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BIRRIWA SOLAR AND BATTERY PROJECT

Amendment Report

ACEN | Australia

Birriwa Solar
Renewable Energy from ACEN

Prepared for ACEN Australia Pty Ltd

September 2023

Birriwa Solar and Battery Project

Amendment Report

ACEN Australia Pty Ltd

J210553 Birriwa Solar and Battery Project - Amendment Report

September 2023

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

Approved by

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28 September 2023

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Executive Summary

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 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 2 hour duration (1,200 MWh). The BESS will enable energy from solar to be stored and then released during times of demand, as well as providing grid stability services and back-up capacity to ensure security of supply.

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

The key components of the project as described in the EIS (EMM 2022a), for which ACEN seeks development consent, include:

- 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 kilovolts (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.

The development application and environmental impact statement (EIS) (SSD-29508870) for the project were submitted to the NSW Department of Planning and Environment (DPE) and publicly exhibited from 14 October 2022 to 10 November 2022. In response to matters raised in submissions received on the project, and outcomes of ongoing engagement with the local community, government agencies, project landholders, and other stakeholders, ACEN has made amendments to the project. The proposed amendments described in this report are:

- The addition of a temporary accommodation facility, on an adjacent property south-east of the original project study area presented in the EIS, to provide temporary accommodation for up to 500 construction staff during the construction phase of the project.
- A refinement to the development footprint associated with the solar component of the project, to include the south-eastern corner (approximately 5 ha).

The proposed amendments are detailed in Chapter 3 of this report.

This amendment report provides an assessment of the potential impacts associated with the proposed amendments. These can be summarised as follows:

- The proposed amendments and additional biodiversity survey effort have resulted in a number of changed impacts including:
  - Additional survey effort identified that there would be no impacts to three owl species that were previously assumed to be present.
  - Impacts to 23.51 ha of an additional plant community type (PCT): PCT 479 – Narrow-leaved Ironbark- Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion. This PCT does not meet the criteria as a listed threatened ecological community and does not require offsetting under the NSW Biodiversity Offset Scheme (BOS).
  - Direct impacts on 3.25 ha of potential habitat within the accommodation facility development footprint for the Superb Parrot (*Polytelis swainsonii*). This species is assumed to be present (due to survey timing), requiring 21 species credits.
  - A change in the impact area associated with project for PCT 281– 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, from 291.91 ha to 300.46 ha. This includes the addition of 8.56 ha within the accommodation facility development footprint, which will be impacted.
  - Confirmation that the approximate 5 ha of land within the south-eastern corner of the solar and BESS development footprint (which was originally excluded from the footprint as a conservative avoidance measure, assuming it was PCT 80 (threatened ecological community)) is rather a lower quality derived native grassland (DNG) PCT 479 and does not require offsetting.
- The proposed amendments will not have a significant impact on any of the assessed viewpoints, or on the 11 residences located within 4 km of the accommodation facility. No additional mitigation measures are required.
- There will be a substantial decrease in the number of project-related light vehicles movements during peak construction as workers will not be travelling in light vehicles from accommodation in surrounding towns to the project on a daily basis. No additional mitigation measures are required.
- One additional heritage site, Winora IF-2, was identified in the vicinity of the proposed access track between the solar and BESS study area and the accommodation facility, and may be impacted by the project. An additional mitigation measure has been included to salvage this site prior to construction if it cannot be avoided.

The addition of the accommodation facility 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 social impact assessment addendum prepared for the amendment (refer to Section 6.2.8). In particular, it will reduce 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.

The proposed amendments are consistent with the relevant objects of the *Environmental Planning and Assessment Act 1979* (EP&A Act) and the principles of ecologically sustainable development (ESD) and do not significantly change the nature of the project originally proposed.

The justification of the project, as described in the EIS (EMM 2022a), remains valid. 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. The project will contribute to the energy generation and storage targets for the CWO REZ, enhancing the security of the State's electricity supply.

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1 Introduction

1.1 Background and previous steps

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 solar and battery 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 2 hour duration (1,200 MWh). The BESS will enable energy from solar to be stored and then released during times of demand, as well as providing grid stability services and back-up capacity to ensure security of supply.

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

The project is State significant development (SSD) pursuant to Schedule 1, Section 20 (electricity generating works) of State Environmental Planning Policy (Planning Systems) 2021. Project approval is sought under Division 4.7 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The development application and environmental impact statement (EIS) (application number SSD-29508870) were submitted to the NSW Department of Planning and Environment (DPE) and 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 government agencies provided advice on the project. A submissions report (EMM 2023a) has been prepared to respond to matters raised in these submissions and agency advice, in conjunction with this amendment report.

1.2 Original project summary

The key components of the solar and battery project as described in the EIS (EMM 2022a), for which ACEN seeks development consent, include:

- 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 kilovolts (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.

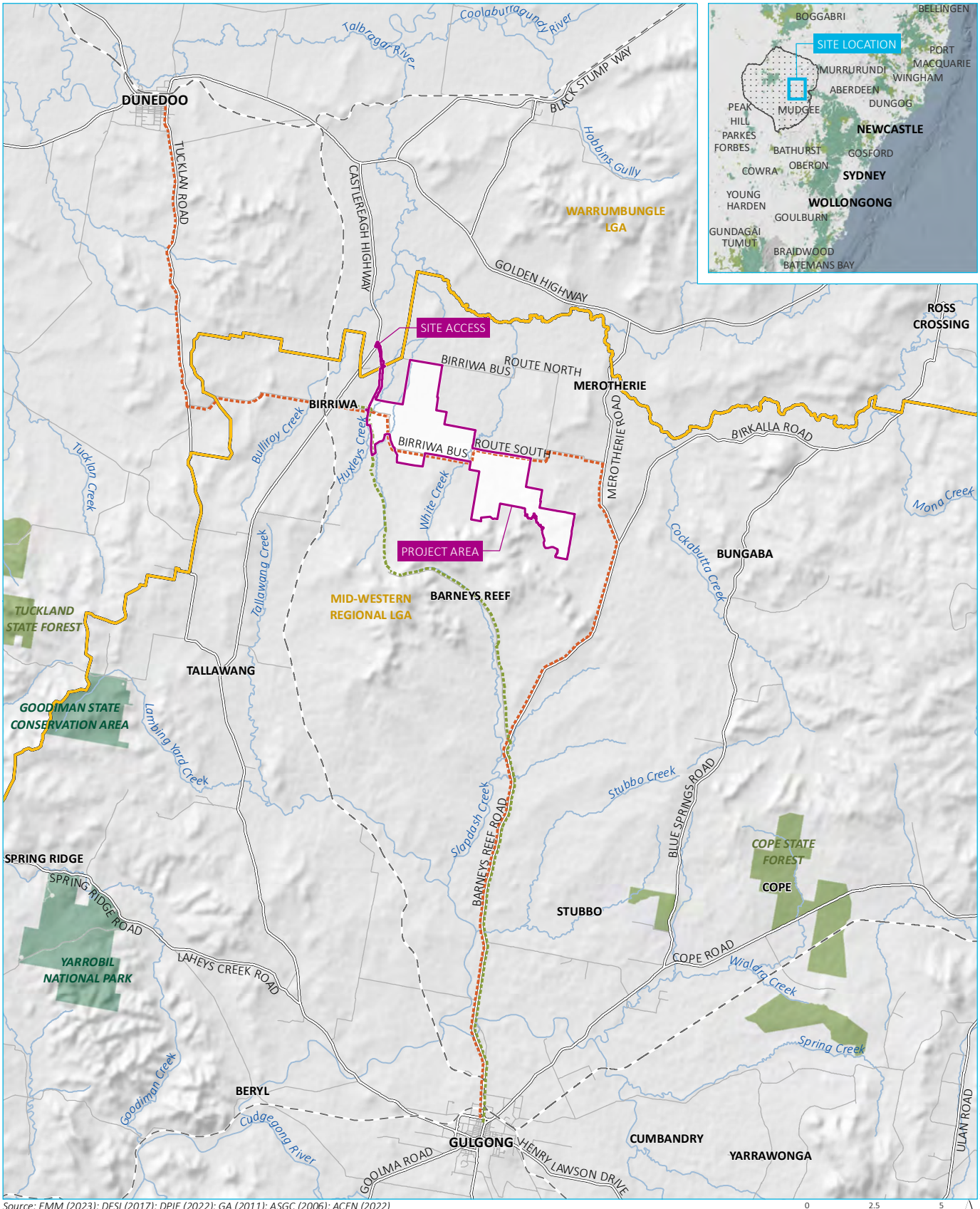
The project layout as presented in the EIS is shown in Figure 1.2.

