement and Construction (EPC) contractor in the timeframe prior to and during the construction phase – for example, to introduce local workers and sub-contractors that have expressed an interest in the project during development. The lead EPC contractor will typically be selected in the months leading up to financing and start of construction and would be responsible for preparing the workforce and accommodation strategy in consultation with Mid-Western Regional Council and Warrumbungle Shire Council, to be approved by DPE prior to commencing on site works.

4.12.4 Workforce accommodation

The EIS suggests that 70% of the construction workforce, equating to 560 people, would be from outside the area and they may be accommodated in local towns and even Dubbo. The EIS suggests 80 workers could be accommodated at Dunedoo. Or, on the other hand, the EIS assumes they may be housed in the accommodation camp planned by the proposed Valley of the Winds project.

Again, as per the commentary regarding employment of locals, there is no clear communication on how and where non-local workers will be accommodated, nor how this will relate to the accommodation needs associated with the other 25 renewable energy projects across the REZ. The EIS goes on to state that the REZ-related cumulative population of non-local workers could be in the order of 4,000 people, equivalent to a 15.7% increase in the total population of Mid-Western Regional LGA.

The EIS states that in Mid-Western Regional LGA there are approximately 3,200 rooms of short-stay accommodation available and a much smaller number of rooms in the Warrumbungle Shire LGA. Rooms have an average occupancy rate of over 80% (SIA field study).

The EIS goes on to state that, "assuming the majority of workforces associated with other projects that overlap with the project will be sourced from outside the regional area, then the projected cumulative demand for short-term accommodation and rental accommodation in the regional area will be extreme and supplementary accommodation e.g. temporary workforce accommodation village would need to be provide":

"Extreme" is a most appropriate term to describe the situation. Until the Proponent and the NSW Government provide clarity on this key topic, Council is not in a position to make an informed judgement on the merits of the project, therefore has no option but to object to the proposal on this matter alone.

As described in Section 4.11.1, ACEN acknowledges Council's concern relating to the availability of accommodation in the region for construction workers. Since the submission of the EIS, ACEN has continued to engage with key stakeholders, including council, local landholders, EnergyCo and DPE regarding this issue, and has subsequently amended the project to include a temporary accommodation facility for construction workers. An amendment report (EMM 2023b) has therefore been prepared and submitted in conjunction with this Submissions Report, which describes the amended project and assesses the impacts and benefits of the inclusion of the accommodation facility to the project.

As described in the amendment report (EMM 2023b), based on the outcomes of a site selection process which considered key factors such as biodiversity constraints, flooding constraints, topography, site access and proximity to the project, an area has been identified as suitable for the construction and operation of a temporary accommodation facility approximately 2.5 km south-east of the project study area, as shown in Figure 4.1.

The workers accommodation facility will accommodate up to 500 construction workers, and will cover an area of approximately 23 ha. Access to the accommodation facility will be via the primary vehicle access point on Barneys Reef Road with an internal access track providing access from the solar and BESS study area to the accommodation facility. No additional road upgrades will be required beyond those assessed in the EIS. Mid-Western Regional Council provided in-principle support for the location of the accommodation facility at a meeting on 26 June 2023 (refer to Appendix D of the amendment report).

As part of the amendment report, technical assessments have been prepared to fully consider the potential impacts of the accommodation facility, including on biodiversity, heritage, land and soils, flooding, traffic, visual amenity, noise, waste management and heritage, as well as the social impacts and benefits of the accommodation facility. These are summarised above in Section 4.11.1, and in the amendment report (EMM 2023b).

It would appear the EIS limits statements on the economic impacts of the project to generalised commentary covering six lines on page 207, without a specialist economic analysis as an appendix. Council finds this surprising, believing the economic benefits and costs warrants more detailed analysis. Also, there is no mention in the EIS of the Capital Investment Value which seems an oversight (was found using other sources).

As per the SEARs, the EIS includes an assessment of the social and economic impacts in accordance with the *Social Impact Assessment Guideline* (DPIE 2021) and benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services, assessment of impact on agricultural production on the site and region.

The EIS was accompanied by a report from a suitably qualified quantity surveyor providing a detailed calculation of the capital investment value of the project. This was provided to DPE during lodgement of the EIS.

4.12.5 Waste disposal and management

The EIS lists the likely waste streams as:

- paper/cardboard (packaging used for the PV modules and tracker components – say several thousand kilograms per week during peak delivery periods)
- wooden pallets (say 1,000–2,000 units per week during peak delivery periods)
- plus plastics, green waste, soil, electrical, metals, liquid, sewage, MSW and batteries.

There is no clear enunciation as to how and where waste will be managed. Again, this is a cumulative impact issue across the REZ that requires a definitive plan before Council can make a judgement on the adequacy of waste management arrangements.

Refer to response in Section 4.11.4 of this report.

4.12.6 Water supply and management

Council notes the Proponent plans to install a 50–80 kl steel tank to store water for use by the RFS in emergency situations. Council also requires the Proposal to retain appropriate firefighting equipment on-site to the written satisfaction of the local RFS.

As outlined in the EIS, the Emergency Management Plan (EMP) and Bushfire Management Plan (BMP) for the project will be prepared post consent and prior to construction in consultation with RFS.

4.12.7 Biodiversity

A small, vegetated area in the road corridor of Barneys Reef Road, which is proposed to be cleared to allow road upgrading for project access, is identified as 'biodiversity' on terrestrial biodiversity mapping under the Warrumbungle LEP. Council seeks to have any biodiversity loss to be appropriately offset.

All vegetation proposed to be cleared has been assessed in the BDAR, in accordance with the BAM, with impacts to native vegetation, flora and fauna species being offset accordingly. The BDAR (Appendix F.1 of the amendment report) contains an offset strategy in accordance with the BOS and in consultation with BCD.

4.12.8 Heritage

Please note there is an historic rural dwelling called Birriwa Homestead (and private cemetery) located 2.6 kms from the project site at 3894 Castlereagh Highway, Dunedoo. The outbuildings were built in the mid-1800s with the homestead erected in 1907 and sensitively renovated in 2015. The property has links to explorer William Lawson. Please see Council's LEP 2013 and its Community Based Heritage Strategy 2019 for relevant information.

Appendix Q (historical heritage assessment) of the EIS provides a brief history of the Mid-Western region and acknowledges the homestead located near Dunedoo. This historic rural dwelling, being approximately 2.6 km from the project study area will not be impacted.

5 Public submissions

As outlined in Section 2.5, 88 submissions were made by the general public. Responses to key matters raised, as summarised in Table 2.2, are provided in the relevant sections below.

5.1 Biodiversity

5.1.1 Impacts to biosecurity

Five public submissions (1% of total public submissions) raised concerns about the project's potential impacts on biosecurity. Submitters raised concerns that the biosecurity of the site may be compromised during both the construction and operation of the project.

ACEN acknowledges the potential impacts that the spread of weeds can have on neighbouring properties if the appropriate management and mitigation measures are not implemented. As described in Section 7.3 of the EIS BDAR and updated BDAR (Appendix F.1 of the amendment report), two state priority weeds identified in the *Central Tablelands Regional Strategic Weed Management Plan 2017–2022* (LLS, 2017) were identified within the study area:

- Coolatai Grass (*Hyparrhenia hirta*)
- St. Johns Wort (*Hypericum perforatum*).

The biodiversity management plan for the project would directly address the control of both these priority weeds. Further, Table 6.5 in the EIS outlines the mitigation measures that ACEN has committed to in relation to weeds, which have been reproduced below:

- Dependent on the weed species and cover in any particular construction area, weeds will be removed prior to clearing. Weeds will be stockpiled appropriately prior to removal from the study area to avoid the spread/introduction of seed and other propagules.
- Weed hygiene protocols will be put in in place prior to entering the site including wash-down procedures to all plant and machinery. This will avoid weed introduction from outside of the site.
- Coolatai Grass (*Hyparrhenia hirta*), and St. Johns Wort (*Hypericum perforatum*) are to be managed as per the requirements of the *Biosecurity Act 2015* and their regional recommended measures (described in Section 7.3 of BDAR). If any other priority weeds of NSW are identified in the study area during construction, they will be removed from the site.

Implementation of these mitigation measures will effectively minimise the potential for impacts relating to biosecurity, including the impacts of weeds. Additionally, all personnel will receive awareness training on noxious weed management as part of the site induction process.

ACEN will work with landholders and contractors to comply with the *NSW Biosecurity Act 2015* to prevent, eliminate and reduce biosecurity risks associated with the project. During construction and operations, land management and mitigation measures will be implemented to reduce the impact of the project on local and regional biosecurity. These will include measures such as restricting vehicle movements to formed access tracks and use of wash-down facilities and procedures.

Once the project is operational, ACEN intends to work with local landholders and farmers to enable sheep grazing under the PV modules to reduce the growth and spread of weeds and maintain a multi-purpose land-use throughout the life of the project. If pest control is still considered necessary, it will generally involve a routine baiting program in consultation with the project landholders and neighbouring landholders. Other control methods such as shooting or trapping may also be used if deemed necessary or appropriate.

Management measures to reduce biosecurity risks, such as measures for the identification, management and ongoing monitoring of weeds on-site will be included in the project's biodiversity management plan (as per mitigation measure BIO1 identified in Section 6.2.6 of the EIS).

The project's potential impacts on biosecurity are described in Section 6.1.2 of the BDAR (Appendix F.1 of the amendment report) and Section 6.2 and Section 3.4.2 of the EIS.

5.1.2 Impacts to biodiversity

Eight public submissions (2% of total public submissions) raised concerns about the project's potential impact on biodiversity, by contributing to direct and indirect impacts to species through habitat loss (including land clearing and installation of perimeter fencing and increase safety risk to wildlife).

Notably in relation to potential impacts on biodiversity, the project site was selected due to its highly disturbed nature, from a long history of agricultural use, and very limited remnant vegetation.

The assessment of the project's potential impacts on biodiversity included consideration of native vegetation and habitat mapping and targeted flora and fauna surveys.

As reported in the EIS, all vegetation within the study area has previously been impacted by existing activities, particularly with ongoing grazing and/or cropping, with the grasslands supporting little native species cover and a lack of native species diversity. The ground cover is heavily grazed and/or cropped, typically with a high coverage of non-native grasses. Fauna abundance across the development footprint is low, and there are no significant fauna movement corridors due to a high level of fragmentation and small patch size of native vegetation (where present).

The findings of the updated BDAR reflect this. Within the subject land[2] impacts to native vegetation will be limited to:

- The loss of 76.80 ha (i.e. 6.6% of the subject land) of PCT 80[3], of which 1.18 ha (0.1% of the subject land) is of a condition to require offsetting, and associated habitat for flora and fauna species.
- The loss of 300.46 ha (i.e. 25% of the subject land) of PCT 281[4], of which 7.45 ha (0.64% of the subject land) is of a condition to require offsetting, and associated habitat for flora and fauna species.
- Loss of 28.45 ha of PCT 479, which is grassland of low condition and does not require offsetting under the NSW BOS.

[2] Subject land = Area subject to all proposed direct impacts in accordance with the 'subject land' described in the BAM (DPIE 2020c). This equates to the 'impact footprint' described in the EIS and includes the final development footprint and construction footprint, which includes temporary laydown areas and ancillary structures. It also includes the road upgrade corridor, equating to 1,159.19 ha (impact footprint in the EIS).

[3] Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion.

[4] Rough-Barked Apple-red gum- Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion).

Impacts to connectivity, such as fragmentation, is unlikely to occur due to the nature of the project removing linear patches of woodland along the road corridor and already isolated woodland patches within the subject land.

As described in Section 6.3 of the BDAR, avoidance of impacts to native vegetation was a key consideration in the project refinement process, resulting in the avoidance of significant biodiversity values. A key design principle was to maximise the placement of project infrastructure in cleared areas and, wherever possible, limit impacts to native vegetation of low quality only. As a result of the biodiversity assessment as part of the EIS, some areas of native vegetation were avoided and are excluded from the proposed development footprint. The areas where native vegetation has been avoided are shown on Figure 1.2 as 'vegetation to be retained', and are located in the south-west and south-east of the project study area; as well as south-east of Barneys Reef Road.

Koala are known to occur along the site access route. The Koala was recorded in the form of scats during the Koala dog detection surveys along Barneys Reef Road. The presence of the Koala is associated with the high condition vegetation zones of PCTs 80 and 281, which are also connected to the vegetation in the wider landscape. The habitat within the development footprint is suitable for foraging and breeding for the Koala.

There will be direct impacts to 8.62 ha of habitat for the Koala (equivalent to 0.48% of available habitat in the locality), requiring offsetting of 227 species credits under the NSW BOS. This removal extends a linear length of approximately 2.5 km and will not fragment potential habitat. Suitable habitat occurs adjacent to Barneys Reef Road, which is highly connected to native vegetation in the north and south. The population which occurs within this area is likely to be relatively mobile, and traverse throughout the suitable habitat along Barney's Reef Road. The greatest width of clearance as a result of the proposed works will be 8 m, adjacent to the existing Barneys Reef Road, which still allows for the connected habitat to provide refuge for the Koala.

In addition to offsets, mitigation measures such as pre-clearance surveys to ensure the Koala is not present within the subject land prior to vegetation removal will be in place in order to avoid direct impacts to the Koala, potentially during the breeding season.

To minimise the impacts on native vegetation triggered from upgrade works along the site access route, it has been agreed with Mid-Western Regional Council and Warrumbungle Shire Council that speed limits will be reduced to 80 km/hr (and potentially further for all construction traffic, to be defined in a Construction Traffic Management Plan (CTMP) prior to road upgrades and project construction) along Barneys Reef Road. Reducing speed limits to 80 km/h along Barneys Reef Road means a smaller footprint required for the works along the road whilst maintaining a safe access for construction and operation. Work site speed limits will be enforced and therefore unlikely to increase to Koala mortality due to vehicle strike. ACEN has committed to mitigation measures which will further reduce the impacts of the project on wildlife. These include measures to limit the removal of trees (including dead trees which provide habitat for wildlife), conducting pre-clearance surveys prior to removal of hollow bearing trees (to mitigate injury to potential fauna) replanting of consistent species post construction (to increase the floristic and structural diversity of the land) and the development and implementation of a biodiversity management plan, which will also encourage daily construction environmental management audits and safety checks to wildlife from the perimeter security fencing. A trained fauna handler will be present during clearing of hollow bearing trees to rescue and relocate displaced fauna, if found on-site.

5.2 Visual

5.2.1 General visual amenity

23 public submissions (6% of total public submissions) raised concerns of the general visual amenity impacts of the project, and the maintenance of the proposed landscape screening. A submitter questioned the accuracy of the photomontages produced for the visual impact assessment.

It is acknowledged that the project will introduce some new infrastructure elements into the landscape. A substantial site selection process is undertaken by ACEN before a project such as this one proceeds to feasibility and environmental assessment, and one of the key factors considered in this site selection process is visibility. As documented in Section 2.2 of the EIS, the study area was selected in part based on its separation from residential townships, with surrounding topography, vegetation and distance assisting in screening most views from the Golden Highway and Castlereagh Highway.

Further, as part of the project refinement process, the design and location of the development footprint within the project boundary went through a number of revisions in response to stakeholder engagement and environmental constraints identification. This process enabled the extent of visual impacts to be minimised and in some cases avoided, as much as possible. Hence, development of the project design included and will continue to include general measures to minimise the degree of visual contrast between project infrastructure and the surrounding rural landscape. This is done primarily through careful siting of project elements to take advantage of the topography and existing vegetation.

Views from further away and higher in elevation will benefit more from trees planted within the development footprint. Enhancing the tree canopy along waterways can emphasise the natural landforms and hydrology of the site, reducing the manufacture appearance across the site.

The visual impact of the BESS and associated structures can be minimised by careful selection of materials and colours. Neutral colours that blend in with the surrounding landscape will be used where possible, such as khaki, green, beige or similar.

Landscape screening is proposed to mitigate visual impacts at the following locations, as illustrated in Figure 1.2:

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

Additional mitigation measures such as screen planting within properties may be considered in a separate agreement with landholders at R5, R7, R11 and R12.

Landscape screening is proposed to effectively mitigate visual impacts at multiple locations, and ACEN commits to the ongoing maintenance of this screening during the life of the project. The potential visual amenity impacts of the project are described in the EIS, specifically in Section 6.4.3 and the visual impact assessment (VIA) in Appendix G of the EIS.

In relation to the accuracy of photomontages, the photographs used were taken following ‘best practice’ techniques. The images were captured on a digital camera with a full frame sensor, and a 50 mm focal length lens. The images were then processed through specialised software to produce the panorama images with minimal distortion.

It is acknowledged that photographs and visualisations cannot replicate the actual view as seen by a human eye; however, they do inform the assessment and help illustrate the location and nature of a proposed development.

5.2.2 Visual impact assessment

Five submitters (1% of total public submissions) raised concerns of the visual impact assessment undertaken as part of the EIS, in particular the selection of the viewpoints and the methodology that was undertaken.

The methodology supporting the selection of viewpoints is described in Appendix G of the EIS. As described, the VIA was prepared with reference to the methods outlined in the following:

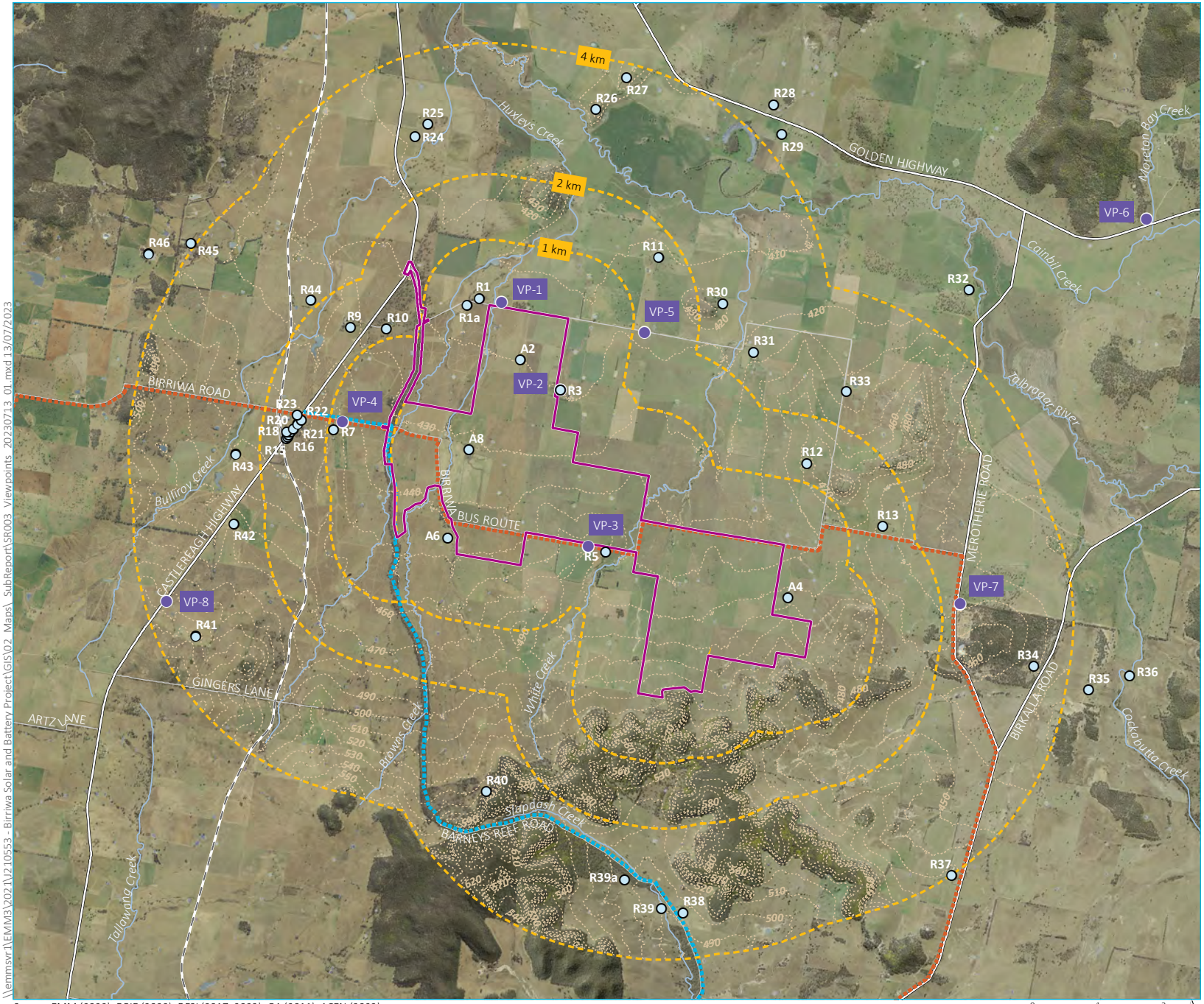
- *Large-Scale Solar Energy Guideline* (DPIE 2022a) (the Guideline)
- *Guidelines for Landscape and Visual Impact Assessment Third Edition* (Landscape Institute and Institute of Environmental Management and Assessment 2013) (the GLVIA)
- *Wind Energy: Visual Assessment Bulletin AB 01 For State significant wind energy development* (DPIE 2016) (the VA Bulletin).

Viewpoints are shown in Figure 5.1. All viewpoints were selected to provide a representative sample of the likely visual landscape changes on the different users of the areas surrounding the project and their visual exposure to various project elements. Viewpoints that are considered to have potential exposure to various project elements or areas available to public access, such as roads, and private viewpoints from residential properties surrounding the project, have been identified through GIS mapping, fieldwork, stakeholder engagement and desktop analysis.

Further, to ensure a thorough assessment of the potential impacts on surrounding rural residences, each residence within 2 km of the development footprint was assessed for visual impacts (in addition to the viewpoints assessed).

As well as informing the project refinement process, feedback received from residents and the local community as part of stakeholder engagement activities was also used to inform the selection of the viewpoints.

More information can be found in Section 6.3 and Appendix G of the EIS.



KEY

- Study area
- Viewshed buffer
- Viewpoint location

Existing environment

- Sensitive receptor
- Rail line
- Major road
- Minor road
- Topographic contour (10 m interval)
- Named watercourse
- Waterbody

Central West Cycle (CWC) trail

- CWC main route - Gulgong to Dunedoo
- CWC alternate route - Slap Dash Creek side trail

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

0 1 2 km

GDA 1994 MGA Zone 55

N

\\emmsvr1\EMM3\2021\2210553 - Birriwa Solar and Battery Project\GIS\02_Maps_SubReport\SR003_Viewpoints_20230713_01.mxd 13/07/2023

Viewpoint locations and receptors

Birriwa Solar and Battery Project
Submission Report
Figure 5.1

EMM
creating opportunities

5.2.3 Glint and glare

Five submitters (1% of total public submissions) raised concerns that the project will result in glint and glare. Submitters were concerned that the project would emit glint and glare impacting the surrounding residents and potentially impacting aircraft activity/operations.

The potential impacts of reflectivity on receptors (including motorists) from PV modules are commonly referred to as “glint” and “glare”. Based on the glare analysis undertaken for the project, the risk of glint and glare related impacts experienced at residences and along roads as a result of the project is limited. Potential reflectivity and glare as a result of the project is assessed in Section 6.3.4 and Appendix G (specifically Section 5.4 and Section 7.1.1 provides a glint and glare analysis) of the EIS.

As described in the VIA, with regard to reflected light, trackers will be used to maximise the sunlight absorbed by the solar panels. The trackers are designed to keep the panel perpendicular to the sun. It can therefore be assumed that the sunlight will reflect perpendicular to the cell and directly back toward the sun.

The glare from the solar arrays is limited in location and intensity. The results of the glint and glare assessment indicate that low levels of glare may be experienced along approximately 400 m of Birriwa Bus Route South (Central West Cycle Trail) for short periods during the winter.

The detailed design of the BESS infrastructure is yet to be finalised. With the refinement in the design of the BESS infrastructure and choice of location finalised, the amount of potential glare is expected to substantially decrease.

There are two airfields in the general locality of the project. These are the Dunedoo airfield and the Dunedoo hospital helipad:

- The Dunedoo airfield is 9.3 km north-west of the study area. The flight path for the airstrip appears to be south-west to north-east. Therefore, aircraft will not fly over the solar arrays nor will they fly within close proximity to the project as they approach for landing. There is therefore little potential for impacts on aircraft from reflection or glare from the solar arrays.

- The Dunedoo hospital helipad is 14.2 km north-west of the study area. Helicopters approaching and leaving the helipad will not be forced to fly above or near the solar arrays, and therefore should not be affected by reflection or glare from the solar arrays.

One submission raised potential glint and glare impacts on RAAF pilots conducting low level exercises. There are no RAAF bases within the vicinity of the project. The closest RAAF base to the project is Glenbrook RAAF base which is located over 250 km to the south-east.

5.2.4 Infrasound

One submitter (0.2% of total public submissions) raised concerns of the visual impacts from possible effects from infrasound.

There are no visual effects of infrasound. Notwithstanding, it is noted that the project will not be a significant source of infrasound.

5.3 Traffic

5.3.1 Increased traffic volumes

11 submitters (3% of total public submissions) raised concerns regarding increased traffic volumes that will result from the project.

The expected project traffic volumes will be highest during the construction phase of the project in comparison to the operation phase, with only minimal traffic movements required during operations.

In particular, the key intersection to be used by construction traffic for the project was assessed, being the Castlereagh Highway/Barneys Reef Road intersection. The traffic modelling of this intersection demonstrated that the level of service (LOS – a qualitative measure used to describe operating conditions) of this intersection will remain good, at LOS A, and will still have approximately 70% spare capacity to accommodate any additional traffic.

ACEN has committed to developing a CTMP to ensure effective traffic management measures are put in place to avoid and mitigate potential impacts. The CTMP will be developed in consultation with TfNSW, Mid-Western Regional Council and Warrumbungle Shire Council prior to the commencement of road upgrades and construction of the project.

The CTMP is expected to be required as a condition of the development consent if the project is approved, which will include measures relating to road safety. In addition, a driver's code of conduct will be implemented and introduced as part of the site induction, which will include the following:

- Informing drivers about the school bus routes along Castlereagh Highway.
- Direction to avoid compression braking near residential receptors.
- Direction to avoid trips during school zone times (8:00 am–9:20 pm and 2:30 pm–4:00 pm).
- Install school bus signs at suitable locations along construction routes if necessary to warn heavy vehicle drivers of student drop-off and pick-up areas, in consultation with relevant councils and road authorities.
- Raise awareness of cyclists' presence in the area.
- Responding to local climate conditions that may affect road safety such as fog, dust and wet weather. The CTMP will be prepared by suitably qualified persons in accordance with the TfNSW (2022) T*raffic Control at Work Sites Manual*.

Road safety will be detailed in the CTMP. In addition to the CTMP, a driver's code of conduct will be implemented and introduced as part of the site induction. The drivers code of conduct will be highlighted to increase awareness of cyclists' presence in the area.

Any site-specific circumstance, e.g. peak construction activities, a traffic controller may be required to manage the vehicular traffic and cyclists which is subject to site supervisor's safety assessment and discretion.

Section 6.4 and Appendix H of the EIS describe the potential traffic impacts of the project as outlined above, including increased traffic volumes on the existing road network.

As described in the EIS (refer to Section 6.4.3 of the EIS), the estimated *daily* light vehicle movements associated with the construction phase of the project is 720 (in and out). This assumption was based on the workforce travelling in and out of the site from local accommodation. With the amended project and addition of the accommodation facility, the majority of the workforce will no longer be travelling from local accommodation during the peak construction period, and therefore the assumed number of light vehicle movements during peak construction per day will be substantially reduced. It is acknowledged that workers will travel in and out of the site during weekly/fortnightly shift changeover; however, the number of movements at this time would be less than the movements associated with the assumed peak of construction.

5.3.2 Road upgrades and maintenance

Five submitters (1% of total public submissions) raised concerns with the existing road conditions and the proposed road upgrades and continued maintenance to sustain the project.

One submitter had questioned who would be responsible for the costs associated with the road upgrades and maintenance, as well the existing road's ability to sustain the project.

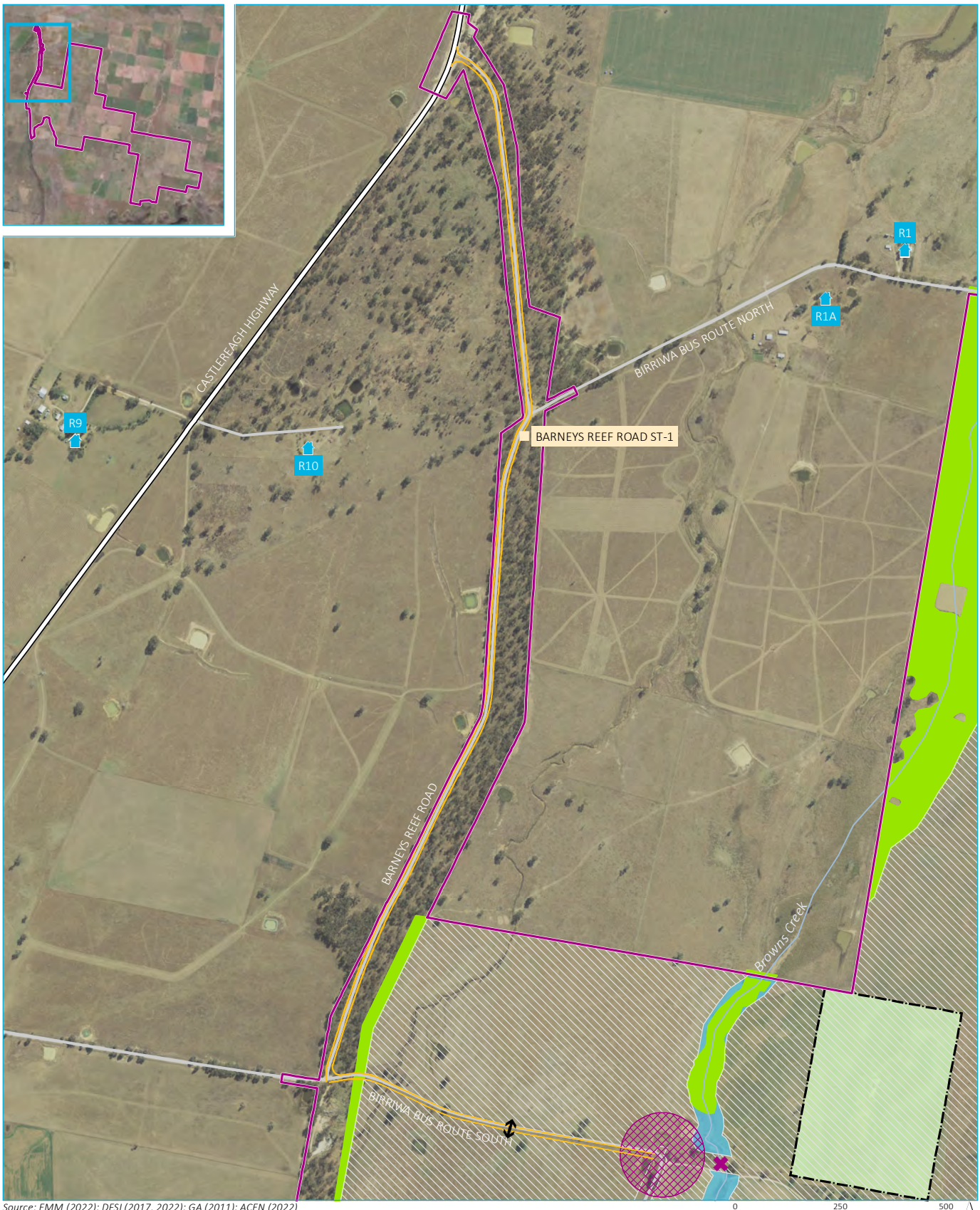
To accommodate the construction traffic movements associated with the project, an upgrade of Barneys Reef Road and Birriwa Bus Route South along the project access route will be required (refer to Figure 5.2). Resurfacing and widening will be completed on Barneys Reef Road and Birriwa Bus Route South in compliance with Austroads rural roads design standards, and in further consultation with relevant authorities during subsequent phases of project design and assessment. The costs associated with the public road upgrades for the purpose of accessing the project will be borne by ACEN. Note, council would maintain the local public roads post-construction and TfNSW would maintain the State Highway. Further, in relation to ongoing road maintenance, as noted above, ACEN will enter into a VPA with Mid-Western Regional Council, the purpose of which is to support the cost of maintenance of services such as local roads. In addition, upgrades to roads that will be undertaken across the CWO REZ, such as Barneys Reef Road and the intersection with the Castlereagh Highway for this project, will increase the quality of the roads across the region and subsequently lead to better safety outcomes for the community.

ACEN has also committed to ensuring that its contractors for the construction of the project prepare and implement a CTMP and a Driver Code of Conduct. ACEN or its contractors will undertake dilapidation surveys of the proposed vehicle routes to assess the condition of the roads, so they are not left in a worse condition because of the project.

The lead contractor(s) appointed by ACEN will also implement a road maintenance program for the affected local roads during construction of the project. The program will be based around bi-monthly route inspections of all the affected roads and may include items such as:

- Regrading of the road survey to repair potholes and road corrugations at regular intervals and in response to identified serviceability and safety concerns.
- Commitment by ACEN or its contractor(s) to restore the road surface to their pre-construction condition at the completion of construction.

The road maintenance program will be prepared in consultation with Council and its effectiveness will be reviewed during the construction period.



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

0 250 500 m

GDA 1994 MGA Zone 55

N

\\emmsvr1\EMM3\2021\210553 - Birriwa Solar and Battery Project\GIS\02_Maps_SubReport\SR004_RoadUpgrade_20230713_01.mxd 13/07/2023

KEY

- Study area

Impact footprint
- Development footprint
- Restricted development area
- Potential public road crossing location

Project layout
- Potential creek crossing point
- Proposed road design
- Proposed access point to the project
- Temporary construction compound

Existing environment
- Dwelling not associated with the project
- Aboriginal heritage site (to be avoided)
- Major road
- Minor road
- Watercourse
- Vegetation to be retained

Proposed road upgrades

Birriwa Solar and Battery Project
Submissions Report
Figure 5.2

EMM creating opportunities

5.3.3 Safety of road users

Four submitters (1% of total public submissions) raised concerns around the safety of road users, as a result of the project.

Three options were considered for the access route to the development footprint, with the preferred option (Option 1: via Barneys Reef Road) selected for a number of reasons (as outlined in Section 2.2 of the EIS), and primarily that it provides safer conditions at the intersection with Castlereagh Highway. The alignment of Barneys Reef Road provides good sight distance, and the grade is relatively flat compared to the other considered options.

A road safety assessment for the Castlereagh Highway and Barneys Reef Road was conducted as part of the traffic impact assessment. The road safety assessment met all design requirements in accordance with the *Austroads Guide to Road Design Part 4A (Unsignalised and Signalised Intersections)*.

In June 2022, and as discussed with Mid-Western Regional Council and the traffic committee regarding the design of upgrades to Barneys Reef Road, it was agreed that the speed limit for the construction period can be reduced to 80 km/h (from 100 km/h) for regular traffic, and the construction traffic speed limit is expected to be set at 40 km/h, as will be described in the CTMP.