The solar and battery project will connect to the proposed Merotherie Energy Hub via one of two indicative connection points as shown on Figure 1.2. The exact location of the interface point between the solar and battery project and the Merotherie Energy Hub is currently being defined in consultation with EnergyCo.

The project development footprint will be accessed via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route. From the project site access point, private internal roads will be used to traverse the project development footprint.

Construction of the project is expected to commence in late 2025, subject to planning approval, labour and equipment availability. The anticipated period of construction for the Project is approximately 28 months.

The operational lifespan of the solar component of the project will be in the order of 30 years, unless the solar project is re-powered at the end of the PV modules' technical life. The decision to re-power the solar project will depend on the economics of solar PV technology and energy market conditions at that time. Should the PV modules be replaced during operations, the lifespan of the project may extend to up to 50 years. The BESS operating life is likely to be 20 years, with the potential for replacing components to extend its life if the market conditions and the cost of the batteries warrant this.



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

0 2.5 5 km

GDA 1994 MGA Zone 55

N

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KEY

- Project 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 BESS Project
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Figure 1.1

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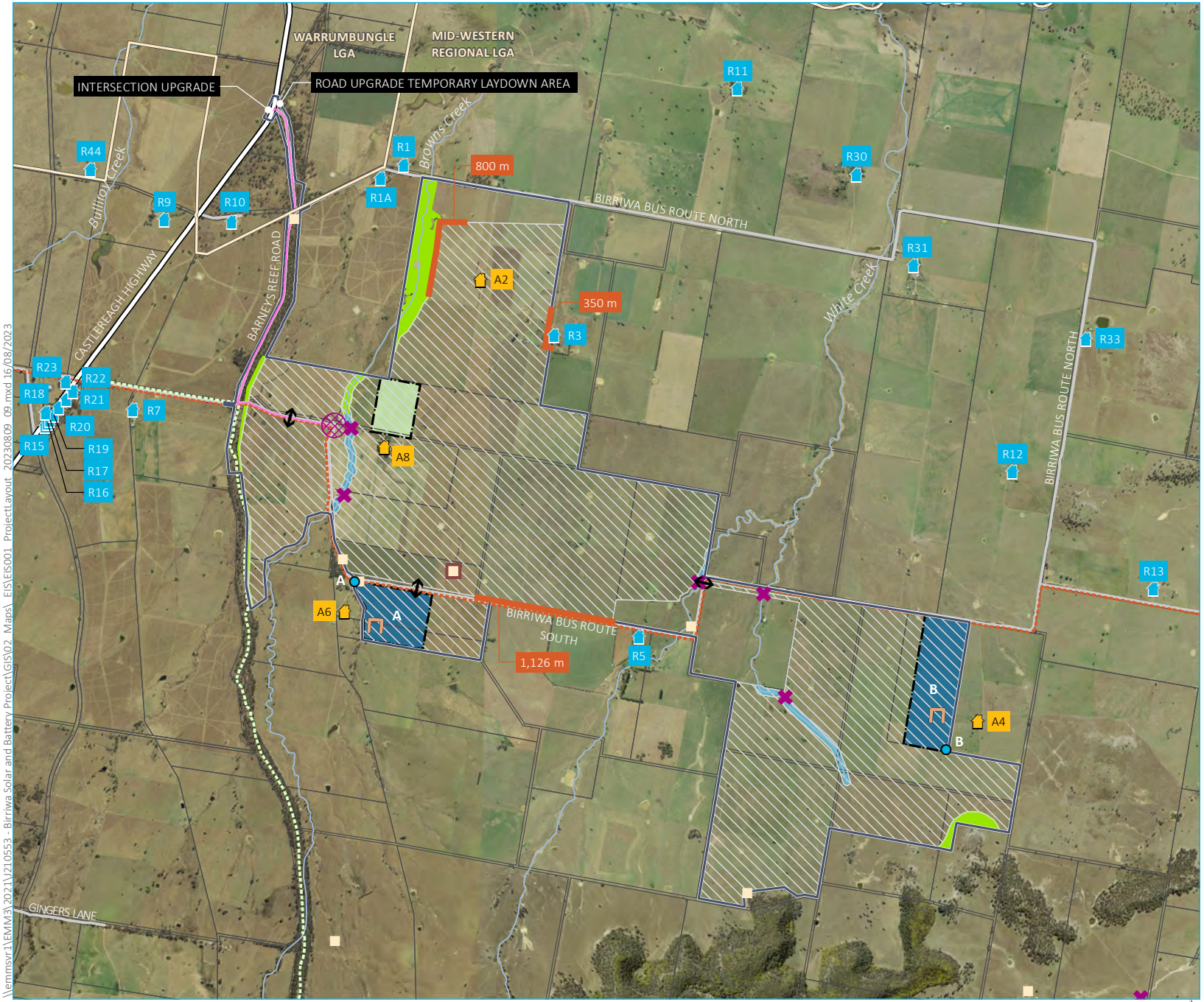


KEY

- Solar and BESS study area
- Develoment footprint
- Barney's Reef Road upgrade corridor
- Restricted development area
- Potential public road crossing location

Project layout

- Potential creek crossing point (refer to inset below for indicative design)
- Connection point (option A or B)
- Indicative noise wall location
- Landscape screen planting
- Proposed access point to the project
- Proposed operational infrastructure area including substation, operational facility and BESS (option A or B)
- Temporary construction compound

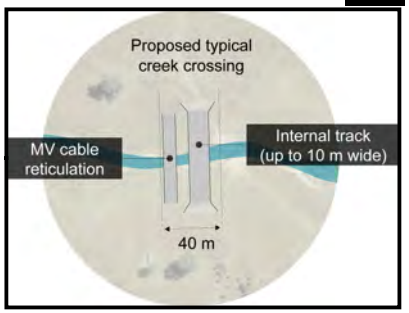
Existing environment

- 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

INSET



Original project layout

\\emmsvr1\EMM3\2021\210553 - Birriwa Solar and Battery Project\GIS\02 Maps\ EIS\EIS001 ProjectLayout 20230809 09.mxd 16/08/2023

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

0 1 2 km

GDA 1994 MGA Zone 55

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Birriwa Solar and BESS Project
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Figure 1.2