There are school bus routes passing along Castlereagh Highway and Birriwa Bus Route South. The potential impacts on school buses associated with the temporary construction phase of the project will be limited to heavy vehicles, only as construction staff travelling in light vehicles will be arriving and departing from the site outside of school bus operating hours. Potential impacts from heavy vehicles will be limited as the majority of the heavy vehicles will be travelling from the north towards the project. Further, as noted above in Section 5.3.1, a CTMP will be developed and implemented during construction, where traffic movements will be highest, and will detail appropriate and effective road safety measures. The CTMP will include specific safety initiatives for transport through residential areas and the scheduling of project deliveries to avoid peak hours and school bus times, as far as practicable. The Driver Code of Conduct will also include safety-specific tips and guidelines.

5.4 Heritage

5.4.1 Impacts on heritage items

Four submitters (1% of total public submissions) raised concerns about the potential impacts to heritage items within the project area, including Aboriginal heritage. Two submissions noted megafauna and unique fossil field were within the area.

Avoidance of significant Aboriginal cultural heritage values was an objective of the project refinement process. Field surveys undertaken as part of the Aboriginal cultural heritage assessment identified eight Aboriginal sites, three of which are outside of the development footprint and will not be impacted by the project. ACEN further refined the development footprint to avoid impacts to another four of the identified sites. Therefore, through the refinement process, ACEN has avoided impacts to seven Aboriginal sites.

Subsequently, only one Aboriginal site, Mangarlowe IF-2, will be impacted by the project (refer to Figure 1.2), and will be collected prior to commencement of construction. Megafauna or fossil fields were not identified during the field survey of the study area.

An Aboriginal cultural heritage management plan (ACHMP) will be developed for the project in consultation with DPE, registered Aboriginal parties (RAPs) and Heritage NSW. The ACHMP will detail the management of known Aboriginal sites and mitigation measures to further avoid impacts to Aboriginal heritage values in the study area, along with unanticipated finds procedures and training and reporting protocols.

Aboriginal cultural heritage is described in detail in Section 6.5 and Appendix I (Aboriginal cultural heritage assessment) of the EIS.

5.5 Hazards

5.5.1 Health impacts

Of the public submissions received, 13 submitters (3% of total public submissions) raised concerns about potential for the project to adversely affect human health. This included:

- the proximity of the project to nearby residences (including PV panels, BESS and transmission lines)
- the toxicity of material and contents of the project elements (including PV panels and BESS)
- workforce health and safety practices
- noise and dust impacts to both the surrounding community's health and animal during the construction phase of the project
- worker behaviour onsite and in the community.

i Health impacts associated with infrastructure and proximity to residences

The Preliminary Hazard Assessment (PHA) undertaken for the EIS (Appendix J) concluded that EMFs created from the project will not exceed the International Commission on Non-Ionising Radiation Protection (ICNIRP) reference level for exposure to the general public at any location within the development footprint, and that the impact on stock and the general public (including neighbouring agricultural workers) in surrounding areas will be negligible.

The design and typical exposure levels to EMFs for the proposed project infrastructure has been assessed against the ICNIRP's (1998) *Guidelines for limiting exposure to time-varying electric, magnetic and electromagnetic fields*. Several controls to reduce the potential for EMFs have been identified and implemented in the project design, including standard solar PV plant characteristics such as inverters housed in shipping containers or steel cabinets.

Electric and magnetic fields (EMFs) are described in Section 6.6 of the EIS and Chapter 5 of Appendix J (Preliminary Hazard Assessment).

ii Infrastructure material and contents

The PV modules will most likely use polycrystalline or monocrystalline wafer technology. Modern crystalline solar panels of the type that will be used for the project do not contain heavy metals.

All of the monocrystalline or polycrystalline PV panels being considered by ACEN for the project are manufactured by tier one suppliers, which make products meeting all the relevant international and domestic standards. The solar component of the project will be constructed by a leading Engineer Procurement and Construction (EPC) contractor(s) using modern tier one PV panels that have passed the due diligence of ACEN and its financiers. Solar panel production, installation and performance will be closely monitored. The modules are not anticipated to physically degrade over the project's lifetime and are accompanied with a manufacturer warranty. Therefore, there is a negligible likelihood of the photovoltaic modules releasing any toxic material.

The grid connection and array collector substations and batteries within the BESS may contain some heavy metals or other potential contaminants (e.g. nickel, manganese, cobalt, iron, copper). Similar to the PV panels, this equipment will be manufactured by reputable manufacturers meeting all relevant international and domestic standards. The substation and BESS facilities will be designed and constructed by tier 1 contractors and will incorporate sufficient bunding/storage capacity to contain spills.

In relation to the BESS, there are appropriate measures in place to ensure the chemicals within the battery cells are contained and will not contaminate the surrounding environment. These measures include:

- An energy management system, which monitors the health of the BESS down to a cell level, ensuring the system is operated in a safe manner.
- Gas and temperature sensors, which monitor the enclosures and will detect any abnormalities.
- Fire suppression systems as part of the enclosures.
- Multiple levels of physical separation between chemicals within the cells and the environment (i.e. the cells will be housed within a module, which will likely be stacked in an enclosure).

Appropriate spill prevention and management measures will be developed as part of the project's construction environmental management plan (CEMP), which will include spill clean-up procedures which would be implemented during construction and throughout the project's operations.

iii Workforce safety practices

Workforce health and safety practices will be managed by ACEN in accordance with the successful contactors work health safety procedures. The successful contractor's work health safety procedures will be in accordance with the applicable requirements of the *Work Health Safety Act 2011* (WHS Act).

Under the *Work Health and Safety Regulation 2017* (WHS Regulation), each construction project must have a principal contractor, and there can only be one principal contactor at a time. Everyone involved in construction work has health and safety duties when carrying out the work. The principal contactor has the primary duty under the WHS Act to ensure, so far as is reasonably practicable, workers and other persons are not exposed to health and safety risks arising from the business or undertaking.

The successful contractor will have a delegated safety manager on site and will prepare and implement a safety management procedure (or similar).

The addendum Social Impact Assessment (EMM 2023c) discusses the community concerns with regards to worker behaviour onsite and in the community, with respect to community safety concerns and the effect the new accommodation facility may have on adjoining and nearby landholders. Security personnel will be situated onsite 24 hours every day to ensure the safety of workers and the surrounding community. Security officers will be responsible for monitoring access to and from the site and managing people within the site. This includes mobile security checks of the accommodation facility and the site perimeter, crowd control for social areas, incident control and emergency response. Officers will have a relevant security licence and will be first aid certified. In addition, a Complaints and Grievances Procedure will provide an opportunity for stakeholders to raise complaints, grievances, and provide feedback. The procedure will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN's response.

iv Health impacts from noise and dust

Noise modelling undertaken (based on a worst-case scenario approach) found that all construction noise management levels are expected to be complied with during standard construction hours. To maintain compliance during works outside of standard construction hours on Saturday afternoons (1:00 pm to 6:00 pm), a construction exclusion zone of 650 m from non-associated residences will be established during site establishment works, and a construction exclusion zone of 300 m will also be established from non-associated residences during infrastructure delivery and installation. Road traffic associated with the construction of the project will increase road traffic noise levels by more than 2 dB; however, levels will remain below the minimum thresholds for arterial roads specified in the *Road Noise Policy* (RNP).

During operations, significant noise impacts are not predicted on any residence, with noise modelling showing that noise levels from project infrastructure will comply with the relevant NSW Government noise criteria. To ensure compliance with operational noise criteria, the following mitigation measures will be adopted in the layout of the project:

- No electrical infrastructure outside of PV arrays (i.e. transformers or inverters) will be installed within 250 m of the property boundary of the nearest neighbouring property, labelled as R3 in the EIS.
- The grid transformers associated with the BESS, may include a 6.5 m high barrier if this is deemed required at the time of final design of the BESS, positioned to reduce noise impacts on nearby sensitive receivers.

Dust emissions will be temporary and associated with the construction phase of the project, and likely as a result of ground disturbance activities and movement of plant and equipment. Mitigation measures will be implemented to limit potential dust generation from these activities, as described in Section 6.13.1 of the EIS, and will likely include speed reduction along unsealed roads, use of water trucks for dust suppression and regular maintenance of unsealed road surfaces.

Noise and dust impacts during the construction of the project are described in Section 6.7 and 6.13.1, respectively, in the EIS.

5.5.2 Potential for contamination

Nine submitters (2% of total public submissions) raised concerns around potential contamination of soil and water resulting from the leaching of chemicals from solar panels following damage from hail stones or across the lifetime of the panels. This could result in the contamination of water supplies used for domestic and stock purposes, and soils used for cropping and grazing. Submitters suggest that contamination of these resources would directly impact on the livelihood of nearby landowners.

As described in Section 5.5.1ii, the PV modules will be manufactured by a tier one supplier using polycrystalline or monocrystalline wafer technology which does not contain heavy metals. The modules are not anticipated to physically degrade over the project's lifetime and come with a manufacturer warranty. Therefore, there is a negligible likelihood of the photovoltaic modules causing contamination.

5.5.3 Increased risk of fire from the PV solar arrays

Of the submissions received, 12 submitters (3% of total public submissions) raised concerns about bushfire risk associated with the project, in particular the increased risk of fire from the PV solar arrays.

PV modules are designed to absorb light rather than reflect or magnify it. The solar PV modules that will be used for the project are not the same technology as those used in concentrating solar power, also known as 'solar thermal', or concentrating PV, which uses mirrors to concentrate sunlight.

The risk analysis in Appendix J of the EIS assessed the risk of fire in the event of a number of scenarios including fire of electrical conversion system equipment, BESS fire, substation fire and bushfire. All are considered to be 'very low' risk events, with no significant offsite impacts expected, due to:

- Fire on electrical conversion system equipment: localised effects, the effects are not expected to have an offsite impact.
- BESS fire, substation fire and bushfire: As the BESS and substation will be located within the operational infrastructure area and there is a large separation distance to the nearest non-associated residential dwelling, the effects are not expected to have an offsite impact.

The study identified proposed prevention controls to reduce the likelihood of these fire events and mitigation controls to contain the fires to minimise potential for escalated events. APZs will be established to ensure a 'buffer zone' between site infrastructure and surrounding vegetation.

A fire management plan (FMP) and emergency response plan (ERP) will be prepared for the project in consultation with the NSW RFS District Office and Fire and Rescue NSW. The FMP will include provisions for location of hazardous materials as well as specific measures and procedures to prevent ignition from project activities. The ERP will incorporate all relevant safety procedures and management measures detailed in the relevant acts, regulations and Australian Standards.

The potential impacts of fire have been assessed and are described in detail in Section 6.6 (hazard and risk), 6.11 (bushfire) and Appendix J (Preliminary Hazard Assessment) and Appendix P (Bushfire Assessment) of the EIS.

The mitigation measures for bushfires are detailed in Section 6.6.3 and Section 6.11.4 of the EIS.

5.6 Bushfire

5.6.1 Inaccurate detail regarding previous bushfires in the area

Two submitters (0.5% of total public submissions) noted that they did not agree with the EIS statement that "no bushfire have been recorded within or close to the study area".

In accordance with the Mid-Western Regional Council and Warrumbungle Shire Council bushfire prone land mapping, the project study area is not on designated bushfire prone land.

As part of the bushfire assessment a search of the National Parks Wildlife Safety (NPWS) Fire History was completed and as stated in the EIS, results showed no recorded fires on or near the project study area.

Through community consultation and feedback ACEN understand, that the Sir Ivans fire was recorded in 2017, which affected managed rural properties and forested crown lands; however, the area affected by the fire is not located within the study area and is greater than 5 km away.

A fire started near Birriwa in 1979 and burnt through to Ulan. It is understood that the fire caused one fatality, left several severely injured, killed thousands of stock, and burnt several houses. Data obtained from the NPWS Fire History shows a total of five bushfires have been recorded within a similar distance from the project, between 2007 and 1952. These include:

- Goon Goon state forest during 2007 (<15 km from the project).
- Vegetation to the north of Cope State Forest during 2002 (<20 km south-east).
- Dapper Nature Reserve in 1978 (<15 km south-west).
- two wild fires were recorded near the Weetalibah Nature reserve in 1952 and 1965 (<40 km north-east).

The bushfire assessment determined the risk of bushfire on the project to be low through the implementation of recommended mitigation measures, which includes clear separation of buildings and bushfire hazards, adequate water supply and pressure, and appropriate access for residents, fire fighters, and emergency service workers.

It is noted the lack of fire activity directly on the development footprint and surrounds is as a result of agricultural management and that the project site itself is not a noted bushfire path.

A bushfire assessment was completed for the project and is summarised in Section 6.11 of the EIS and is included in Appendix P of the EIS.

5.7 Noise

5.7.1 Noise impacts on neighbouring properties

Of the submissions, six submitters (2% of total public submissions) raised concerns of the potential increased noise impacts that the project on the surround residences during the construction and operation of the project.

Noise impacts have been addressed in Section 5.7.1 of this report. As explained, noise modelling showed that during construction, all relevant construction noise criteria are expected to be complied with during standard hours. To maintain compliance during works outside of standard construction hours on Saturday afternoons (1:00 pm to 6:00 pm), additional measures will be put in place, in particular exclusion zones for equipment from nearby properties. During operations, compliance with criteria is also expected, as demonstrated by the detailed noise modelling undertaken for the EIS.

Construction noise and vibration management measures will be implemented consistent with recommendations contained within the *Interim Construction Noise Guideline* (DECC 2009). These will be outlined in the CEMP for the project.

ACEN has established a Community Information Line (1800 290 995) so that members of the community can lodge a complaint in response to noise impacts. During construction, complaints will be investigated by ACEN and/or its appointed engineering, procurement and construction contractor with the appropriate actions implemented in response based on the nature of the complaint.

Noise and dust impacts during the construction of the project are described in Section 6.7 and 6.13.1, respectively, in the EIS.

5.8 Land resources

5.8.1 Loss of agricultural land

49 submitters (12% of total public submissions) questioned the site suitability, particularly in regard to the loss of agricultural land as a result of the project. Many submitters claimed that the project would remove prime agricultural land.

In relation to site suitability, the project is consistent with local, regional and state planning regimes.

The land on which the project is located is not biophysical strategic agricultural land (BSAL) as it does not meet the requirements for high value or prime, agricultural land. As shown in Figure 5.3, the study area is mapped as Land Soil Capability (LSC) classes 5 and 7, representing land with moderate-low capability to very low capability, as per the NSW government eSPADE database.

In addition, the value of agricultural production loss in the project development footprint was quantified as part for the agricultural productivity assessment undertaken for the EIS (refer to Appendix L of the EIS). It found that, if the development footprint (1,138 ha) was fully developed, it would encompass some 572.0 ha of land used for grazing and 542.9 ha for cropping, totalling 1,115.0 ha. Were this 1,115.0 ha to be developed (change of use) it would be valued between $318,168.30 and $319,564.66 in annual productivity based on calculated agricultural values for the Mid-Western Regional LGA and Mudgee Region–West respectively.

The site suitability with respect to agriculture considers the inherent low LSC class in addition to the extensive amount of land utilised for agriculture within the LGA, of which the project is a very minor area. project impacts to agriculture are primarily due to the loss of access to the land for use in intensive cultivation such as cropping or cattle grazing for the duration of the project. These impacts are considered to be low due to the inherently poor land capability of the study area as well as the potential for ongoing agricultural practices, such as sheep grazing.

Hence, the majority of the land within the development footprint is not suitable for high-impact land uses such as cultivated cropping or intensive grazing, and therefore the use of the land for a solar project (with or without co-existent grazing) would not remove significant amounts of land from intensive primary production. It should be noted that single axis tracking technology will allow for approximately 60–70% of the available land within the array areas to remain free of project infrastructure, and available for sheep grazing, therefore allowing for a continuation of the land's current use.

The location of the project on grazing land and the design of the PV modules to allow unimpeded sheep grazing encourages the co-existence of both agriculture and electricity generation. This co-existence enables landholders to diversify their income streams during times of climatic and economic uncertainty, creating a stronger and more sustainable local and regional economy.

The project's potential impacts on the agricultural industry arise from the occupation of agricultural land by a non-agricultural facility. This is limited to the land on which project infrastructure is located, with no anticipated constraints on the current or potential agricultural uses of nearby land. Further, potential impacts to land within the development footprint will be mitigated in part by the project layout and designing to allow for sheep grazing to continue on land on which the PV modules are located.

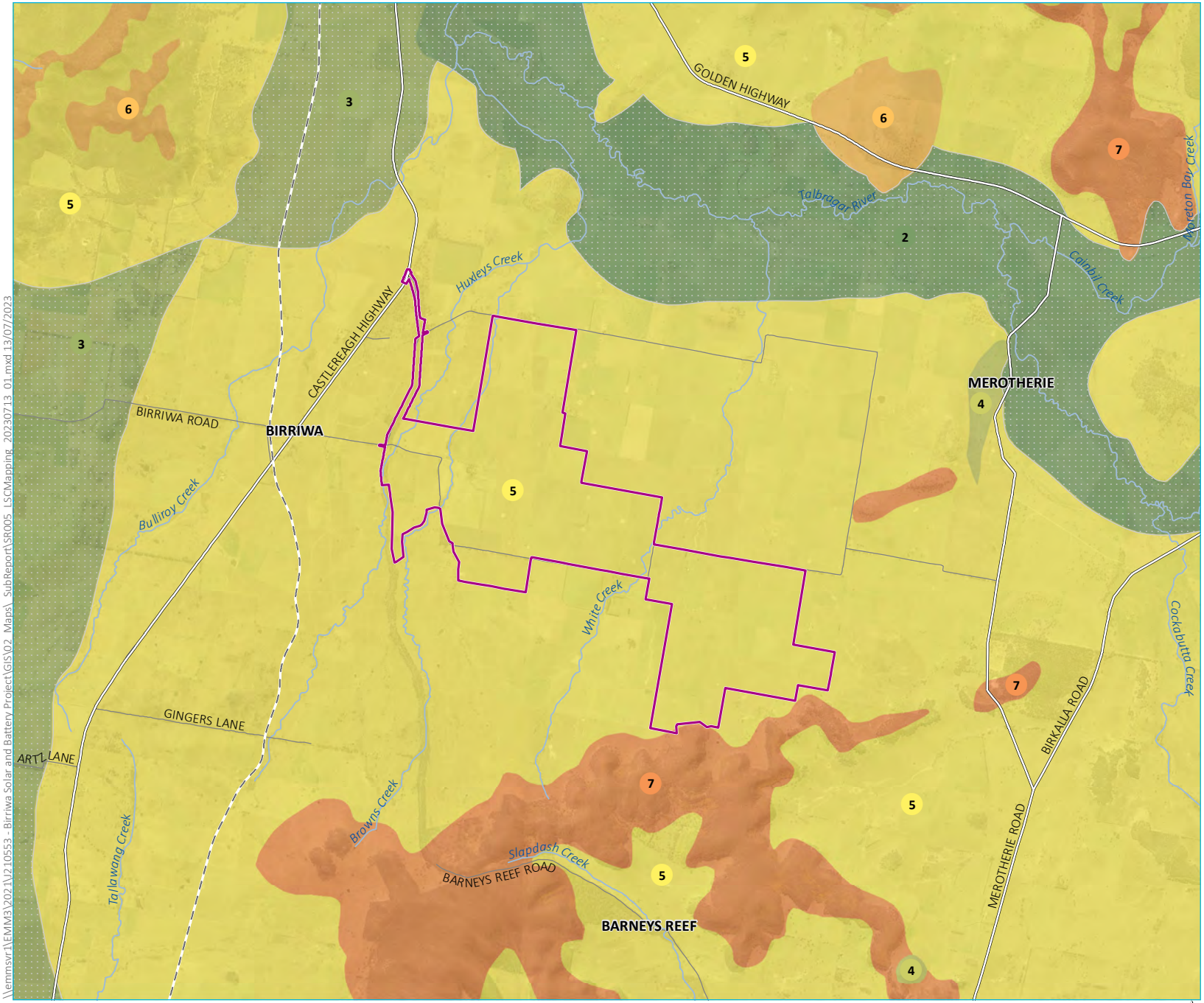
As described in the Land Use Conflict Risk Assessment (contained within Appendix L of the EIS), the project is a temporary and reversible change of land use, and the land within the development footprint can be returned to its former use (i.e. grazing) following decommissioning.

The development footprint incorporates a mix of farms from within the local community, with potential for continuation of sheep grazing activities within the development footprint during operations, as well as continuation of farming activities on land surrounding the development footprint. Primary production can continue within the immediate surrounds.

In addition, it is anticipated that the development footprint will only require minimal site preparation and civil works (such as grading/levelling and compaction). No large areas of reshaping or excavation are anticipated, aside from digging of cable trenches and formation of level pads for substations, PCUs and BESS infrastructure.

A project decommissioning and rehabilitation plan will be prepared prior to the end of the project's operational life and will feature rehabilitation objectives and strategies for returning the development footprint to agricultural production.

A land use, soils and erosion assessment was completed to inform the EIS and is included in Appendix L of the EIS. Section 6.8.2 of the EIS.



\\emmsvr1\EMM3\2021\2210553 - Birriwa Solar and Battery Project\GIS\02_Maps_SubReport\SR005_LSCMapping_20230713_01.mxd 13/07/2023

Modelled land and soil capability and BSAL mapping

Birriwa Solar and Battery Project
Submissions report
Figure 5.3

EMM
creating opportunities

5.8.2 Soil erosion and run-off impact

11 submitters (3% of total public submissions) raised concerns about the potential increase in erosion and sediment run off that would occur as a result of the project, and how this will impact the neighbouring properties and nearby creeks.

ACEN has committed to the development and implementation of a SWMP for the project, which will outline the erosion and sediment controls to be implemented during construction and operation to effectively avoid and mitigate potential impacts on soil resources.

These measures include:

- Minimising disturbance and maintaining topsoil and vegetative cover over dispersive subsoils.
- Adopting a drainage design that maintains sheet flow conditions and minimises concentration of flow.
- Installing solar arrays at a height that maintains adequate vegetative soil surface cover.
- Utilising the natural landform topography and minimising cut and fill where practicable.
- Ensuring pipeline and cable trenches are located on the contour where feasible and using trench breakers that extend outside the trenches into in-situ soils.
- Treating disturbed dispersive soils with gypsum.
- Locating sediment basins downstream of disturbed areas to capture eroded sediments and treat turbid runoff.
- Progressively stabilising and revegetating disturbed areas.

A land use, soils and erosion assessment (LUSEA) was prepared to inform the EIS (Appendix L of the EIS) and is summarised in Section 6.8.4 of the EIS.

5.9 Water

5.9.1 Flooding impacts

Four submitters (1% of total public submissions) raised potential concerns that the project may increase flood impacts. One submitter raised concerns about how the roads and creeks will handle the increased amounts of water when it rains.

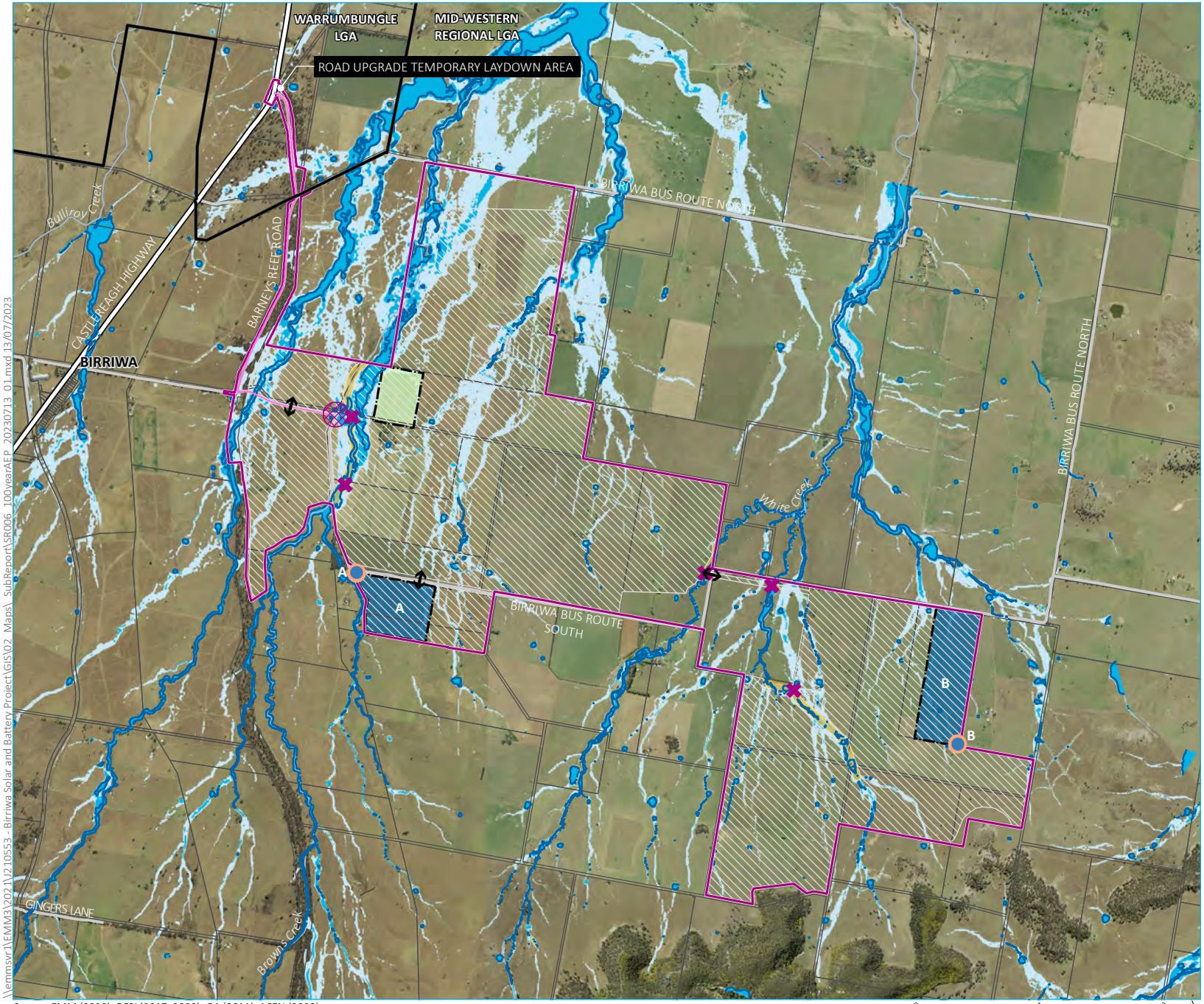
Flood modelling was undertaken for the project to provide planning guidance for the placement of internal infrastructure and to assess the potential for external impacts. Flood modelling of the existing conditions was undertaken for a range of annual exceedance probability events for the study area. The output of this modelling provides guidance on the planning of project infrastructure and enables the assessment of external impacts which may occur due to the project. Modelling results show that the project is likely to result in a minor increase in the volume of surface flow being discharged from the study area (refer to Figure 5.4).

Flood prone areas have been mapped across the study area and areas of higher flood risk identified. Due to the small extent of the project at the ground level, the impacts of the project to flood depth, velocities and levels will be small. For proposed site infrastructure outside the primary flow paths, flood impacts are considered to be minor in all modelled events.

In relation to potential offsite impacts, the proposed substation and BESS areas will not cause increases in flood level outside of the site boundary.

Preliminary design has considered flooding constraints and makes appropriate responses in terms of locating flood-sensitive facilities (e.g. substation and BESS) away from watercourses and areas of high hazard flooding. Array areas have also adopted appropriate setbacks from mainstream flooding and higher order watercourses. In addition, during construction, temporary site works, compounds, storage areas and plant and equipment will be located outside of flood prone areas, where practicable.

The potential risks of flooding on the project are described in Section 6.9.3 and Appendix M (Flood Impact Assessment) of the EIS.



KEY

- Study area
- 1% AEP event
- Area of higher flood hazard
- Area of lower flood hazard

Impact footprint

- Development footprint
- Road upgrade corridor
- Restricted development area
- Potential public road crossing location

Project layout

- Potential creek crossing point
- Proposed access point to the project
- Connection point (option A or B)
- Proposed operational infrastructure area including substation, operational facility and BESS (option A or B)
- Temporary construction compound

Existing environment

- Major road
- Minor road
- Watercourse
- Cadastral boundary
- Local government area boundary

\\emmsvr1\EMM3\2021\P210553 - Birriwa Solar and Battery Project\GIS\02 Maps\ SubReport\SR006 100yearAEP 20230713 01.mxd 13/07/2023

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

0 1 2 km

GDA 1994 MGA Zone 55

N

100 year AEP flood planning zones

Birriwa Solar and Battery Project
Submissions Report
Figure 5.4

EMM
creating opportunities

5.9.2 Impacts on groundwater

Three submitters (0.7% of total public submissions) raised potential concerns that the project may interact and impact the groundwater aquifer located within the project area.

Interaction with groundwater is anticipated to be minimal. The site selection and design process will reduce the need for heavy earthworks as much as practicable by using the flatter areas of land, which are mostly cleared of vegetation for infrastructure placement. Civil works will be required to prepare the disturbance area for construction and for certain project infrastructure such as the laying of any underground cabling and the substation/BESS pads.

The typical depth of installation for piles to support PV modules is anticipated to be approximately 1.5–3 m but may be greater depending on geotechnical conditions and specific tracker design. The depth of required ground preparation works for other project infrastructure and civil works are expected to also be within this range. It is noted that the medium voltage cables are typically buried to a depth of at least 600 mm.

Surface water modelling results show there is anticipated to be a minor increase in the volume of surface flow being discharged from the development footprint. When considering a conceptual water balance approach, there is likely to be a slightly lower percentage of infiltration through the soil profile and into the groundwater with a greater surface runoff from the development footprint. Given the minor increase and that the location of ground dependent ecosystems (GDEs) are primarily upstream of the development footprint, this change is likely to have a negligible impact on GDEs at the development footprint.

The development footprint is within the Lachlan Fold Belt Murray Darling Basin (MDB) groundwater source. Groundwater in the vicinity of the Huxleys Creek and Browns Creek through the development footprint has been classified as vulnerable by the NSW Government's regional mapping. Groundwater vulnerability is the level of risk of aquifers to contamination due to the physical characteristics of a location, such as depth to the water table or soil type. However, the only infrastructure proposed in these areas are solar panels and therefore no significant works are proposed that would impact on groundwater. The operational infrastructure areas and construction compound are not proposed in these areas, and therefore it is considered there is negligible risk to groundwater resources in these mapped areas.

Impacts to water resources, including groundwater, are described in Section 6.9 and Appendix N (Water quality impact assessment) of the EIS.

5.9.3 Dust suppression

Two submitters (0.5% of total public submissions) raised concerns about the amount of water that the project will require for dust suppression during the construction phase of the project and the on-going maintenance of solar panels during operation.

Vehicle movements on unsealed roads are expected to generate dust impacts; however, these impacts will typically be limited to the construction phase of the project and will be short-term. Mitigation measures to limit potential dust generation from project-related vehicle movements are described in Section 6.2.6 and 6.13.1 of the EIS and are likely to include speed reduction along unsealed roads, use of water trucks for dust suppression and regular maintenance of unsealed road surfaces.

Sources of water to be used for dust suppression will be determined in consultation with suppliers and landholders and will be subject to availability. The project water requirements are anticipated to include approximately 218 ML of water over the 28 month construction period (less if the weather is generally wet). Most of this water will be required for dust suppression, with other minor uses including site amenities, fire protection and washing of equipment and plant.

During construction, as noted in the EIS, water to be used for dust suppression is likely to be sourced from commercial supplies of treated wastewater (via water trucks). The project will not impact adjacent licensed water users or basic landholder rights during construction.

During operations, as noted in the EIS, water for panel cleaning may be transported to the project via water trucks if no other appropriate on-site solution is available. Washing will not require any detergent or cleaning agents.

The projects TMP will detail specific routes for heavy vehicles and dust suppression maintenance standards.

5.10 Decommissioning

5.10.1 Responsibilities for decommissioning and waste management

Nine submitters (2% of total public submissions) raised concerns regarding the project during the decommissioning phase, the two main concerns were:

- The need to identify who would be responsible for the disposal of the decommissioned material once the project has reached its lifespan.
- What will happen to the material once it has been decommissioned, with submitters noting the impact that these materials going to landfill will have on the environment.

The project infrastructure will be decommissioned and the development footprint returned to its pre-existing land use, namely suitable for grazing of sheep and cattle, or another land use as agreed by the project owner and the landholder at that time.

Consistent with contemporary consent conditions issued for large scale solar farm developments in NSW, it is anticipated that any consent for the project will include conditions requiring that the development be decommissioned, and site rehabilitated within a specific period and to the satisfaction of the Secretary of DPE.

If the project is approved, a project decommissioning and rehabilitation plan will be prepared prior to decommissioning, in accordance with any relevant conditions of consent. The plan will outline the rehabilitation objectives and strategies for returning the development footprint to agricultural production or alternative uses as has been agreed with the project landholders.

As part of the decommissioning and rehabilitation, ACEN would reuse, resell or recycle all dismantled and decommissioned infrastructure and equipment, unless contractually agreed with the landholders (i.e. underground cables deeper than 600 mm) and if it does not cause harm to the environment and farming activities post operation. Structures and equipment that cannot be reused or recycled will be disposed of at an approved waste management facility. project

ACEN will be responsible for decommissioning and rehabilitating the land within the development footprint. No cost is expected to be borne by Council's or the local community in this process. ACEN has entered into agreements with project landholders, which include appropriate measures to ensure sufficient funds are available for decommissioning and rehabilitation.

At the end of the project's operational life (noting that the project is anticipated to have a 30 year life), the PV modules will either be reused or recycled. ACEN anticipates that at the time of decommissioning, there will be significantly more recycling options available within Australia. In 2016, the International Renewable Energy Agency (IRENA) reported that up to 85% of the material within PV modules is able to be recycled (IRENA 2016). There may also be opportunities to reuse the PV modules. In lieu of an Australian based solution, the PV modules will be sent overseas for disposal through one of many established PV module recycling programs.

More information on decommissioning can be found in Section 3.4.3 of the EIS.

5.10.2 Final land use and rehabilitation

Of the submissions received, three of the submitters (0.7% of total public submission) raised concerns regarding the project during the decommissioning phase, the two main concerns were:

- The need to identify who would be responsible for the disposal of the decommission material once the project has reached its lifespan.
- What will happen to the material once it has been decommissioned, with submitters concerned the material used in the solar panels would be considered hazardous and will have detrimental environmental impacts.

During the rehabilitation and decommissioning of the site, ACEN will return the site in a safe, stable and non-polluting, as far as practicable. The visual impacts of any above ground ancillary infrastructure will be minimised as far as possible or retained for an alternative use where feasible.

Infrastructure related to the solar farm will be decommissioned and removed, unless agreed by the Planning Secretary otherwise. Some underground cables may remain on site, as agreed between the landholder and ACEN. Once decommissioned, the land within the development footprint can be rehabilitated to its current use if required thereby allowing for either continuation of renewable energy generation or a return to agricultural production. Land capability will restored, as far as practicable, to its pre-existing use.

ACEN will develop a decommissioning and rehabilitation plan for the project that will describe how the development footprint would be returned, as far as practicable, to its condition prior to the commencement of construction. The decommissioning and rehabilitation plan will also describe the approach to disposal/recycling of infrastructure.

ACEN will aim to ensure public safety at all times throughout the project, including the rehabilitation phase of the project.