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1.3 Proposed amendments

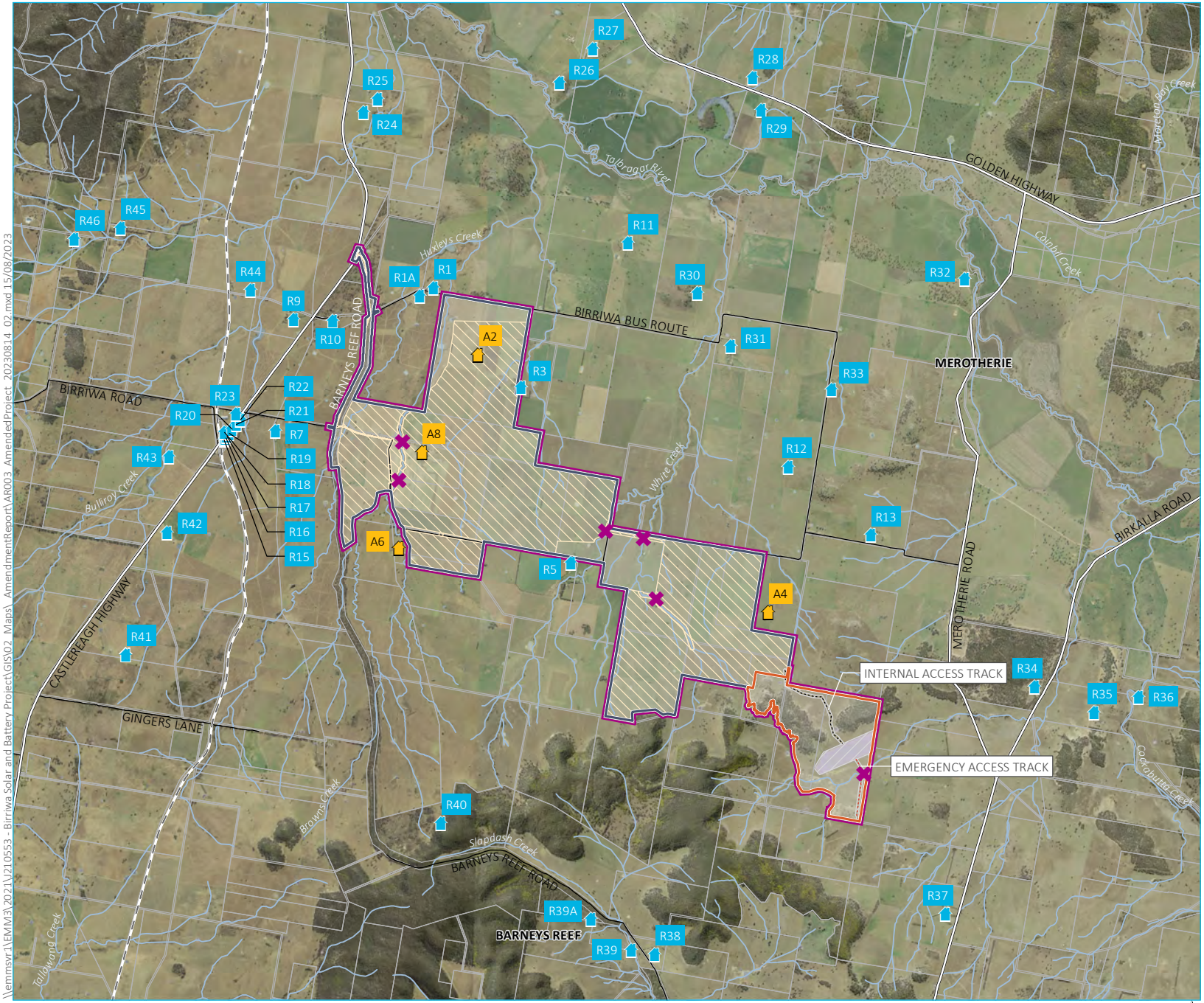
In response to matters raised in submissions and outcomes of ongoing engagement with the local community, government agencies, project landholders, and other stakeholders, ACEN has made amendments to the project, as follows:

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 1.3), 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 Biodiversity Development Assessment Report (BDAR). Subsequently, this area has been surveyed by EMM ecologists since submission of the EIS and 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.



Amended project

Birriwa Solar and BESS Project
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Figure 1.3

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1.4 Terminology

The following key terms are used throughout this amendment report:

- **The project:** The project comprises of the solar and battery project assessed in the Birriwa Solar and Battery Project EIS, and the accommodation facility assessed in this amendment report, as shown in Figure 1.3.
- **The solar and battery project:** The project assessed in the Birriwa Solar and Battery Project EIS.
- **The project area**: The solar and BESS study area (1,330 ha) and the accommodation facility study area (205 ha), in which the DA will apply. The total project area considered for the project is approximately 1,535 ha.
- **Accommodation facility study area**: The area of assessment (approximately 205 ha) for baseline surveys and studies conducted for the amendment report. The study area comprises the maximum area considered for the Birriwa accommodation facility (refer to Figure 1.3), as part of the site selection process for the accommodation facility infrastructure and access. Note, this area is not the development footprint and hence is not the maximum extent of ground disturbing work (impact footprint).
- **Solar and BESS study area:** The area of assessment (approximately 1,330 ha) for baseline surveys and studies conducted for the EIS. This study area comprises the maximum area considered in the EIS, based on the extent of land where ACEN holds landholder agreements and the area of potential impact for road upgrades.
- **Project development footprint:** The maximum extent of ground disturbing work (impact footprint) associated with the amended project, comprising approximately 1,197 ha of land, associated with construction and operation of the project including the solar, BESS, road upgrades, re-inclusion of south-eastern corner, and accommodation facility components (refer to Figure 3.1), including:
    - **Accommodation facility development footprint (approximately 33 ha):** Comprises all operational components of the accommodation facility (approximately 23 ha, which includes the accommodation infrastructure area), the access track from the solar and BESS study area to the accommodation facility (approximately 6 ha), and an emergency access track which provides a secondary access from the accommodation facility infrastructure area to the south-east (approximately 4 ha).
    - **The solar and BESS development footprint and road upgrade corridor (approximately 1,164 ha):** This is the impact footprint of the original project as assessed in the EIS (approximately 1,159 ha) and the re-inclusion of the grassland area south-east of the solar and BESS study area (approximately 5 ha). It comprises the area to be developed within land where ACEN holds landholder agreements, including all operational components of the project, areas of direct impact for construction of the public road crossings, and the area of direct impact for public road upgrade works along the access route (i.e. part of Barneys Reef Road and its intersection with the Castlereagh Highway and Birriwa Bus Route South, connecting the access point to the project with the Castlereagh Highway). A refinement to the development footprint is included in the amended project, associated with the solar component of the project, to include the south-eastern corner (approximately 5 ha) of the solar and BESS study area into the development footprint. This area was conservatively mapped as derived native grassland and previously excluded from the solar and BESS development footprint.
- **Associated residence:** A dwelling whose owners have entered into a land agreement with ACEN for the project. Residences identified with an ‘A’ are associated residences.
- **Non-associated residence**: A dwelling whose owners do not have an agreement with ACEN for the project. Residences identified with an ‘R’ are non-associated.

1.5 The applicant

The applicant details are outlined in Table 1.1.

Table 1.1 Applicant details

Name	ACEN Australia Pty Ltd (ACEN)
Postal address	Suite 2, Level 2, 15 Castray Esplanade, Battery Point, Tasmania 7004
Contact	Cédric Bergé
ABN	27 616 856 672

2 Strategic context

2.1 Site and surrounds

The project is on Wiradjuri Country in the localities of Birriwa and Merotherie, approximately 15 km south-west of the township of Dunedoo, in the Central West of NSW. As noted in Section 1.1, the project is within the CWO REZ, and is in the Mid-Western Regional LGA, with part of the project's primary vehicle access route from the Castlereagh Highway within the Warrumbungle Shire LGA.

The accommodation facility is proposed on adjacent land to the south-east of the solar and BESS study area within the Mid-Western Regional LGA, and is proposed to be connected to the solar and BESS development via a new internal access track. A secondary access track is also proposed to provide an alternate means of access/egress, suitable for emergency vehicles. The project amendments and accommodation facility is shown in Figure 1.3 and Figure 3.1.

Key features of the accommodation facility site and surrounds are presented in Table 2.1.

Table 2.1 Key features of the accommodation facility study area and surrounds

Aspect	Description
LGA	The accommodation facility study area is within the Mid-Western Regional LGA. The accommodation facility will be accessed via the project's access route as presented and assessed in the EIS. A section of this access route along Barneys Reef Road is within the Warrumbungle Shire LGA.
Land zoning	The accommodation facility development footprint in its entirety is zoned RU1 Primary production under the *Mid-Western Regional Local Environmental Plan 2012* (Mid-Western Regional LEP).
Nearby townships	The accommodation facility study area is within the locality of Birriwa, which has a population of 45 (ABS 2021) and includes a small cluster of residences and rural infrastructure on the Castlereagh Highway approximately 9.5 km west of the accommodation facility development footprint. Birriwa is situated between Dunedoo (15 km northwest), Gulgong (20 km south), Coolah (40 km north), Mudgee (60 km south) and Dubbo (80 km west).
Landscape	The accommodation facility study area lies on the lower slopes of Barneys Reef, which runs east to west along the southern boundary of the solar and BESS study area. Land surrounding the accommodation facility study area is characterised by flat to gently undulating cleared land with scattered rural residences and agricultural buildings and infrastructure (e.g. silos and livestock yards). Areas of native vegetation occur within and surrounding the accommodation facility study area in the form of scattered paddock trees, vegetation along local roads, a woodland area, and an unnamed third order stream.
Land use	The accommodation facility study area is located in a rural setting. Key land uses in the local and broader region include agriculture, consisting primarily of sheep and cattle grazing and dry land cropping, with areas of mining, viticulture and production forestry within the broader region (in the vicinity of Gulgong and Mudgee).
Site history	The accommodation facility study area and surrounds have been modified by historical land use practices and past disturbances associated with land clearing, cropping and intensive livestock grazing.
Land ownership	The accommodation facility development footprint comprises of one freehold land parcel owned by one landholder on Lots 53, 54, 55/DP 750755 and Crown land paper roads (refer to Figure 4.1). Lot 54/DP 750755 was included within the schedule of lands provided in the EIS and therefore two additional lots will be added to the schedule of lands for this amendment (Appendix A).
Residences	There are a total of 11 residences within 4 km of the accommodation facility development footprint. One associated residence (A4) is approximately 940 m from the accommodation development footprint (closest point to the access track), and one non-associated residence (R37) is approximately 1.8 km from the accommodation facility development footprint (closest point to the emergency access track). The non-associated residence (R37) is approximately 2.5 km from the accommodation facility infrastructure area and the associated residence (A4) is approximately 2.1 km from the accommodation facility infrastructure area. Nine non-associated residences are located between 2 km and 4 km from the accommodation facility development footprint (Figure 1.3).

Table 2.1 Key features of the accommodation facility study area and surrounds

Aspect	Description
Nearby natural features	An unnamed third order stream south of the accommodation facility development footprint flows in a north-easterly direction. The proposed emergency access track crosses this stream. The nearest national parks to the project area are the Goulburn River National Park, approximately 30 km to the south-east, and the Yarrobil National Park, approximately 20 km to the south-west. Other areas of environmental conservation associated with state conservation areas are west of the Castlereagh Highway. More locally, Barneys Reef Ridge just south of the study area comprises a rocky ridgeline with native vegetation and is zoned C3 Environmental Management under the Mid-Western Regional LEP.
Nearby infrastructure and access	The project and accommodation facility can be accessed by the Castlereagh Highway (via Birriwa Bus Route South and Barneys Reef Road). The primary vehicle access route as described and assessed in the Birriwa Solar and Battery Project EIS (EMM 2022a), will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. The primary vehicle access point on Barneys Reef Road will provide access to the project development footprint. The accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the solar and battery project and the accommodation facility (Figure 1.3). An emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (Figure 1.3). The Gwabegar railway line crosses the Castlereagh Highway at Birriwa and travels in a south-south-easterly direction towards Gulgong. This railway no longer provides a passenger service; however, it is understood the Australian Rail Track Corporation uses the railway for freight services.
Surrounding development	Renewable energy development is a growing land use in the area, with the declaration of the CWO REZ in 2021. There are a number of other renewable energy projects (either approved or proposed) within 25 km of the accommodation facility study area. In addition to those identified in the EIS, the Narragamba Solar Project is in EIS preparation phase and is located approximately 2 km south-east of the accommodation facility study area.
Planning context	The accommodation facility study area is not within any land identified as: • biophysical strategic agricultural land (BSAL) • flood planning area • bushfire prone land • mine subsidence district. A small area of the accommodation facility study area is identified as 'high biodiversity sensitivity' or 'moderate biodiversity sensitivity' on the Mid-Western Regional LEP. Note, this is outside the accommodation facility development footprint.

2.2 Site suitability

2.2.1 Site selection

ACEN engaged Nous Group to develop a robust and evidence-based method to select a site for the accommodation facility. This was a staged process, as illustrated in Figure 2.1, where landholdings were assessed and shortlisted based on assessment against key criteria. The criteria were informed by discussions with local and state government stakeholders and relevant local environmental planning instruments. The steps in the process and outcomes are discussed in the sub-sections below.

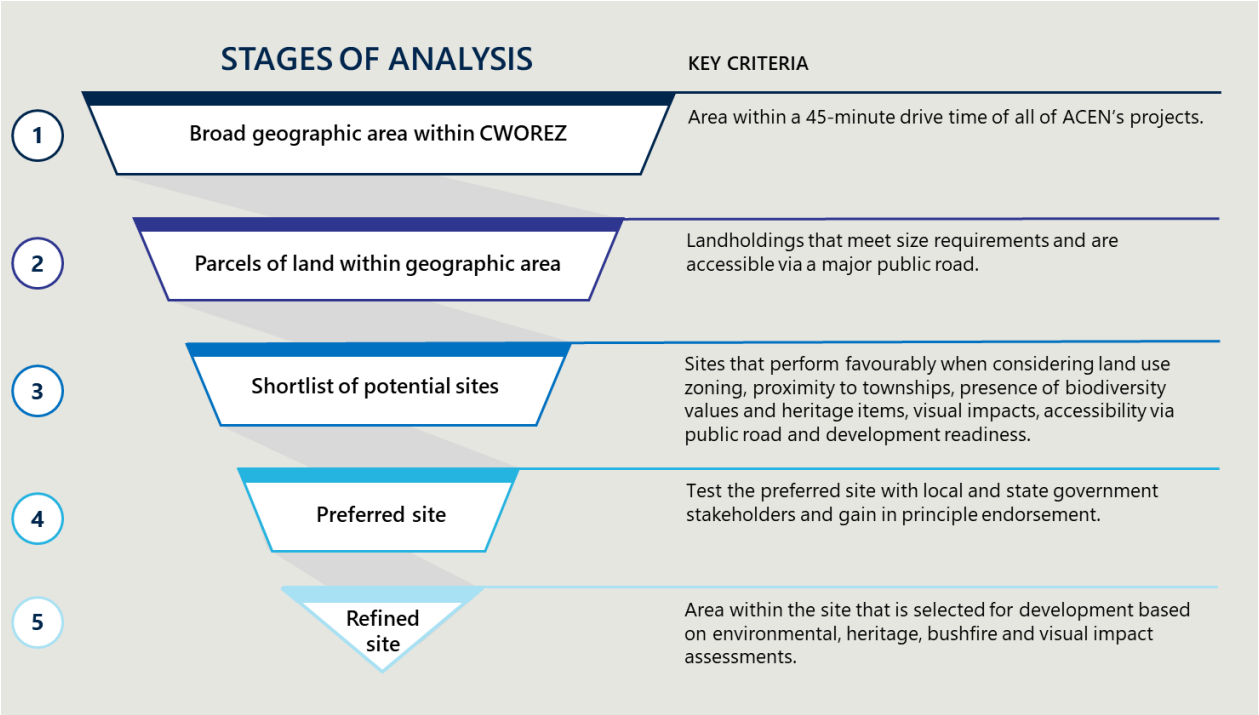


Figure 2.1 Stages of analysis

i Stage 1: Broad geographic area with the Central-West Orana Renewable Energy Zone

As described in Section 1.3, the project has been amended to include a temporary accommodation facility suitable to accommodate a construction workforce of up to 500 people. 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 ACENs future developments within the CWO REZ, if deemed required and subject to future accommodation needs.

Therefore, in stage 1, geographic areas were identified within the CWO REZ that are within a 45 minute drive of all ACENs projects, as illustrated in Figure 2.2. This would enable ACEN to accommodate a construction workforce across multiple projects at one site. Areas that did not meet these criteria were discounted. While not shown on Figure 2.2, the Narragamba Solar Project is proposed in close proximity to the Birriwa Solar and Battery Project.