5.11 Social

5.11.1 Impacts on lifestyle and community

22 submitters (5% of total public submissions) raised concerns of how the project will impact the lifestyle of the neighbouring community. These concerns included:

- increase number of people within the local community
- impact the current lifestyle and cultural values of the community
- directly impact neighbouring properties way of life
- the removal of agricultural land.

i Increase in the number of people within the local community

The anticipated increase in the number of people within the local community as outlined within the EIS has been revised as a result of the proposed temporary workers accommodation facility, which has been included in the project design to address concerns raised by local councils in the context of the CWO REZ, and to ensure that the accommodation needs of the required construction workforce can be met.

The addendum SIA (EMM 2023c) describes the concerns raised regarding the capacity and availability of services in the local area. The addition of the construction workers accommodation facility to the project, as described in the amendment report (EMM 2023b) offers the opportunity for onsite provision of first aid facilities at the accommodation facility. A registered nurse will also be onsite at the facility to address complex health concerns to reduce the reliance on local health services. Provision of onsite security will also assist in reducing the likelihood of incidents and police callouts.

The addendum SIA noted that landholders identified that towns in the area are dependent on a stable population to support services and social infrastructure. There was a related desire for long-term positives from the workforce accommodation facility.

Road safety due to an increase in workers and associated traffic was also a key concern raised and is discussed in detail in the addendum SIA. Co-location of the project site and worker accommodation, and provision of onsite shuttle buses will also serve to reduce worker fatigue risks related to project travel, when compared with the original project (without onsite accommodation) and greatly reduce the number of light vehicle movements on local roads. The accommodation facility will also include provision of onsite access to alcohol supervised by RSA requirements, providing a direct means for the project to reduce the likelihood of drink-driving.

ii Impacts on the current lifestyle and cultural values of the community

ACEN has proposed a number of mitigation and management measures to effectively mitigate the social impacts of the project. These mitigation measures have been reproduced below:

- Community benefit related to community investment and involvement:
  - ACEN will adopt a shared value approach in their identification of future community funding opportunities, employment, apprenticeship and training opportunities, and community involvement opportunities.
- Community impacts related to reduced social cohesion due to an influx of temporary workers:
  - ACEN will adopt a number of different measures to reduce the size of the temporary construction workforce including a targeted approach to securing local employees, including by the mean of supporting training in the context of the CWO REZ.
  - Construction workforce behaviour will be managed through the implementation of a CWMP.
  - ACEN will seek to appoint a regionally based resource to coordinate community and workforce engagement across all ACEN projects in the CWO REZ.

Potential impacts to lifestyle are discussed in Section 6.10 and Appendix O (social impact assessment) of the EIS, with the mitigated risks assessed as 'high', summarised below:

- Community benefit related to community investment and involvement.
- Way of life impacts related to intergenerational equity.
- Livelihood benefit related to access to employment and training opportunities (youth).
- Livelihood impacts related to limited workforce supply and job competition (construction).
- Livelihood benefit related to use of local goods and services.
- Livelihood benefits related to rural income diversification (associated landholders).
- Health and wellbeing impacts related to safe use of the CWC Trail.

The addendum SIA details the social impacts and benefits of the amended project and concludes that the accommodation facility substantially reduces the significance of key social impacts that would have been experienced by the community. Specifically, the accommodation facility:

- Limits the impact on regional housing availability and affordability during the construction phase of the project.
- Avoids temporary construction workers utilising the limited tourist accommodation available, which is important to the regional economy.
- Provides contracting and employment opportunities for local providers for the construction and servicing of the accommodation facility.
- Reduces safety risks associated with traffic movements through accommodating the majority of the workforce in one location.
- Enhances health and wellbeing for workers through appropriate accommodation design and reduced fatigue.

iii Direct impact to neighbouring properties way of life

Community impacts related to social amenity resulting from project construction activities (i.e. noise, dust and light), project operation, personal disadvantage related to access to affordable housing and intergenerational equity:

- ACEN has implemented a complaints and grievance procedure (which includes a dedicated project phone number and project email), provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback.
- The complaints and grievances mechanism will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN response.

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

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

iv The removal of agricultural land

As discussed in Section 5.8 of this report, the land that the proposed project is to be developed on is land with a moderate-low capability to very low capability, as per the NSW government eSPADE database. The project area is not biophysical strategic agricultural land. The site suitability with respect to agriculture considers the inherent low LSC class in addition to the extensive amount of land utilised for agriculture within the LGA, of which the project is a very minor area.

5.11.2 Community relationships

11 submitters (3% of total public submissions) raised concerns that the project will fracture community relationships. Suggestions were made that the difference in individual community members opinion on the project and their entitlement to a compensation package will impact community relationships.

ACEN is committed to ongoing consultation with neighbours and the community. ACEN encourages everyone to raise their concerns and is available to meet anyone to address and resolve potential issues.

ACEN has undertaken an appropriately transparent consultation program which commenced with negotiations with the associated landholders. Consultation was then progressed to the near neighbours in advance of lodging the Scoping Report and at around the same time ACEN widened the consultation effort to the broader community.

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

Through various mechanisms including the voluntary Neighbour Benefit Sharing Program (NBSP), Stubbo Project Social Investment Program and the proposed Central West and Orana community benefit sharing program (described below in Appendix O of the EIS), ACEN seeks to ensure that financial and non-financial benefits are distributed to the broader community and other local and regional stakeholders. ACEN aims to do so in a way that drives sustainability, community resilience to change and distributive equity.

ACEN remains committed to the development of a community benefit sharing program and with local residents and the broader community proximate to ACEN projects, aimed at building and supporting local projects and initiatives, as described in Section 5.5.1 in the EIS. However, since submission of the EIS (EMM 2022), a VPA has been agreed to with Mid-Western Regional Council, and therefore the value of the community benefit sharing program will be determined in consideration of this VPA. As noted above, ACEN has also initiated a voluntary NBSP for residents that meet certain criteria such as distance of their dwelling from the development footprint or visual impact on the neighbour's views from their primary residence within a certain distance. This program is described in Section 5.5.1iii of the EIS (EMM 2022) and remains in place, irrespective of the VPA.

Built on a foundation of trust and shared value, ACEN seeks to develop relationships with communities that create enduring and positive impact. ACENs Social Participation and Communications Policy is guided by industry and global standards including the *Clean Energy Council Best Practice Charter* and the *United Nations Sustainable Development Goals.*

How ACEN does this:

- Engage early and often, and listen to the full range of community views, including those from minority groups.
- Communications about ACENs business and activities is transparent.
- Understand and value the diversity of Aboriginal and Torres Strait Islander and non-Indigenous cultures, rights, experiences and heritage as an integral part of ACENs shared Australian identity.
- Encourage social participation in activities through procurement, employment and training streams.
- Social investments contribute to building thriving and resilient communities and economies.

- Relationships and commitments are long term, integrated into whole-of-business processes and full project life-cycle.
- Integrate activities into full project life-cycle and business systems to monitor, measure and report on ACENs performance.

5.11.3 Mental health and well-being

Six submitters (1% of total public submissions) raised concerns that the project will result in mental health and wellbeing problems for the neighbouring residents and surrounding community.

ACEN acknowledges that the planning and development stage of any major project can cause stress for local communities and landholders, especially associated with uncertainty over the project's potential impacts in the context of the CWO REZ.

> Studies have been undertaken relating to the stress and anxiety of major developments, especially coal mining and coal seam gas. These studies recognise that health and well-being impacts need to be considered at a community level. In a study of the health of Hunter Valley communities close to coal mining and power generation, where there is a significant concentration of such activities, Merritt et al. (2013) found that: There were no significant differences in management rates of mental health conditions in the Hunter Valley region compared with the rest of rural NSW. Management rates of depression and anxiety were not higher, nor were prescription rates of antidepressants.

This indicates similar levels of anxiety are experienced in the Hunter Valley region compared to rural NSW as a whole, although the causes of anxiety may vary between regions.

Section 6.10 of the EIS and Appendix O (SIA) includes discussion of both the negative impacts of the project as well as its positive benefits, acknowledging that the project may generate feelings of stress and anxiety in landholders and the broader community. This report also addresses several issues related to the project, which should reduce uncertainty, and consequently, mental health and/or stress associated with the project. ACEN would also seek to reduce pressure on the health system through a number of initiatives including community benefit sharing with potential investment in initiatives that support health service delivery or health awareness, and the provision of an onsite first aid treatment and registered nurse at the accommodation facility.

The positive benefits of the project, including diversification of income streams, will help to reduce mental health stress on some members of the community by improving its resilience in times of climatic or economic uncertainty.

5.11.4 Accommodation availability

Eight submitters (2% of total public submissions) raised concerns about the lack of available accommodation in the region to support the construction workforce and the associated social and economic impacts this would have.

As described above in Sections 4.11.1 and 4.12.4, as a result of ongoing discussions with the local community, project landholders and other stakeholders, ACEN has included a temporary workers accommodation facility to the project.

Subsequently, an amendment report has been prepared to outline the changes to the project that have been made since the public exhibition of the EIS and provide a summary of the impacts and benefits associated with the amended project.

The accommodation facility as described in the amendment report (EMM 2023b) is a temporary accommodation facility for up to 500 construction staff during the construction of the solar and BESS project. The accommodation facility is on an adjacent property south-east of the original project study area.

The accommodation facility will reduce the impact of the project on the availability of regional housing and affordability during the construction phase of the project. It will also ensure that temporary construction workers are not using the limited tourist accommodation available, which is important to the regional economy.

The social and economic impacts and benefits of the accommodation facility are detailed in the addendum SIA (EMM 2023c). In addition limiting impacts to regional housing and tourist accommodation, the accommodation facility will:

- Provide contracting and employment opportunities for local providers for the construction and servicing of the accommodation facility.
- Reduce safety risks associated with traffic movements through accommodating the majority of the workforce in one location.
- Enhance health and wellbeing for workers through appropriate accommodation design and reduced fatigue.

5.11.5 Impacts to demand and supply of local workforce

14 submitters (3% of total public submissions) raised concerns that the project's claim to source local employees for the project will result in a reduction in available employees for local industries. One of these submissions noted that the project does not provide any long-term employment benefit to the community.

The project will generate employment opportunities and other indirect economic benefits. As outlined in the EIS, direct employment opportunities generated by the project will include up to 800 temporary construction jobs over approximately 28 months and up to 20 full time jobs during operations.

The project will result in a diversification of the income earned by the landholders involved in the project, most of whom will continue farming on their properties within the region. Notwithstanding, it is acknowledged that a large percentage of the construction workforce will come from outside of the area, due to the specialist skills required, and therefore the project is not anticipated to have a significant impact on the availability of local employees for other industries.

As detailed in Section 5.14.1 of this report, EnergyCo has recently published *The Central-West Orana REZ – Coordinating community impacts and benefits in the REZ* report (EnergyCo 2023). The report summarises key findings for the CWO REZ in terms of industry, training and skills. With demand increasing for skilled labour in the renewable energy sector, EnergyCo are investigating how workforce capabilities and employment opportunities can be further built upon within the REZ. Thus, while the project itself offers limited long-term employment, the combined projects in the REZ will offer many years of employment opportunities.

Section 3.4 of the EIS discusses the workforce requirements for the project, and Section 6.10 describes the potential social impacts and benefits of the project in regards to employment.

Section 3.4.4 of the amendment report describes ACENs approach to local employment and procurement. ACENs preference and priority is to employ locally first through targeted recruitment and upskilling of local workers. This includes, where possible engaging businesses based in the local area (Gulgong, Dunedoo, Leadville) to participate in the construction and servicing the accommodation facility.

ACENs approach to maximising opportunities for regional participation through the project is centred on the following priorities:

1. Prioritise the procurement of goods and services from regional and Indigenous businesses, and social enterprises.

2. Prioritise workforce participation opportunities for regional, Indigenous and other minority groups through employment.

3. Prioritise opportunities for 'learning workers' with a focus on regional, Indigenous and other minority groups to participate in the project.

This commitment is embedded into procurement frameworks including EPC contracts, management and assurance systems.

5.11.6 Impacts to food security

Three submitters (0.7% of total public submissions) raised concerns that the project would result in a decrease in food security.

As discussed in Section 5.8.1 of this report, the study area is mapped as LSC classes 5 and 7, representing land with moderate-low capability to very low capability. The site suitability with respect to agriculture considers the inherent low LSC class in addition to the extensive amount of land utilised for agriculture within the LGA, of which the project is a very minor area.

These impacts are considered to be low due to the inherently poor land capability of the study area as well as the potential for ongoing agricultural practices, such as sheep grazing. Impacts to the inherent capability of the land and subsequent agriculture after project completion should be minimal if mitigation measures are utilised.

5.11.7 Impacts to tourism

Nine submitters (2% of total public submissions) raised concern that project will impact tourism within the region, these concerns included:

- the change in natural landscape will deter tourists from visiting
- the change of the historical nature of Gulgong as a result of the project will reduce tourism
- concerns that the project will impact tourism for cyclists.

It is acknowledged that tourism is an important and growing industry sector in the Mid-Western Regional LGA. However, no significant negative impacts on tourism are expected from the project, due primarily to its location within a rural agricultural setting and approximately 30 km north of Gulgong. It is acknowledged that the central west cycle trail (CWCT) will have a visual impact from the solar project and may be detoured temporarily during construction.

The CWCT extends through the study area, including along the section of Birriwa Bus Route South that forms part of the project access route. Impacts to cyclists utilising this cycle trail will be mitigated through the provision of a dedicated approximately 2 m wide dust lane in accordance with relevant cycling guidelines and standards and in consultation with the community. Screen planting along Birriwa Bus Route South as a mitigation from visual impacts from CWCT. This 7.5 km portion of the CWCT, which forms part of the project access route and study area, is part of a 58 km section of trail running between Gulgong and Dunedoo. The estimated time spent on this section of the CWCT is 20–30 minutes, whereas the time on the 58 km section is estimated at 3–3.5 hours. The relative time spent with views of the project is relatively short.

ACEN will focus on the management of workforce accommodation demands to minimise impacts on the tourism industry sector.

ACENs community benefit sharing program will provide funding for local projects such as sports, clubs, tourism, heritage, arts and culture via a yearly competitive grants process and on-off sponsorship and donations. As outlined in the EIS, ACEN is committed to further discussions with the CWCT organising committee on how to support trail improvements in the area.

Within some community submissions, there is a perception that the presence of a solar farm will negatively impact tourist numbers and the amount of time tourists are likely to stay in the local area. While the future tastes and preferences of tourists are inherently difficult to predict, there is no tangible reason to conclude that there will be a net negative impact on local tourism as a result of the project, including from cyclists along the CWCT. Importantly, views of project infrastructure from publicly accessible vantage points are expected to be limited and will be mitigated as much as possible.

Potential impacts to tourism are considered in Section 6.10 and Appendix O of the EIS. These impacts generally relate to the potential accessibility impacts due to capacity of short term accommodation such as lack of accommodation or increased prices, deterring tourists from attending regional events.

The addendum SIA (EMM 2023c) concludes that a direct effect of the amended project will be reduced reliance on short term accommodation. It is considered that the degree of change is such that the residual risk of related impact on the tourism sector is now negligible. The amendment provides alternative accommodation for the construction workforce in the form of a workforce accommodation facility for up to 500 people, which is anticipated to be the project's entire non-local construction workforce. This will avoid placing additional strain on the local property market, which otherwise continues to experience pressure.

5.12 Engagement

5.12.1 Inadequate engagement with neighbouring landholders

Ten submitters (2% of total public submissions) raised that there was inadequate engagement with the community regarding the project. Two of these submissions claimed that consultation with the community regarding the project used "jargon talk" and did not provide "customer satisfaction surveys".

ACEN recognises the importance of stakeholder engagement to the success of the project. Consultation and engagement with affected parties, stakeholders, and the broader community has been an integral part of the development of the project as well as informing the scoping of investigations for the EIS.

ACEN has been building a local presence in the region since early 2018. At the stage of assessing the potential for a solar project in the area, ACEN undertook a large number of one-on-one meetings with local landholders, including landowners associated with the project and neighbouring property owners. ACEN also facilitated a group meeting with broad landholder participation prior to commencing detailed land security negotiations. In 2021, engagement with neighbouring landholders intensified in the lead up to preparation of the Scoping Report.

In September 2021, ACEN published a project website (www.birriwasolarfarm.com.au), Facebook page, dedicated email address (info@birriwasolarfarm.com.au) and project hotline (1800 290 995). ACEN also made targeted phone calls and posted a letter and project fact sheet to the following sensitive receptors:

- all landholders within 2 km of the study area boundary
- all dwellings within 5 km of the study area boundary.

The letters identified the likely impacts as assessed by ACEN, including the proximity to the site and whether or not a visual impact was likely to occur. The project fact sheet provided key project facts and directed stakeholders to the project website. Further, the letters were signed by an ACEN representative and contained their mobile number and email address and encouraged people to get in touch.

Extensive efforts have been made to involve the local community and neighbouring landholders and to obtain feedback on the project and potential impacts so that changes to the project design could be made before the EIS was submitted. Evidence of the extent of these efforts is available within the project's consultation register (refer Appendix B of the EIS).

Further community sessions and activities undertaken since public exhibition have been outlined in Chapter 3 of this report. ACEN has undertaken additional consultation with these identified submitters since their concerns were raised, which are outlined in Chapter 3 of this report.

Chapter 5 of the EIS discusses the engagement undertaken for the project. Engagement has been undertaken by ACEN in accordance with the requirements of the SSD Engagement Guidelines 2021 and the project SEARs. Table 5.1 of the EIS demonstrates engagement was consistent with the community participation objectives in the SSD Engagement Guidelines.

In addition, further consultation has been undertaken with respect to the accommodation facility and the overall project. Chapter 5 of the amendment report outlines the consultation that has been undertaken, including:

- A public community information day on 6 July 2023 attended by seven members of the community.
- An advertisement in the Dunedoo Diary with information relating to the community information session and information on the accommodation facility.
- An editorial piece from the Gulgong Business Chamber in the July edition of the Gulgong Gossip featuring information on the worker accommodation facility.
- A briefing to the State Member for Dubbo on 30 June to discuss ACEN's projects as well as the accommodation facility.

5.12.2 Rushed approvals approach

Two submitters (0.5% of total public submissions) stated that the approval process for the project was rushed, claiming that the project was a "pilot solar project" and was "without comprehensive community consultation".

The project is State significant development (SSD) pursuant to Schedule 1 of the State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP). Accordingly, ACEN is seeking approval of the project through the required legal process (including a number of statutory timeframes), pursuant to the provisions under Part 4 of the EP&A Act and associated regulations and supporting guidelines.

This EIS accompanies a new SSD application for the project. ACEN (operating as UPC\AC at the time) submitted a request for the Secretary's environmental assessment requirements (SEARs) to the Department of Planning and Environment (DPE) in October 2021. DPE issued the SEARs (SSD-29508870) on 5 November 2021.

The EIS was prepared in general accordance with the *State significant development guidelines* (DPIE 2022a) and has followed the process outlined in Figure 1 of the guidelines which has been reproduced below (Figure 5.5). As per the guidelines the EIS describes the project, the existing environment, planning considerations and the statutory context for the project, potential impacts, mitigation measures, residual impacts and a description of the community engagement undertaken and outcomes. It is informed by the technical assessments contained in the appendices and provides an overview of these assessments. It addresses the requirements of the SEARs issued by DPE and the appended agency requirements. A summary of how the SEARs have been addressed is provided in Appendix A of the EIS.

All the technical studies prepared to support the EIS have been undertaken in accordance with relevant guidelines, which include specific requirements and statutory timeframes. In addition, consultation with key stakeholders was carried out throughout the development of the EIS, in accordance with the *Undertaking Engagement Guidelines for State Significant projects* (SSD Engagement Guidelines) (DPIE 2022b) so that stakeholders remained informed throughout the process.

Section 1.5 of the EIS outlines the purpose of the EIS document and Section 4.3 of the EIS describes the approval pathway.

5.12.3 Consultation fatigue

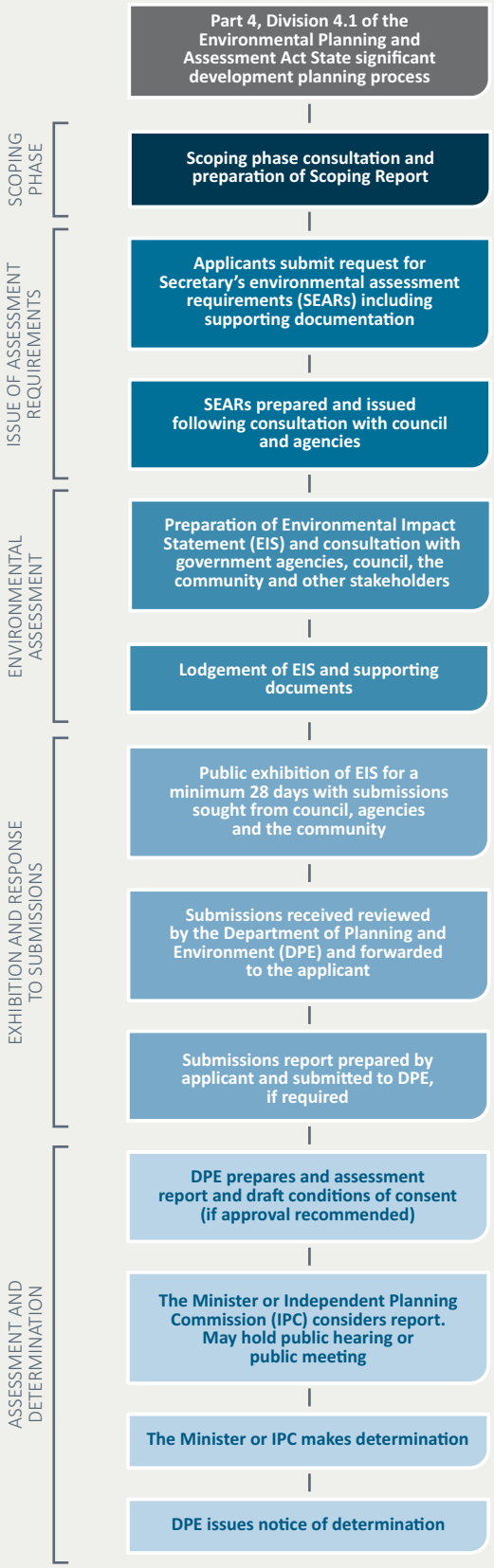
Submitters raised the issue of consultation fatigue and confusion between the NSW Government's roles and private generators' roles in the CWO REZ.

In relation to the roles of the government and private developers, EnergyCo is the appointed Infrastructure Planner for the CWO REZ as part of a declaration for the REZ under the NSW *Electricity Infrastructure Investment Act 2020* (EII Act). In this role as Infrastructure Planner, EnergyCo is leading the development of the CWO REZ, and is responsible for the development of the network infrastructure that will connect individual solar, BESS and wind projects being developed by private developers across the REZ, and the energy hubs that will collect the electricity from these projects. EnergyCo is therefore leading the community and stakeholder consultation, property negotiations and environmental planning approvals in relation to the transmission link and the energy hubs. EnergyCo will appoint a Network Operator to design, build, finance, operate and maintain the new transmission link and associated infrastructure.

Private developers are responsible for developing the individual renewable energy projects that will produce the electricity in the REZ. They are therefore responsible for obtaining the required environmental planning approvals and undertaking stakeholder engagement relating to their individual project.

ACEN acknowledges the large number of renewable energy projects being developed by private developers in the REZ, and therefore the significant engagement with the community that is occurring by various developers about these projects, as well as EnergyCo on the broader REZ infrastructure.

ACEN is in regular communication with EnergyCo about its activities in the REZ and participates in consultation organised by EnergyCo (such as community open days) to minimise consultation fatigue. Further, ACEN has tried to ensure that consultation relating to the project is specifically targeted to neighbouring landholders and those that may be affected by the development (e.g. via traffic movements or changes to views), with the aim of striking a balance between ensuring all stakeholders potentially affected by the project are well-informed, and at the same time not significantly contributing to consultation fatigue experienced by a wide number of community members who are being consulted by other developers.



Planning approval process for SSD

Birrawa Solar and Battery Project – Approval Strategy

Figure 5.5

5.13 Economics

5.13.1 Impacts on property value and insurance costs

Of the submissions received, 22 submitters (5% of total public submissions) raised concerns that the project would devalue and/or increase the insurances costs for the properties.

A wide range of factors affect property values over time, including factors at an individual property, local, regional and macroeconomic level. There is no significant research on the impact of solar farms on neighbouring property values in an Australian setting. The most relevant research available demonstrates that renewable energy facilities, such as wind farms and solar farms, have a negligible impact on property prices. This refutes the perception that the presence of wind farms and solar farms can reduce the value and saleability of neighbouring properties.

Research has been undertaken in the USA and Canada on the impact of solar farms (Al-Hamoodah et al. 2018; CohnReznick 2018) and wind farms (Hoen et al. 2009; Hoen et al. 2013; Vyn and McCullough 2014) on neighbouring property values. This studies of relevance to the project concluded that the impact of solar farms on neighbouring property values is negligible.

Al-Hamoodah et al. (2018) researched the impact of utility-scale solar installations on the value of nearby homes in the USA. They surveyed 37 property assessors in relevant locations on the potential impacts of utility-scale solar farms on property values within 3 miles (4.8 km) of the installation. The survey was designed to take into account installation size, distance from the solar installation, size and height of the PV modules and presence of fencing or visual barriers. The research indicated that proximity to a utility-scale solar installation had no impact on home values (Al-Hamoodah et al. 2018).

CohnReznick (2018), a valuation advisory service, undertook a property value impact study in the USA. This study analysed the impact of eight solar farms in Illinois, Indiana and Minnesota on the sales of adjoining properties, compared to the sales of comparable properties not located near a solar farm. This study found that there was little to no measurable and consistent difference in property values between those located adjacent to a solar farm and those not located near a solar farm. The study concluded that property values were not adversely affected by their proximity to a solar farm (CohnReznick 2018).

The potential impact of the project to property values is discussed in Section 5.3 of the EIS and Appendix O (Social Impact Assessment) in the context of a potential impact to the livelihood of members of the community. The SIA concluded that the agricultural production attributes of the landholdings provide a strong foundation for overall property value, and the project would not impact agricultural production value. While the project has the potential to impact vistas from some properties, mitigation in the form of buffers and visual screening would be used, and the livelihood impact related to a decrease in property value was therefore assessed as low.

Another solar development (Jindera Solar Farm) has sought feedback from the Insurance Council of Australia regarding concerns of an increase on insurance premiums for neighbouring properties. The response from the Insurance Council of Australia confirmed that the majority of underwriters signalled that the proximity of the solar farm would, on present understanding, not influence a decision to underwrite, nor would it impact the quantum of the risk premium (NGH 2020).

The Insurance Council noted that they were unaware of any mandated requirement for a rural policyholder to increase liability coverage. Given this, it is anticipated that there would not be any effect on the ability of neighbouring properties to obtain cost effective insurance premiums (NGH 2020).

5.13.2 Cost and benefit analysis

Eight submitters (2% of total public submissions) raised concerns of the costs associated with the project outweigh the benefits and justification of the project. These concerns include:

- lack of transparency with actual cost of the project
- a detailed feasibility, costs and benefit assessment was not completed for the project
- the costs associated with the environmental social and economy impacts of the project, outweigh the project benefits
- the short lifespan of solar farms, make it expensive and not viable.

i Summary and context

While a detailed cost benefit analysis was not required as part of the SEARs issued by the DPE for the project, the EIS does consider the socio-economic impacts and benefits of the project.

This section discusses the economic viability of the project in terms of agricultural economic productivity; security of supply; meeting Government targets and objectives including the CWO REZ objectives; as well as other project economic benefits.

The project is justified economically due to the significant economic benefits and stimulus it will provide to the local region. The employment created will provide economic benefits for both the local economy and broader region. 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.

Further, the AEMO is ultimately responsible for assessing the demand vs supply outlook of the overall energy system and does this every year in its Electricity Statement of Opportunities (ESOO) in which it forecasts the need for new capacity. Based on current announcements by thermal coal plant owners, about 8 gigawatts (GW) of the current 23 GW of coal fired generation capacity will withdraw from the NEM due to power station closures by 2030 (ISP 2022). Modelling by the AEMO suggests this could be up to 14 GW. In NSW, a small shortfall after the closure of Liddell in 2023 will be further exacerbated over the next few years with the planned closure of Eraring and Vales Point Power Stations before the end of the decade. Coal fired generators are continuing to bring forward their withdrawal from the market; potentially by up to seven years to 2025 in the case of Eraring Power Station.

The AEMO has also become responsible for developing the optimal path for the longer-term transition to the future energy system in its Integrated System Plan (ISP). The 2022 ISP recognises that the NEM is supporting a once-in-a-century transformation in the way electricity is generated and consumed in eastern and south-eastern Australia. Legacy power generation assets (such as coal fired power stations) will replace legacy assets with low-cost renewables, energy storage is being added as well as other new forms of firming capacity, and the grid is being re-configured to support two-way energy flow. Given the relative costs of different generation technologies and the outlook for continuing cost reductions in renewables and batteries, projects such as the Birriwa Solar and Battery project form a key part of the future energy system of NSW. The ISP (2022) recognises that when successful, the transformation of the NEM will deliver low-cost renewable electricity with reliability and security, help meet regional and national climate targets, and contribute significantly to regional jobs and economic growth, particularly in REZs such as the CWO REZ.

Further responses to the specific issues raised are provided below.

ii Cost of the project

As per the SEARs, the capital investment value (CIV) of the project was calculated by a quantity surveyor and provided to DPE.

iii Agricultural economic productivity

If fully developed, approximately 1,138 ha of the development footprint would encompass some 572.0 ha of land used for grazing and 542.9 ha for cropping, totalling 1,115.0 ha. Were this 1,115.0 ha to be developed (change of use) it would be valued between $318,168.30–$319,564.66 in annual productivity based on calculated agricultural values for the Mid-Western Regional LGA and Mudgee Region–West respectively.

The disruption to productivity will be primarily due to lack of access to the land, as opposed to a reduction of the land capability. Additionally, the project will allow for the land to still be utilised for some agricultural practice even where developed, by utilising sheep for grazing which is estimated to achieve 50% of existing stocking rates for 50% of the year.

An economic analysis of the potential impacts of the project on agricultural productivity was undertaken as part of the *Land use, Soil and Erosion Assessment* prepared for the project (Appendix L of the EIS).

iv CWO REZ

The Central West region of NSW has been selected by the NSW Government for the development of the CWO REZ due to the region's significant potential for renewable energy infrastructure and regional development (NSW EnergyCo 2022), with an initial target of 3,000 MW of new transmission capacity to be developed in the region by 2026. To support the development of the CWO REZ, the EnergyCo is planning several new 500 and/or 330 kV transmission lines and related connection infrastructure (Energy Hubs) as well as augmentation of the existing 330 kV network.

The key objective of the project is to deliver up to 600 MW of much needed renewable energy into NSW. In doing so, the project will play an important part in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through construction jobs and associated flow-on benefits.

More information on the CWO REZ can be found in Section 1.1 of the EIS and Section 1.1 of this report.

v Security of supply

The key objective of the project is to deliver up to 600 MW of much needed renewable energy into NSW. According to its base case (step change) scenario in the *2022 Integrated System Plan* (2022 ISP) (AEMO 2022), the Australian Energy Market Operator (AEMO) expects all of NSW's coal fired generation capacity (approximately 8,000 MW) to retire by 2040. As shown in Figure 2.1 of the EIS, AEMO notes coal is retiring two to three times faster than anticipated in its *Infrastructure Investment Objectives Report* (AEMO 2021).

In light of this, if the NSW Government is to maintain a reliable energy supply to its residential customers and industry, as well as meet its ambitious climate change objectives (i.e. its target of reducing greenhouse gas emissions from 2005 levels by 50% by 2030) it is critical that large renewable projects, such as this project, can proceed in a timely fashion.

The project is consistent with the NSW Government's electricity infrastructure objectives, which are:

- Construction of specified amounts of renewable energy infrastructure.
- Construct additional infrastructure necessary to minimise costs to NSW electricity customers and meet the NSW energy security target and reliability standard.

vi Other project economic benefits

The project will play an important part in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through construction jobs and associated flow-on benefits.

In addition to the energy security and climate change objectives of the project, the project will also:

- Provide ongoing economic benefits for both the local economy within the Mid-Western Regional LGA and the Warrumbungle Shire LGA and more broadly, the regional economy within the Central West.
- Provide significant employment opportunities during the 28 month construction period, comprising a total of up 800 jobs during construction, noting these jobs will be staged over the construction period with a likely peak of 400 workers at any one time on site. It will also provide employment for 20 full time equivalent jobs throughout operations.

ACEN will work in partnership with Mid-Western Regional Council, Warrumbungle Shire Council and the local community to ensure that, as far as possible, the benefits of the projected economic growth in the region are maximised and impacts minimised.

During consultation undertaken for the project, stakeholders were interested in understanding how the benefits of the project could be shared within the community. In this regard, ACEN has been developing and implementing a voluntary NBSP for its renewable projects within the CWO REZ.

ACEN has agreed to enter into a VPA with Mid-Western Regional Council prior to construction commencing to make financial contributions at an amount equalling 1.5% of the project CAPEX. The contribution will be paid in instalments over the project lifetime and be distributed between Mid-Western Regional Council and Warrumbungle Shire Council as agreed between the Mayors and General Managers of the councils.

ACEN understand that the contributions will be invested in activities that reflect the community needs and priorities, and underpinned by a governance framework that provides assurance to community, council and the developer.

5.13.3 Economic impacts on removal of land

Six submitters (1% of total public submissions) raised concerns of the economic impact that would result from a loss of “agricultural land” to the project. These concerns included the economic impacts to the community and surrounding farmers and also the flow on effect these impacts will have on the Australian economy.

As discussed in Section 5.8 of this report, the study area is mapped as LSC classes 5 and 7, representing land with moderate-low capability to very low capability. The project impacts to agriculture are considered to be low due to the inherently poor land capability of the study area as well as the potential for ongoing agricultural practices, such as sheep grazing.

As discussed in Section 4.11.2 and 5.8.1 of this report and Section 5.1.4 of the EIS (Appendix L), the 1,138 ha of the development footprint, if fully developed, would encompass some 572.0 ha of land used for grazing and 542.9 ha for cropping, totalling 1,115.0 ha. Were this 1,115.0 ha to be developed (change of use) it would be valued between $318,168.30–$319,564.66 in annual productivity based on calculated agricultural values for the Mid-Western Regional LGA and Mudgee Region–West respectively.

The disruption to productivity will be primarily due to lack of access to the land, as opposed to a reduction of the land capability. Additionally, the project will allow for the land to still be utilised for some agricultural practice even where developed, by utilising sheep for grazing which is estimated to achieve 50% of existing stocking rates for 50% of the year. Hence, impacts to the inherent capability of the land and subsequent agriculture after project completion should be minimal if mitigation measures are utilised.

The use of the land for the project will provide economic benefits for both the local economy and broader region through job opportunities, that otherwise would not be available at proposed extent (up to 800 jobs during the construction phase). If the project provides an opportunity to diversify the local and broader Australian economy.

5.13.4 Impacts on local economy and businesses

20 submitters (5% of total public submissions) raised concerns of the potential impact that the project will have on the local economy and businesses.