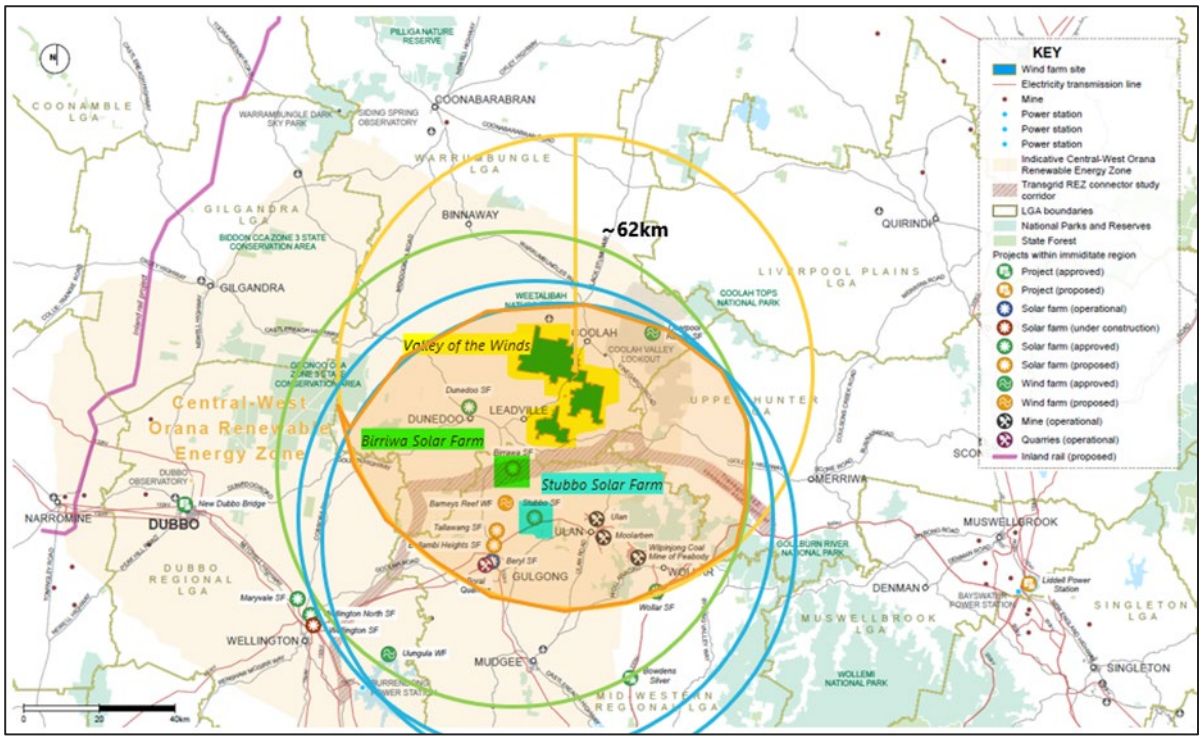


Figure 2.2 Broad geographic area identified in Stage 1

ii Stage 2: Landholdings within the broad geographical area

Stage 2 identified landholdings that could be further assessed at a site-level based on size and proximity to a major public road.

The minimum size of the landholding was calculated using a conservative estimate of the peak construction workforce across ACENs projects in the region and density standards. Engagement with accommodation providers indicated a density of approximately 100–125 people per hectare (ha). Indicatively, a site area of approximately 4–5 ha would therefore be required for approximately 500 people, and approximately 8–10 ha for approximately 1,000 people.

Landholdings that are accessible from, or in close proximity to, major public roads were identified as preferred sites in this stage. This was to facilitate heavy vehicle access and reduce the time taken to transport pre-fabricated accommodation units to and from the site.

iii Stage 3: Individual site analysis

Stage 3 applied a set of site selection criteria, listed in Table 2.2, to the landholdings to develop a short-list of potential sites. The purpose of this assessment was to consider the potential social, environmental and economic impacts associated with developing an accommodation facility at that location. Landholdings were shortlisted if they:

- satisfied the mandatory primary criteria
- presented minimal social, environmental and economic impacts or presented preventable and/or mitigatable social, environmental and economic impacts.

Landholdings that presented multiple social, environmental and economic risks were excluded.

Table 2.2 Site selection criteria used to evaluate potential landholdings for a temporary accommodation facility

Impact	Aspect	Criteria	Application of selection criteria to proposed site
Primary criteria used to determine whether a parcel of land should undergo detailed analysis			
Economic	Travel time between the accommodation facility and the project area	Land is within a 45 minute drive time of the project area, and the route does not go through a town with a population above 1,000 people.	The accommodation facility is within a 45-minute drive of ACENs projects (Birriwa Solar, Narragamba Solar, Stubbo Solar and Valley of the Winds). The workforce for Valley of the Winds may need to travel through Leadville if the facility was used for that project. The closest townships are Leadville (approximately 13 km), Dunedoo (approximately 15 km) and Gulgong (approximately 20 km).
Social	Distance from local township	In Mid-Western Regional LGA, land was considered if it was more than 5 km from local townships (Gulgong)[1]	
Secondary criteria used to assess parcel of land's appropriateness to support accommodation facility			
Economic	Road access	Land is bordered by a sealed public road.	The accommodation facility will be accessed via the primary vehicle access route of the project (Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South) through to a new internal access track between the solar and BESS study area and the accommodation facility (refer to Figure 3.1). An emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (Figure 3.1).
	Size	Land is large enough to accommodate 500 people. With an estimated density of 100–125 people per hectare, the parcel of land must therefore be at least 4–5 hectares.	The property identified for the accommodation facility included a study area of approximately 205 ha. Further constraints analysis was then undertaken (refer to stages 4 and 5) to identify the least constrained area within the property for the facility. This resulted in a development footprint of 23 ha for the accommodation facility infrastructure area (excluding the required access tracks) which meets the minimum area criteria and within the required density limits. This size is conservative and allows for flexibility in detailed design and siting of infrastructure.
	Topography	Land is reasonably flat, to reduce the amount of cut and fill required during construction.	A review of the topographic map and subsequent site visit confirmed the land was sufficiently flat.

Table 2.2 Site selection criteria used to evaluate potential landholdings for a temporary accommodation facility

Impact	Aspect	Criteria	Application of selection criteria to proposed site
Environmental	Biodiversity	There are no/limited listed ecological communities on the land.	There is terrestrial biodiversity, and unmarked waterways on the site. The area being considered avoids significant biodiversity areas. There is an unnamed third order stream which will be avoided by the accommodation facility and main access track. A track suitable for emergency use only will be constructed over the stream. The site has no areas of mapped groundwater vulnerability within the accommodation facility development footprint.
	Bushfire risk	There is no Category 1 or Category 2 Vegetation on the land.	
	Waterways	There are no watercourses on the land or they can easily be avoided.	
	Groundwater risk	There are no areas mapped on the groundwater vulnerability map within the LEP.	
Social	Visual impact	Areas where the accommodation facility may be developed have few visible impacts from the road, neighbouring properties or existing dwellings on the land.	Visual assessments have been conducted from four representative viewpoints surrounding the accommodation facility development footprint to demonstrate the potential visual impacts of the project. The landscape visual impact assessment addendum (ALVIA) for the amendment identified that the visual impact rating is low for all viewpoints and no mitigation is required. Visual impacts were also assessed via viewshed analysis from the 11 residences within 4 km of the accommodation facility development footprint. The analysis demonstrated that only one residence within 4 km will have any view of the accommodation facility infrastructure (R35), and in that case the impact will be low due to distance (3 km) and existing vegetation filtering views. One residence (R37) may see a small portion of the accommodation facility access track; however, this impact is considered to be low.
	Heritage	There are listed heritage items of significance.	One Aboriginal heritage site, Winora IF-2, may be impacted by the access track. If this site cannot be avoided, it will be salvaged in accordance with approved management strategies (refer to Appendix F.3). There are no listed historic heritage items on the site.

Notes: 1. Mid-Western Regional Council indicated that an accommodation facility for the project should be located away from local townships to limit impacts on community composition, way of life and access to local infrastructure.

The criteria were informed by the outcomes of consultation with government stakeholders, including Mid-Western Regional Council and Warrumbungle Shire Council, which are summarised in Table 2.3. The provisions of the Mid-Western Regional LEP and Warrumbungle LEP were also considered.

Table 2.3 Summary of stakeholder insights for site selection criteria

Stakeholder	Consultation	Key insights for site selection criteria
Mid-Western Regional Council	19 January 2023	• Accommodation facility should be located away from townships to minimise the potential for 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.
	26 June 2023	• Mid-Western Council noted that the selected site aligned with its preferences (as outlined during the 19 January 2023 meeting) and gave support for the proposed site.
Warrumbungle Shire Council	27 Feb 2023	• Accommodation facility should be located near townships to realise economic benefits. • Accommodation facility should feature underground utilities (water, gas, electricity and telecommunications networks) that can be connected to future permanent accommodation developments.
	10 Jul 2023	• Noted that the proposed accommodation facility is located within Mid-Western Regional LGA. • 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 Council.
EnergyCo	7 Feb 2023 On-going (the Candidate Foundation Generators process)	• Consider providing infrastructure that can be re-utilised by the local community once the accommodation facility is completed (such as more permanent dwellings that can be relocated).
Department of Planning and Environment	On-going (development application, Priority Assessment Programme)	• Regular updates including resolution of any issues relevant to the EP&A Act, timeframes under the priority assessment program.
NSW Department of Communities and Justice	6 February 2023	• 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.

iv Stage 4: Site selection

Stage 4 identified a site south-east of the solar and BESS study area as the preferred option for the accommodation facility, based on the application of the criteria and the outcomes of consultation with stakeholders described above. It is also approximately 1 km south of EnergyCo's proposed Merotherie hub and is within close proximity to the project's development footprint.

The accommodation facility location was discussed with key stakeholders such as EnergyCo and DPE, and the proposed accommodation facility development footprint was further refined before ACEN sought council endorsement of the accommodation facility location (see Table 2.4).

Table 2.4 Summary of stakeholder insights regarding selected site

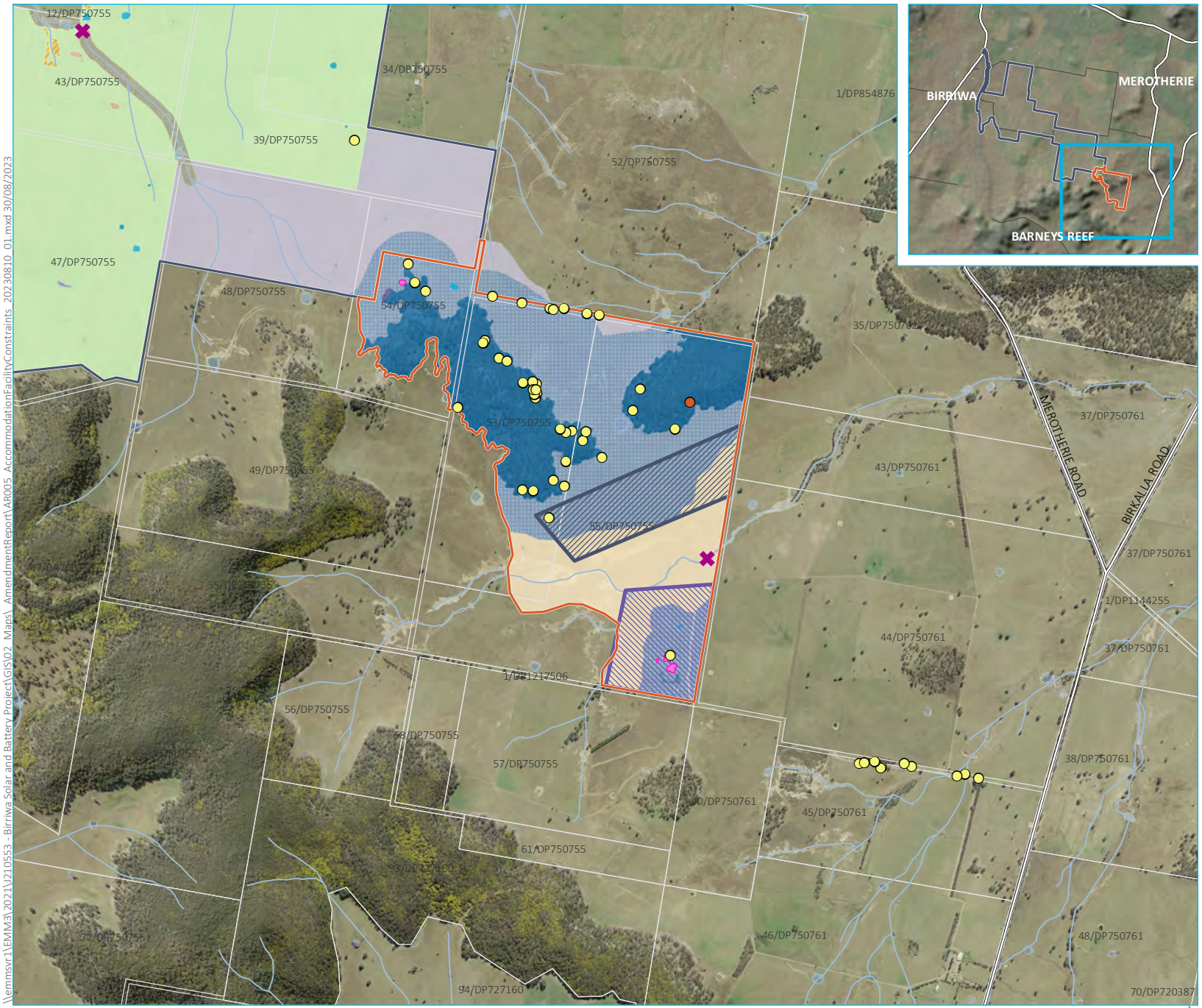
Stakeholder	Consultation	Key insights regarding selected site
Mid-Western Regional Council	26 June 2023	• Medical staff should be available at the accommodation facility to reduce strain on the local health services. • A licensed social area should be available onsite to reduce the number of staff using local pubs. • The accommodation facility should be capable of scaling up to meet increasing demand for construction workforce accommodation in the region.
Warrumbungle Shire Council	10 July 2023	• Impacts on townships within Warrumbungle Shire should be accounted for in the social impact assessment and the planning agreement for the project.
EnergyCo	Regular meetings as part of the Candidate Foundation Generators process	• Discussion regarding CWO REZ cumulative impacts. • Access roads to CWO REZ infrastructure and generation projects. • Update on ACENs strategy. • Coordination of approval pathways between EnergyCo CWO REZ Infrastructure. • Facilitation of discussions with other generators.
Department of Planning and Environment	25 January 2023 16 February 2023 23 March 2023 24 May 2023 15 June 2023 19 July 2023	• Update on ACENs strategy in the context of the development application. • Discussion on preferred approval pathways and inclusion of the accommodation facility in the project's Amendment Report. • Resolution of specific issues related to the development application, e.g. access route, biodiversity methodology.

2.2.2 Final location and suitability

Once the preferred site was identified for the accommodation facility, further constraints and opportunities analysis was undertaken to identify the specific development footprint within the identified study area. This included an assessment of biodiversity, bushfire, flooding, visual and cultural heritage impacts based on desktop information and the outcomes of field investigations.

Two locations were initially considered within the same lot to develop the accommodation facility; a northern and southern location, as shown on Figure 2.3. A biodiversity, heritage, flooding and visual investigation identified environmental and land use constraints that informed the final accommodation facility development footprint and included:

- Aboriginal cultural heritage sites identified during archaeological surveys
- native vegetation and threatened species habitat mapped during biodiversity surveys
- location of residences and direct feedback from residents
- location of higher order watercourses and flooding potential.



KEY

- Potential creek crossing point
- Hollow-bearing tree
- Wedge-tailed eagle nest
- Pink-tailed legless lizard rocky habitat
- Solar and BESS study area
- Accommodation facility study area

Accommodation facility infrastructure area

- Northern option
- Southern option

Plant community type

- Exotic (trees, grassland)
- Cleared
- Dam

PCT 80 | Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion

- High
- Poor
- Pasture

PCT 281 | 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

- Poor
- Pasture
- Planted

PCT 479 | Narrow-leaved Ironbark- Black Cypress Pine - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion

- High
- Moderate
- Derived native grassland (DNG)

Existing environment

- Major road
- Minor road
- Watercourse/drainage line
- Waterbody
- Cadastre

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

0 0.5 1 km

GDA 1994 MGA Zone 55

N

Accommodation facility biodiversity constraints

Birriwa Solar and BESS Project
Amendment Report
Figure 2.3

EMM creating opportunities

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A summary of the key environmental constraints considered as part of the accommodation facility refinement process and selection of the development footprint is provided in Table 2.5.