The project will generate an alternative revenue stream for associated landholders through landholder agreements. As discussed in Section 5.13.3, ACEN have entered into access licence agreements with associated landholders allowing rights over the land for the life of the project. Upon cessation of any land arrangement, infrastructure would be decommissioned, and land would be returned to its pre-existing condition as agreed with the landholders. The use of the land would then be fully returned to the landholder. Associated landholders will receive financial payments from ACEN under the provisions of the relevant landholder agreement. For associated landholders, the landholder agreements represent an alternative revenue stream to the original land use. Income diversification will assist associated landholders to sustain their livelihoods now and into the future.

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

ACEN will support local business by utilising their established supply networks and providing sufficient opportunities and information for local businesses to secure new supply contracts. Wherever possible and practical, ACEN will work with the local businesses, and the local community to prioritise and use local goods and services.

Construction phase project procurement activities have the potential to deliver economic benefits to businesses within the local and regional area. Local procurement may also enable flow-on economic impacts, which would be realised in the regional area, specifically Mid-Western Regional LGA where the majority of the workforce is anticipated to be located. To maximise local procurement benefits derived from the project ACEN will engage with the business community across Dunedoo, Gulgong and Mudgee to establish relationships and ensure distribution relevant information regarding project timing, procurement processes and the required goods and services. Wherever possible and practical, it is recommended that ACEN encourages their construction contractors to prioritise the use of local goods and services and encourage local spending.

Potential impacts to the livelihood related to the use of local goods are discussed in Section 6.10 and Appendix O (social impact assessment) of the EIS.

Further consideration of social and economic impacts of the temporary workers accommodation facility is included in the amendment report. As also described above, the amendment report (EMM 2023b) and addendum SIA (EMM 2023c) describe the impacts and benefits of the accommodation facility as follows:

- limits the impact on regional housing availability and affordability during the construction phase of the project
- avoids temporary construction workers utilising the limited tourist accommodation available, which is important to the regional economy
- provides contracting and employment opportunities for local providers for the construction and servicing of the accommodation facility
- reduces safety risks associated with traffic movements through accommodating the majority of the workforce in one location
- enhances health and wellbeing for workers through appropriate accommodation design and reduced fatigue.

5.13.5 Costs associated with waste management

Two submitters (0.5% of total public submissions) raised concerns about the costs associated with waste management of the solar panels once decommissioned.

The project infrastructure will be decommissioned and the development footprint returned to its pre-existing land use, namely suitable for grazing of sheep and cattle, or another land use as agreed by the project owner and the landholder at that time.

Consistent with contemporary consent conditions issued for large scale solar farm developments in NSW, it is anticipated that any consent for the project will include conditions requiring that the development be decommissioned and site rehabilitated within a specific period and to the satisfaction of the Secretary of DPE.

If the project is approved, ACEN will be required to remediate the project development footprint in accordance with the project's conditions of consent.

More information can be found in Section 3.4.3 of the EIS.

5.14 Cumulative impacts with other renewable developments within the REZ

22 submitters (5% of total public submissions) raised concerns about the cumulative impact that the project will contribute to within the CWO REZ. The concerns raised regarding cumulative impacts included:

- the transmission line and transmission tower
- accommodation
- the cumulative effect on residences
- visual impact
- cumulative effect on amenities and services (including businesses, healthcare, fire and emergency services)
- traffic.

There are currently several State significant development projects recently approved or proposed in the REZ, as described in Section 2.4 of the EIS and as identified through DPE's Major projects Planning Portal. A radius of approximately 25 km from the project has been used to identify future projects for consideration of potential cumulative impacts. Responses to the concerns raised in submissions are provided below. In addition to those projects identified in the EIS, Narragamba Solar project is in the EIS stage of the approval process, and is located approximately 2 km south-east of the accommodation facility study area.

The cumulative impacts of the project are described in Section 6.14 of the EIS.

5.14.1 EnergyCo investigations

EnergyCo is in the development phase of the State's first REZ in the CWO region. REZs are modern-day power stations, connecting new clean energy generation and storage to electricity consumers across the State.

As the infrastructure planner for the CWO REZ, EnergyCo is responsible for coordinating private sector investment from solar, wind and storage projects as well as planning new transmission infrastructure in the REZ. In this capacity, EnergyCo is taking a leading role in the coordination of impacts and benefits to communities who will be hosting renewable generation and transmission infrastructure.

Since mid-2022, EnergyCo has been carrying out a program of research which aims to:

- Understand key topics of concern for local councils and communities.
- Collect baseline data on the cumulative impacts of projects in the REZ.

- Develop proposed strategies and initiatives to coordinate potential impacts and provide positive outcomes for REZ communities.

EnergyCo has recently published *The Central-West Orana REZ – Coordinating community impacts and benefits in the REZ* report (EnergyCo 2023). The report summarises key findings for the CWO REZ in terms of the following:

- Road upgrades: investigations have been carried out to understand the scope of road upgrades required to facilitate construction of projects in the REZ. Potential road upgrades may include road widening for heavy vehicle movements, intersection upgrades and installing site access roads.
- Housing and accommodation: studies have been carried out to understand the existing housing context in the REZ and identify potential accommodation solutions for the incoming construction workforce.
- Industry, training and skills: with demand increasing for skilled labour in the renewable energy sector, EnergyCo is investigating how workforce capabilities and employment opportunities can be built upon in the REZ.
- Waste and circular economy: studies have been completed to understand waste generation for projects in the REZ and identifies opportunities to promote efficient waste management and circular economy.
- Telecommunications: mobile and internet connectivity is a widespread issue in the REZ. EnergyCo has investigated how the construction of renewable energy infrastructure could help improve telecommunication coverage for communities in the region.
- Social infrastructure: EnergyCo is investigating the current provision of community services including healthcare, education and recreational services and whether additional services may be required to support increased demand during the construction of projects in the REZ.

Further, the cumulative impacts of the planned infrastructure as a whole are being considered by EnergyCo in the establishment and development of the wider REZ, of which the project is a part.

5.14.2 The transmission line and transmission tower

As the existing 330 kV and 132 kV transmission network is not capable of transferring the planned three gigawatts or more of new electricity generation in the CWO REZ, and therefore new transmission infrastructure is required in the region.

EnergyCo is proposing the construction and operation of new high voltage (HV) electricity transmission infrastructure and new energy hubs and switching stations to connect new energy generation and storage projects within the CWO REZ to the existing electricity network.

As outlined in the *CWO REZ Transmission project Scoping Report* (EnergyCo 2022), a new HV transmission line will run west to east within the vicinity of the project's development footprint, connecting to the Merotherie Energy Hub. According to the scoping report, it is expected that construction of this transmission project infrastructure would commence in the second half of 2024 and take approximately three years to complete, with initial operations commencing around mid-2027.

Potential landscape character and visual amenity impacts that could occur during operation of the transmission project would be a result of the introduction of the transmission line, energy hub and switching station infrastructure into the landscape, some of which could potentially be noticeable from distances of several kilometres or visible at night. The exact location of transmission towers will be confirmed as part of continued design development of the transmission project.

It is expected that the transmission towers will add to the cumulative visual impact of the surrounding landscape and the project. At the time of finalisation of this report, EnergyCo were in the process of preparing the EIS for the transmission infrastructure and as part of that development application will be considering and assessing the cumulative impacts of this infrastructure with other projects in the REZ, which will include identifying mechanisms to reduce this impact.

5.14.3 Visual impact

As outlined in the visual impact assessment (VIA) (Appendix G of the EIS), cumulative visual impacts can arise from the presence of similar projects that may have a low impact individually, but when viewed together, can have a significant visual impact on the landscape. Generally, this occurs when:

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

Proposed, approved, under construction and operational renewable energy developments (known at the time of the EIS preparation) within, and in the vicinity of, the CWO REZ are shown on Figure 5.18 of the VIA, with several developments (VIA Table 5.5) known within 25 km of the study area.

Due to the height of wind turbines and the extent across the landscape, wind farms are visible from a greater distance than solar farms. Where solar farms typically assess a distance of 4 km for visual impacts, wind farms assess distances up to 8 km.

For the project, visual sensitivity has been assessed based on the combination of viewer sensitivity and scenic quality classifications, which when combined provide a visual sensitivity rating of low, medium or high.

Anticipated cumulative visual impacts are summarised below.

i Barneys Reef Wind Farm

Barneys Reef Wind Farm project is proposed by RES, with SEARs issued in September 2021 by DPE. It is understood that Barneys Reef Wind Farm will have a capacity of approximately 440 MW and will include up to 65 wind turbines.

This proposed wind farm is the nearest proposed renewable energy project to the Birriwa Solar and Battery project and is located along the southern slopes of Barneys Reef between the Castlereagh Highway to the west and Merotherie to the east. The closest proposed turbine location is 3 km south-west of the study area on the western side of Barneys Reef. On the eastern side of Barneys Reef (Merotherie) the closest proposed wind turbine is 2.4 km from the study area.

If both projects are approved, there is the potential for cumulative visual impacts of the project and Barneys Reef Wind Farm. According to the Preliminary Visual Impact Assessment prepared as part of the Scoping Report for the Barneys Reef Wind Farm (Moir Landscape Architecture 2021), the zone of visual influence for the wind farm indicates that potential views of the wind turbines will extend northward to the Golden Highway, and eastward to Tucklan Road.

Along the Castlereagh Highway, at least ten turbines will be visible. From this location, project infrastructure associated with the Birriwa Solar and Battery project will also be visible (refer to viewpoint 8).

To the east of Barneys Reef, turbines will be located as far north as the intersection of Merotherie Road and Birkalla Road. These turbines will be visible to residents within the eastern portions of the study area.

Overall, cumulative visual impacts from the project and Barneys Reef Wind Farm may occur for:

- Some residents near the Birriwa Solar and Battery project; however, the number of turbines visible combined with the viewing distances is anticipated to result in a low cumulative visual impact.
- Travellers along Castlereagh Highway and rail line; however, the number of turbines, distance to views of project infrastructure and the speed of travel will combine to yield a low cumulative visual impact.
- Cyclists on the Central West Cycle Trail (Merotherie Road and Birriwa Bus Route South) who would ride past the Stubbo Solar project, Barneys Reef Wind Farm and Birriwa Solar and Battery project. Their experience of a sequential viewing of multiple renewable energy projects is anticipated to result in a moderate cumulative visual impact.

The amendment report further considered cumulative visual impacts of development in the area. From the accommodation facility, some 10–19 wind turbines may be visible. The residence R37 has been identified as a dwelling associated with the Barneys Reef Wind Farm. The VIA addendum prepared for the amendment report concluded that cumulative impacts associated with Barneys Reef Wind Farm would be:

- low visual impact for residents near the Birriwa Solar and BESS project
- low visual impact for travellers along Castlereagh Highway and rail line
- moderate visual impact for travellers along the Central West Cycle Trail (Merotherie Road and Birriwa Bus Route South).

ii Valley of the Winds project

The Valley of the Winds project is proposed by ACEN to have a capacity of up to 800 MW of energy with up to 148 wind turbines and supporting infrastructure. The Valley of the Winds project also has the potential for cumulative visual impacts as it is approximately 9 km north of the Birriwa Solar and Battery project. The *Valley of the Winds Landscape and Visual Impact Assessment* (Moir Landscape Architecture 2022) indicates that two to ten turbines will be visible from the Golden Highway corridor at distances between 3.5–5 km. Views of the Birriwa Solar and Battery project are also possible along the Golden Highway.

Overall, cumulative visual impacts from the project and Valley of the Winds project may occur for:

- Some residents near the Birriwa Solar and Battery project; however, the number of turbines visible combined with the viewing distances is anticipated to result in a low cumulative visual impact.
- Travellers along the Golden Highway; however, the number of turbines, distance to views of project infrastructure and the speed of travel will combine to yield a low cumulative visual impact.

Cumulative impacts were considered in the amendment report for the temporary workers accommodation facility. The closest turbine is 12 km north of the accommodation facility development footprint, between Leadville and Uarbry. The wind farm stretches northward to Coolah. This wind farm is not expected to be visible from the accommodation facility infrastructure area.

iii Narragamba Solar Farm

SEARs have been issued for the Narragamba Solar Project. This project has been considered in the amendment report for the accommodation facility. It is located approximately 2 km south-east of the accommodation facility development footprint. There is a very low chance of any cumulative impact anticipated due to low visibility of the accommodation facility infrastructure area from Merotherie Road. The temporary nature of the proposed accommodation facility means it is unlikely to remain in place during operation of the Narragamba Solar Project.

5.14.4 Accommodation

In relation to the sourcing of workers, ACEN has committed to local hiring, provision of training and apprenticeship opportunities for local workers, and partnership with local employment and training services to reduce the need for outsourcing of workers. Further, ACEN will schedule construction activities across its projects in the CWO REZ to avoid peak construction period overlap, as far as practicable. Notwithstanding, it is acknowledged that the employment demands for the future projects identified will require additional workers to be sourced from outside the local and regional areas.

As a result of ongoing discussions with the local community, project landholders and other stakeholders, and in recognition of the potential cumulative impacts of the influx of construction workers on accommodation in the area, ACEN has amended the project to include the establishment and operation of a temporary workers accommodation facility.

Subsequently, a separate amendment report has been prepared to describe the changes to the project that have been made since the public exhibition of the EIS, and to provide an assessment of the impacts associated with the amended project, including the proposed temporary accommodation facility, and the mitigation measures proposed.

5.14.5 Effects on residents

The cumulative effect on residences of the project and other proposed projects in the REZ has been assessed within the relevant technical assessments undertaken for the EIS. The key social amenity aspects relate to potential noise, traffic and visual impacts. Cumulative visual impacts are discussed above in Section 5.14.3, traffic is discussed in Section 5.14.7, and noise is discussed in Section 5.7.

Further, it is noted that the assessment of potential traffic and noise impacts presented in the EIS used conservative construction worker numbers as a worst case scenario. However, ACEN will stage peak construction periods so that workforce numbers are expected to be lower at any one time. The amendment report describes the accommodation facility and the associated traffic and noise impacts. As shuttle buses will be used to transport workers from the accommodation facility to the solar and BESS construction area, the number of light vehicles using local roads will be substantially reduced. In addition, noise and vibration impacts from construction and operation of the accommodation facility are predicted to be negligible.

In addition, a mitigation for social amenity impacts is ACENs complaints and grievance procedure (which includes a dedicated project phone number and project email), which provides the opportunity for stakeholders to raise complaints, grievances, and provide feedback. The complaints and grievances mechanism will facilitate the timely response to stakeholder complaints and grievances and enable the monitoring and reporting of grievances and ACEN response. With respect to the accommodation facility, ACEN will develop and implement safety measures within the facility, including security patrols and adequate fencing and worker training.

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

5.14.6 Social infrastructure and services

Local population growth (temporary or permanent) associated with local and regional development can increase the need for funding and presence of local social and health services. Temporary population growth associated with the workforce associated with the proposed developments in the REZ may increase demand for more health services, for different health services including specialists, and for more diversity and capacity in employment and training organisations.

A potential cumulative benefit of the large number of local projects is related to significant combined community contribution (i.e. benefit sharing agreements and opportunities), procurement and local investment. It is noted that discussions are in progress with EnergyCo and councils about how developers can effectively contribute to social services in the broader context of the REZ.

In relation to the project, as discussed in Section 4.10.2 of this report, the SIA prepared as part of the EIS considered the direct and indirect impacts of the project on the regional area, and in particular the possibility for population changes as a result of the project, which could lead to impacts on the use of local public amenities and services.

The SIA for the project found that, unmitigated, the project has the potential to increase pressure on existing health services during construction. ACEN would employ several strategies to reduce pressure on health services, including maintaining communication with health care providers across the regional area to ensure they are informed of the project schedule and workforce arrangements and size, and encouraging construction workers to access routine healthcare at their usual place of residence. Community benefit sharing and prioritising local employment will also be utilised to reduce impacts.

Further to this, additional measures have been included to address this potential impact as part of the amendment to the project. Onsite first aid facilities will be provided at the accommodation facility. A registered nurse will also be onsite at the facility to address complex health concerns to reduce the reliance on local health services.

During operation of the solar and BESS, the SIA for the project found that given the small size of the operational workforce, the project is very unlikely to make any noticeable impact on the size of the permanent population in the communities of the local area, and therefore would not impose any pressure on local public amenities and services (refer to Section 7.2.2 of the SIA).

In relation to waste management services, due to the expected volume of project generated waste, it is likely that the waste will need to be managed by a commercial agreement between the EPC contractor(s) appointed by ACEN for the construction of the project, a licensed waste management company and the relevant local councils. Details will be included in the WMP to be developed prior to construction. Significant quantities of waste generated during construction, such as cardboard packaging and wooden pallets, will be suitable for reuse, recycling or alternative use (i.e. chipping of pallets for mulch), which will reduce the volume of waste going into landfill. ACEN is currently in discussions with several leading PV module suppliers to understand what they are doing to reduce the volume of plastic used in packaging (i.e. for shipping/transport of PV modules). During decommissioning, dismantled and decommissioned infrastructure will be recycled, where possible.

5.14.7 Traffic

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

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

As noted in Section 5.14.2 of this report, EnergyCo will consider the cumulative impacts of the REZ transmission infrastructure, including the Merotherie hub, and associated construction related traffic.

5.15 Other matters

5.15.1 Greenhouse gas emissions

Five submitters (1% of total public submissions) raised concerns that the EIS does not adequately detail or assess the amount of greenhouse gas emissions that will be generated throughout the lifetime of the project.

Submitters raised concern around the resources required to produce materials for the project and the indirect impacts that would result from the project.

Importantly, with respect to climate change and greenhouse gas emissions, the project will contribute to the security of renewable energy supply in NSW, supporting the Commonwealth and State governments in achieving their respective renewable energy and greenhouse gas emissions reduction targets.