Table 2.5 Matters considered during accommodation facility refinement

Aspect	Matters considered during refinement
Aboriginal cultural heritage	A field survey of the accommodation facility study area identified one isolated artefact site, Winora IF-2, within the accommodation facility study area, in the vicinity of the proposed internal access track. If the final design of the access track cannot avoid Winora IF-2, it will be salvaged prior to the commencement of construction. The methodology for the salvage of this site will be finalised as part of an Aboriginal cultural heritage management plan (ACHMP) to be prepared for the project. Further information on this site is provided in Appendix F.3.
Biodiversity	Measures to avoid and minimise impacts to native vegetation were considered during the refinement process, resulting in avoidance of significant biodiversity values. The accommodation facility study area encompasses approximately 205 ha. Two locations were assessed for the accommodation facility, the northern and southern location. The following biodiversity constraints were identified for the southern location: • PCT 479-high and moderate (the treed area) will require offsetting for ecosystem credits. • Pink-tailed Legless Lizard (*Aprasia parapulchella*) will require assumed presence, based upon the occurrence of approximately 2 ha of rocky habitat. This will result in a credit obligation for the species, as well as the requirement of pre-clearance surveys and additional mitigation measures. Locating the facility in the northern location avoided these impacts upon biodiversity values including removing the requirement for biodiversity offsets. In addition, a key design principle within the project refinement process was to maximise the placement of project infrastructure in areas historically cleared of trees and shrubs and, wherever possible, limit impacts to native vegetation of low quality only (low condition grassland). The accommodation facility access track will be located within the accommodation facility development footprint within areas of minimal vegetation (low condition DNG only), thereby avoiding the need to remove higher quality vegetation containing trees and shrubs. The accommodation facility and access tracks have been designed, where possible, to be further than 100 m from adjacent hollow-breading trees, further reducing impacts to potential owl breeding hollows. Targeted surveys targeting breeding owls were also undertaken, at any suitable hollows in proximity to the accommodation facility and access tracks, confirming there are no breeding owls present.
Visual	A key consideration of the accommodation facility refinement process was the potential visibility of infrastructure from the nearest non-associated rural dwelling, R37. In response to feedback received from neighbouring landholders and the local community during targeted engagement, revisions were made to reduce the extent of the accommodation facility development footprint. Locating the facility in the northern location significantly reduced the distance and visual impact of proposed infrastructure from the residence at R37, compared to the southern option.
Traffic and transport	Alternative site access options were considered including an access track off Merotherie Road. However, the selected approach is to access the accommodation facility via an internal access track from the solar and BESS study area. This avoids any additional impacts on public roads from the construction and operation of the accommodation facility, including potential ecological and heritage impacts associated with road upgrades.
Waterways	Refinements to the accommodation facility layout have excluded the higher order streams from the accommodation facility development footprint as much as possible. Flood modelling outputs resulted in refinements being applied to the location of the accommodation facility. Areas where flood hazards need to be considered have been identified, using the flood depths and velocities from the 1% AEP event. The proposed location for the accommodation facility was identified to avoid modelled flood zones. The internal access road and northern accommodation facility location were selected as the least constrained due to the avoidance of impact to the third order stream, located south of the facility, as well as avoiding modelled flood zones. Therefore, avoiding impacts to any associated riparian vegetation, with the exception of that required for the provision of emergency vehicle access.

Table 2.5 Matters considered during accommodation facility refinement

Aspect	Matters considered during refinement
Bushfire	The accommodation facility location includes a 10–20 m buffer around the perimeter of the accommodation units, to allow for an asset protection zone (APZ). An emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicle use.

The accommodation facility is located immediately south-east of the solar and BESS study area, and avoids key biodiversity, heritage, traffic and waterways constraints, outlined in Table 2.5. The accommodation facility development footprint is on freehold land parcels owned by one landholder (Lots 53, 54 and 55/DP 750755). Lot 54/DP 750755 was in the schedule of lands provided in the EIS and therefore two additional lots will be added to the schedule of land for this amendment (Appendix A).

2.3 Strategic planning framework

The strategic planning framework as described in the EIS continues to remain applicable to the amended project. An overview of relevant policies, plans, and strategies and how the project and proposed amendments align with these is provided in Table 2.6. The key change to the strategic planning framework to that described in the EIS, is that the *Central West and Orana Regional Plan 2041* was finalised in December 2022 following the submission of the EIS in September 2022 (EMM 2022a). The key changes to the strategic planning framework since publication of the EIS are outlined in Table 2.6 in bold text.

Table 2.6 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
International context		
The Paris Agreement	*The Paris Agreement* is a legally binding international treaty on climate change adopted by 196 parties in 2015. As a signatory to the agreement, the Australian Government has committed to reduce greenhouse gas emissions by 26%–28% on 2005 levels by 2030.	The project will contribute to meeting Australia's commitments under *the Paris Agreement* by providing an alternative energy source to energy sourced from fossil fuels, thereby reducing the NEM's annual greenhouse gas emissions.
National context		
Large-scale Renewable Energy Target	The Australian Government Clean Energy Regulator administers the *Large-scale Renewable Energy Target* which incentivises investment in renewable energy power such as wind and solar farms. The *Large-scale Renewable Energy Target* of 33,000 gigawatt hours of additional renewable electricity generation was met at the end of January 2021 (Clean Energy Regulator 2021). The annual target will remain at 33,000 gigawatt hours until the scheme ends in 2030. Notwithstanding, the Clean Energy Regulator expects that large-scale renewable generation could reach up to 40,000 gigawatt hours in 2021.	The solar component of the project will have an indicative capacity of around 600 MW and include a BESS of up to 600 MW for a 2 hour duration (1,200 MWh), which will make significant contributions towards meeting the Large-scale Renewable Energy Target in future years. In addition, the BESS will be able to store renewable energy to increase market efficiency and enable greater penetration of renewables in the electricity grid.

Table 2.6 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
Integrated System Plan 2022	The Australian Energy Market Operator (AEMO) publishes an inaugural ISP which is updated every two years. The 2022 ISP finds that the NEM must triple its overall generation and storage capacity if it is to meet the economy's electricity needs. The 2022 ISP also identifies the need for 46 GW/640 gigawatt-hour (GWh) of dispatchable storage capacity, efficiently operated and firm variable renewable energy into the future.	The project will contribute to the storage and dispatchability requirements and will therefore support the 2022 ISP.
Net Zero 2050	In October 2021, The Australian government released its *Long Term Emissions Reduction Plan* to achieve net zero emissions by 2050. The Plan aims at reaching a net zero economy through a technology-based approach, whilst protecting relevant industries, regions and jobs. It is part of an overarching strategy for emission reduction, based on a technology-led approach which includes a Technology Investment Roadmap and its Low Emissions Technology Statements.	The project will reduce greenhouse gas emissions by approximately 6 Mt tonnes (CO_{2e}) over its operational life.
State context		
NSW Electricity Infrastructure Investment Roadmap (DPIE 2020a)	The *NSW Electricity Infrastructure Roadmap* and its implementing legislation the EII Act, coordinates investment in transmission, generation, storage and firming infrastructure as ageing coal-fired generation plants retire. The roadmap includes actions that will deliver "whole-of system" benefits. The roadmap sets out a plan to deliver the state's first five REZs in the Central-West Orana, New England, South-West, Hunter-Central- Coast, and Illawarra regions.	The project is within the CWO REZ and is ideally placed to contribute to the success of the roadmap.
Large-Scale Solar Energy Guideline (DPE 2022a)	The *Large-Scale Solar Energy Guideline* (DPE 2022a) provides the community, industry, applicants, and regulators with guidance on the planning framework for the assessment of large-scale solar projects and identifies the key planning considerations relevant to solar energy development in NSW. It is noted that this guideline was released in August 2022, and therefore the earlier version of these guidelines (DPIE 2018) is referred to in the SEARs for this project.	Site selection and impact assessment considerations detailed in the guideline have been and will continue to be used to inform the project.
Net Zero Plan Stage 1: 2020–2030 (DPIE 2020b) and Implementation Update (DPIE 2021a)	The *Net Zero Plan Stage 1 2020–2030* (DPIE 2020b) outlines the NSW Government's plan to grow the economy and create jobs while helping the state to deliver a 35% cut in emissions compared to 2005 levels. The *Net Zero Plan Stage 1 2020–2030 Implementation Update* (DPIE 2021a) outlines the implementation of the Electricity Infrastructure Roadmap and REZs.	The project contributes to Priority 1 of the Plan: "drive uptake of proven emissions reduction technologies that grow the economy, create new jobs or reduce the cost of living." The CWO REZ is also identified in the Plan as critical in replacing retiring coal fired generators in NSW.
Local and regional context		
Central West and Orana Regional Plan 2041 (DPE 2022b)	The *Central West and Orana Regional Plan 2041* (the Regional Plan) considers a 20-year timeframe with a focus on the next 5 years. This purpose of the plan is to guide land use planning decisions in the region by the NSW Government, councils and others to the year 2041.	The following objectives of the draft plan are relevant to the project: • Objective 2: Support the State's transition to Net Zero by 2050 and deliver the Central–West Orana Renewable Energy Zone. • Objective 18: Leverage existing industries and employment areas and support new and innovative economic enterprises.