Once operational, the project will reduce greenhouse gas emissions by approximately 6 Mt (CO_{2e}) over its operational life.

All power generation technologies, regardless of whether they are renewable such as wind and solar, or fossil fuel based technologies such as coal plants and gas plants, require resources to be mined and extracted for the manufacture of the required equipment (e.g. steel for the boilers and concrete for the cooling towers in a coal plant). A full comparison of the lifecycle resource requirements of these different technologies is outside of the scope of the EIS and is not a planning consideration under the NSW planning framework.

In addition, the greenhouse gas emissions associated with the resources required to produce materials for the project are classified as 'Scope 3 emissions', which are indirect emissions of the project but are from sources not owned or operated by ACEN. Notably, these emissions are accounted for by the producers of the material in their Scope 1 emissions.

5.15.2 EIS assessment methodology and consideration of impacts

Two submitters (0.5% of total public submissions) raised concerns about the adequacy of the EIS. One submitter raised that the EIS did not adequately address the environmental impacts that the project will have on the land. The other submitter noted that the level of complexity of the EIS was not adequate for public exhibition.

The EIS was prepared in general accordance with the *State significant development guidelines – preparing an environmental impact statement* (DPIE 2022c) and describes the project, the existing environment, planning considerations and the statutory context for the project, potential impacts (during construction and operation of the project), mitigation measures, residual impacts and a description of the community engagement undertaken and outcomes. It is informed by the technical assessments contained in the appendices and provides an overview of these assessments. It addresses the requirements of the SEARs issued by DPE and the appended agency requirements. A summary of how the SEARs have been addressed is provided in Appendix A of the EIS. The EIS was accepted by DPE as adequately meeting the SEARs.

The methodology for each of the technical assessments is provided in the corresponding reports (Appendix F to Appendix Q of the EIS).

5.15.3 Unethically sourced material and lack of manufacturing detail

Six submitters (1% of total public submissions) raised concerns that the material required for the project will be unethically sourced and will depend on slave labour.

The factory location for the PV modules which will be procured for the project will largely depend on the module provider selected for the project. In most cases, the source of origin will be China given the superior economies of scale of modern Chinese PV manufacturing facilities compared with other smaller suppliers in other countries.

The Commonwealth *Modern Slavery Act 2018* requires entities based, or operating in, Australia, which have an annual consolidated revenue of more than $100 million, to report annually on the risks of modern slavery in their operations and supply chains, and actions to address those risks. Other entities based, or operating, in Australia may report voluntarily.

It is also noted that the Clean Energy Council has formed a Modern Slavery Working Group. The objectives are to facilitate the process of reporting under the *Modern Slavery Act 2018* and raise the standard of practice across the clean energy sector in Australia. It does this by providing a platform to discuss and consider collaboration on efforts to:

- Identify and address risks of modern slavery within supply chains.
- Report under the national Modern Slavery Reporting Requirement.

Furthermore, banks investing in the project would be required to observe the Equator Principles as part of the project legal due diligence process.

5.15.4 Energy supply consumption

Six submitters (1% of total public submissions) raised concerns that the power generated from the project will not be consumed locally.

The project will generate electricity from renewable solar energy that will be supplied into the National Electricity Network (NEM). The local area around the project is connected to the NEM and uses and relies on electricity generated throughout the network. Although the power generated from the project will not solely be consumed locally, the renewable sourced power will be injected back into national grid to be consumed nationally.

The project will power the equivalent of approximately 260,000 Australian households.

5.15.5 Not supportive of renewable energy

Seven submitters (2% of total public submissions) object to the project as they do not support renewable energy projects, for the following reasons:

- unethical and has nothing to do with climate change
- destroys Australian countryside.

The project is consistent with relevant Commonwealth, State, regional and local strategic plans and polices, and in particular the NSW Electricity Infrastructure Roadmap, which sets out the plan to deliver REZs in NSW. The project will contribute to the energy generation and storage targets for the CWO REZ, with an indicative capacity of around 600 MW and storage of up to 600 MW for a two hour duration (1,200 MWh). The development and operation of the project, in conjunction with other large-scale renewable energy projects, will contribute to filling the need for replacement power as ageing coal-fired generators close.

Chapter 7 of the EIS provides the project justification based on the result of the environmental impact assessments. A revised project justification can be found in Chapter 6 of this report.

5.15.6 Site suitability

Seven submitters (2% of total public submissions) raised concerns of the site suitability for the project. These concerns included:

- proximity to residences
- interference with neighbouring agricultural practices, such as spray cropping and wild pig culling
- installation of power lines across highly flood prone black soils
- town does not have the resources required to meet the projects demand (accommodation, building supplies, work force)
- the location of the transmission hub, is yet to be determined and should be approved prior to this project.

The project is consistent with local, regional and state planning regimes as a suitable development for its location. The project location was primarily selected by ACEN due to the very good solar resource of the area and physical conditions for large-scale solar energy generation. The study area's flat to gently undulating topography and its predominantly cleared, agricultural land use make it highly suitable for the project. The study area is also separated from residential townships, with surrounding topography, vegetation and distance assisting in screening most views from the Golden Highway and Castlereagh Highway. The study area was also selected due to the absence of biophysical strategic agricultural land and farming land with land and soil capability Class 1 to Class 4 (Class 1 represents land capable of sustaining most land uses including those that have a high impact on the soil), the relatively low level of other environmental constraints, and the relatively few residences within close proximity. The project will include security fencing around the perimeter of the site which will prevent wild pigs and wildlife from entering the site. This fencing will not interfere with agricultural practices, such as spray cropping and wild pig culling on neighbouring properties.

The site is suitable for the project due to several factors, notably its location within the CWO REZ. In addition, the study area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (flat to gently undulating topography and predominantly cleared, agricultural land), absence of biophysical strategic agricultural land and relatively few neighbours living within close proximity. Further, the project's proximity to the proposed CWO REZ transmission link and Merotherie Energy Hub as shown in the *CWO REZ Transmission project Scoping Report* (EnergyCo 2022), means that there will be infrastructure within the immediate area with the capacity to export the electricity generated by the project to the grid.

Site suitability and the rationale for choosing and refining the site are described in Section 2.2 of the EIS.

5.15.7 The project size is too large

Eight submitters (2% of total public submissions) raised concerns about the overall project size, noting the project was too large for the area. One submitter raised concerns that the size of the project combined with the other projects within CWO REZ, will be too big for the small community host. The impacts on the biodiversity and natural landscape in relation to the size of the project, was raised by one of the submitters.

The project will be developed within a study area of approximately 1,330 ha. The exact land area to be covered by the project components (the development footprint) has been refined through an iterative design process throughout the preparation of this EIS and has been informed by the outcomes of community and stakeholder engagement and the findings of specialist technical environmental, social and economic assessments. In relation to biodiversity, a key reason the site was chosen for the project is that it comprises predominantly cleared agricultural land with minimal biodiversity constraints.

Importantly, the size of this project is consistent with CWO REZ generation targets, and the needs to replace coal-fired power generation, as power plants progressively close over the coming decade.

More information on the project's description can be found in Chapter 3 of the EIS.

5.15.8 Cost of energy

Two submitters (0.5% of total public submissions) raised concerns regarding the cost of energy, claiming it will increase electricity prices and will not benefit the Australian economy.

Once operational, the project will dispatch low-cost electricity into the NEM. Solar PV is now one of the lowest cost sources of energy in the world and in Australia (Brailsford 2018).

As described above in Section 5.15.4, the development of the CWO REZ, of which the project is a key part, is part of the transformation of the NEM, of which the objective is to provide reliable, secure and affordable electricity to consumers (ISP 2022).

5.15.9 Work hours

One submitter (0.2% of total public submissions) raised concerns about the work hours, and asked whether the workforce would be working 24 hours a day.

Work hours during construction are described in Section 3.4.1 of the EIS. Construction activities will be undertaken during standard daytime construction hours consistent with the *Interim Construction Noise Guideline* (ICNG) (DECC 2009), with the addition of work on Saturday afternoons from 1:00 pm to 6:00 pm, as follows:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 6:00 pm on Saturdays
- no works on Sundays or public holidays.

ACEN proposes the following construction activities may be undertaken outside these hours without the approval of the Secretary:

- activities that are inaudible at non-associated residences
- the delivery of materials as requested by the NSW Police Force or other authorities for safety reasons
- emergency work to avoid the loss of life, property and/or material harm to the environment.

5.15.10 Operational workforce

One submitter (0.2% of total public submissions) enquired where operational employees would be based and the nature of their work.

Operational activities are described in Section 3.4.2 of the EIS and include:

- site maintenance including vegetation maintenance, weed and pest management, fence and access road management, and landscaping
- infrastructure maintenance including PV module cleaning, infrastructure repair (if required), inverter and PCU replacement (within every 7–10 years), and equipment, cabling, substation and communications system inspection and maintenance.

Highly technical operations and maintenance activities will typically be undertaken by specialist subcontractors and/or equipment manufacturers whereas routine activities such as fencing maintenance and vegetation management are likely to be offered to local contractors wherever available. Specialist contractors would likely require accommodation in the surrounding towns for short periods of time.

6 Updated project justification

The development and operation of the project, in conjunction with other large-scale renewable energy projects, will contribute to filling the need for replacement power as ageing coal-fired generators face closure in NSW. The project will contribute to the energy generation and storage targets for the CWO REZ, with an indicative capacity of around 600 MW and storage of up to 600 MW for a 2 hour duration (1,200 MWh). The project is consistent with relevant Commonwealth, State, regional and local strategic plans and polices, in particular the *NSW Electricity Infrastructure Roadmap*, which sets out the plan to deliver REZs in NSW.

In response to submissions received on the project and based on the outcomes of engagement with key stakeholders, amendments have been made to the project since the public exhibition of the EIS; notably the addition of a temporary workers accommodation facility. The amendment report (EMM 2023b) that accompanies this submissions report describes changes to the project that have been made since the submission of the EIS and provides a summary of the impacts associated with the amended project.

The inclusion of the temporary accommodation facility to house construction workers will substantially reduce the significance of key social impacts which would otherwise be experienced by the community due to the project, as demonstrated by the addendum social impact assessment prepared for the amendment (EMM 2023c). In particular, it will substantially reduce and generally avoid the impacts that a construction workforce would otherwise have on the availability of short-term accommodation in the local and regional area. This will alleviate social impacts associated with a constrained rental and housing market in the local region, particularly as a result of cumulative impacts of renewable developments in the CWO REZ, and limit impacts to tourism-related accommodation.

Additional work has also been undertaken to respond to submissions received on the EIS. No further major changes were required to the solar and BESS components of the project as a result of matters raised in the submissions. The description of the project and the project evaluation and justification, as presented in the EIS, remain a true and accurate reflection of the project for which approval is sought.

The project is considered to be justified and in the public interest because:

- It is suitably located due to several factors, notably its location within the CWO REZ. In addition, the study area is favourable for the construction and operation of a solar and battery project due to the available solar resource, physical conditions (flat to gently undulating topography and predominantly cleared, agricultural land), absence of biophysical strategic agricultural land and relatively few neighbours living within close proximity. Further, the project's proximity to the proposed CWO REZ transmission link and Merotherie Energy Hub means that there will be infrastructure within the immediate area with the capacity to export the electricity generated by the project to the grid.
- The design of the project has been an iterative design and environmental assessment process to ensure impacts have been avoided and minimised as much as possible. This has included refining the design in consultation with neighbouring landholders, local and NSW Government agencies, registered Aboriginal parties and the local community.
- The project will not result in significant biophysical, social or economic impacts, and the EIS and this amendment report have concluded that any residual impacts can be appropriately managed and/or offset in accordance with relevant NSW Government policies.
- It will contribute to energy security and reliability in NSW by diversifying the State's energy mix and helping to prepare for the retirement of large-scale coal-fired power generation.

- It aligns with Commonwealth and NSW Government electricity policies and strategies and regional plans, and it will provide ongoing economic benefits for both the local economy within the Mid-Western Regional LGA and the Warrumbungle Shire LGA and more broadly, the regional economy within the Central West.

Were this project not to proceed, the project's benefits, including contributions to the generation of renewable energy and increased energy security, will not be realised. Due to the need to establish renewable energy generation and storage projects in NSW, not proceeding with the project in its current location may encourage development in a less favourable location, resulting in undesired outcomes, such as greater requirements for grid connection infrastructure and greater environmental and social impacts.

The project will have both impacts and benefits on the surrounding natural and built environments. The impacts have been investigated, are not predicted to be significant and can be adequately managed through appropriate design, mitigation and management during construction and operation. On balance, it is therefore considered that the project is in the public's best interest.

References

Al-Hamoodah, L, Koppa, K, Schieve, E, Reeves, C, Hoen, B, Seel, J and Rai, V 2018, *An exploration of property-value impacts near utility-scale solar installations, LBJ School of Public Affairs,* University of Texas, retrieved March 2023 from https://emp.lbl.gov/sites/default/files/property-value_impacts_near_utility-scale_solar_installations.pdf.

Brailsford, L 2018, *New wind and solar now as cheap as existing coal*, Climate Council, 6 December, retrieved 21 February 2023 from https://www.climatecouncil.org.au/new-wind-and-solar-now-as-cheap-as-existing-coal/

CohnReznick 2018, A*djacent property values solar farm impact study: A study of nine existing solar farms*. Report prepared by CohnReznick on behalf of Sunvest Solar Inc, retrieved March 2023 from http://www.oglecounty.org/document_center/planning%20&%20zoning/Solar%20Ad%20Hoc%20Committee/PV%20Impact%20Studies/CR%20-%20SunVest%20Solar%20-%20Solar%20Farm%20Impact%20Study%20(Report%20Date%205-30-2018).pdf

Department of Environment and Climate Change 2009, *Interim Construction Noise Guideline*

Department of Environment, Climate Change and Water 2010, *Aboriginal Cultural Heritage Consultation Requirements for Proponents*

Department of Planning and Environment 2022a, *Large-Scale Solar Energy Guidelines*

Department of Planning and Environment 2022b, *Controlled Activities – Guidelines for riparian corridors on waterfront land*

Department of Planning and Environment 2022c, *Controlled activities – Guidelines for watercourse crossings on waterfront land*

Department of Planning and Environment 2022d, *Guidelines for instream works on waterfront land*

Department of Planning and Environment 2022e, *Cumulative Impact Assessment Guidelines for State Significant Development*

Department of Planning, Industry and Environment 2016, *Wind Energy: Visual Assessment Bulletin AB 01 For State significant wind energy development*

Department of Planning, Industry and Environment 2020a*, eSPADE NSW soil and land information database, Version 2.1*. NSW Department of Planning, Industry and Environment, available: https://www.environment.nsw.gov.au/eSpade2Webapp, accessed:13 October 2021.

Department of Planning, Industry and Environment 2020b, *Land and Soil Capability Mapping for NSW*, Department of Planning, Industry and Environment, Parramatta.

Department of Planning, Industry and Environment 2020c, *Biodiversity Assessment Method*

Department of Planning, Industry and Environment 2022a, *State Significant Development Guidelines – Preparing a Submissions Report*

Department of Planning, Industry and Environment 2022b, *Undertaking Engagement Guidelines for State Significant projects*

Department of Planning, Industry and Environment 2022c, *State significant development guidelines – preparing an environmental impact statement*

EMM Consulting Pty Ltd 2022a, *Environmental Impact Statement. Birriwa Solar and Battery Project,* prepared for ACEN Australia, 12 September 2022

EMM Consulting Pty Ltd 2022b *Birriwa Solar and Battery Project Land Use, Soils and Erosion Assessment* (Appendix L of the EIS) International Renewable Energy Agency (IRENA) 2016, *End-of-life Management – Solar Photovoltaic Panels*

EMM Consulting Pty Ltd 2022c, *Birriwa Solar and Battery Project Traffic Impact Assessment*

EMM Consulting Pty Ltd 2023a, *Birriwa Solar and Battery Project Biodiversity Development Assessment Report*

EMM Consulting Pty Ltd 2023b, *Birriwa Solar and Battery Project Amendment Report*

EMM Consulting Pty Ltd 2023c, *Birriwa Solar and Battery Project Amendment Report – Addendum Social Impact Assessment*

EnergyCo 2023, *The Central-West Orana REZ – Coordinating community impacts and benefits in the REZ*

EnergyCo 2022, *CWO REZ Transmission Project Scoping Report*

Hoen, B, Wiser, R, Cappers, P, Thayer, M & Sethi, G 2009, *The impact of wind power projects on residential property values in the United States: A multi-site hedonic analysis*, Berkeley Lab, viewed March 2023, https://emp.lbl.gov/publications/impact-wind-power-projects.

Hoen, B, Brown, JP, Jackson, T, Wiser, R, Thayer, M & Cappers, P 2013, A spatial hedonic analysis of the effects of wind energy facilities on surrounding property values in the United States, Ernest Orlando Lawrence Berkeley National Laboratory, retrieved March 2023 from https://emp.lbl.gov/sites/all/files/lbnl-6362e.pdf

International Renewable Energy Agency (IRENA) 2016, *End-of-life Management – Solar Photovoltaic Panels*

Kenning, Tom 2016, PVTECH, *PV Cycle achieves record 96% recycle rate for silicon-based PV modules, retrieved pril 2023 from https://www.pv-tech.org/pv-cycle-achieves-record-96-recycle-rate-for-silicon-based-pv-modules/*

Landcom 2004, *Managing urban stormwater: soils and construction*, Volume 1, 4th Edition March 2004 Government of NSW

Merritt, T, Cretikos, MA, Smith, W & Durrheim, DN 2013, *The health of Hunter Valley communities in proximity to coal mining and power generation, general practice data*, 1998-2010, NSW Health.

NGH 2020, *Jindera Solar Farm Submissions Report*

NSW EnergyCo 2022, *Central West-Orana Renewable Energy Zone*