Table 2.6 Alignment with key strategic planning frameworks

Plan, policy or strategy	Description	Alignment with strategic framework
Our Place 2040 Mid-Western Regional Local Strategic Planning Statement (Mid-Western Regional Council 2020)	The Mid-Western Regional Local Strategic Planning Statement sets out the 20-year vision for land use planning in the Mid-Western Regional LGA. Planning Priority 7 of the Local Strategic Planning Statement is to "support the attraction of a diverse range of business and industries". To support this planning priority the *Local Strategic Planning Statement* contains a land use action to "consider renewable energy development in appropriate areas that avoids impacts on the scenic rural landscape and preserves valuable agricultural land."	The project will contribute to Planning Priority 7 of the *Local Strategic Planning Statement* and has been sited to minimise impacts on productive agricultural land and visual amenity, where practicable. An extensive site selection process was undertaken to identify a suitable location for the project that is consistent with Priority 7, as discussed in Section 2.2.

3 Description of amendments

3.1 Overview

The high demand for workforce generated by energy projects in the CWO REZ means that a large portion of the construction workforce for projects will need to be sourced from outside the region. This will significantly increase the demand for local and temporary accommodation.

In response to matters raised in submissions and outcomes of ongoing engagement with the local community, government agencies, project landholders, and other stakeholders (i.e. to minimise the impact upon limited local and temporary accommodation in the CWO REZ), ACEN has made amendments to the project and seeks approval to construct and operate an accommodation facility near the Birriwa solar and battery project (hereafter referred to as the 'accommodation facility)' to accommodate the temporary construction workforce required for the project.

In addition to this project, ACEN has several renewable energy projects in various stages of development within the CWO REZ. The accommodation needs associated with the required construction workforce is also being considered by ACEN as part of the planning and design phase of these future projects. While development consent is sought only to accommodate construction workers for the Birriwa solar and battery project as part of this application, it is noted that the Birriwa accommodation facility may therefore also service the temporary construction phase accommodation needs of ACENs future projects in the CWO REZ. However, this will be subject to the necessary planning approvals and accommodation availability and needs at the time. The intention is to avoid any material overlap of peak workforce in the construction of projects in the CWO REZ and to minimise the total capacity of the accommodation facility.

Whilst approval is sought to accommodate the Birriwa solar and battery project construction workforce at the accommodation facility, ACEN acknowledges the number of projects at different stages in the REZ. ACEN will therefore continue to evaluate options for construction worker accommodation, which may be at other facilities as they become available.

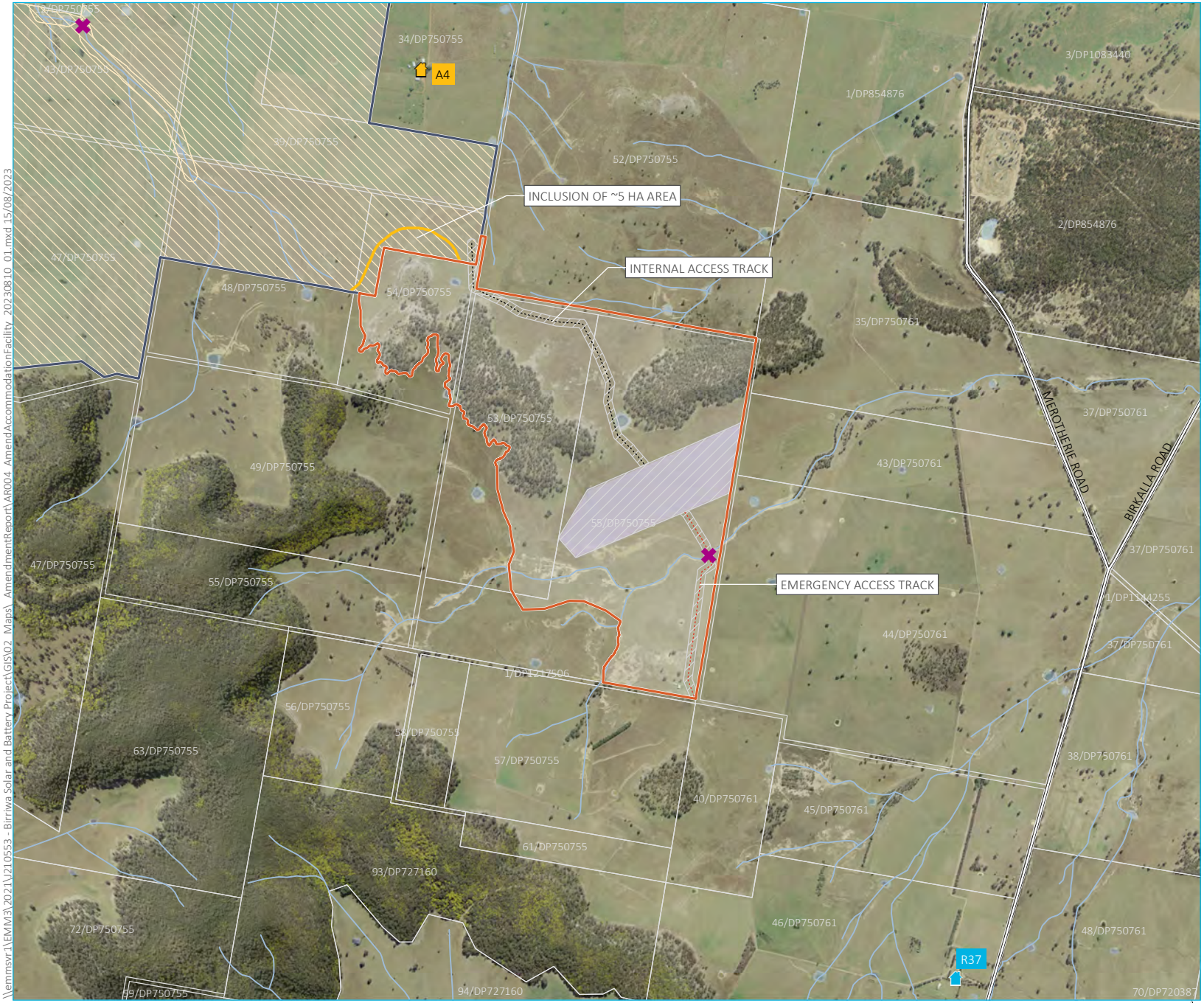
The accommodation facility will:

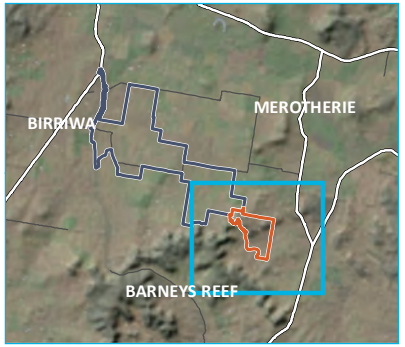
- limit the impact on regional housing availability and affordability during the construction phase of the project
- avoid temporary construction workers using the limited tourist accommodation in the region
- offer contracting and employment opportunities for local providers for the construction and servicing of an accommodation facility
- maintain the current social fabric of communities, including security and traffic, by accommodating the majority of the workforce in one location
- offer a positive health and well-being experience for workers through appropriate accommodation design
- potentially provide local government or other entities with relocatable accommodation facilities that can be re-purposed to meet future community needs.

The schedule of lands originally presented in Appendix A of the EIS to which the development application applies has been updated to account for the accommodation facility. The updated schedule of lands is presented in Appendix A of this amendment report.

In addition to the accommodation facility, an amendment to the development footprint associated with the solar component of the project is also proposed, as shown in Figure 3.1, to re-include an area of grassland (approximately 5 ha) that was excluded in the EIS based on conservative mapping of this area as derived native grassland. This area has been surveyed by EMM ecologists since submission of the EIS, which confirmed that this area is not derived native grassland, and therefore does not need to be avoided on the basis of ecological constraints.

A consolidated, detailed description of the project, including the accommodation facility, is included in Appendix B of this amendment report.





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

Accommodation facility study area and development footprint

Birriwa Solar and BESS Project
Amendment Report
Figure 3.1

EMM creating opportunities

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3.2 Amendment summary

A comparison between the original proposed project and the proposed amendment is provided in Table 3.1. The proposed amendments are also shown on Figure 3.1, with an updated, consolidated project description provided in Appendix B.

Table 3.1 Amended project summary

Element	Original project	Amended project
Study area	The study area of 1,330 ha as shown in Figure 3.1 of the EIS.	The study area of approximately 205 ha for the accommodation facility, as shown in Figure 1.3 and Figure 3.1. **The total study area considered for the project (i.e. the project area) is 1,535 ha.** Note, the study area is the area of assessment for baseline surveys and studies conducted. Note, this area is not the development footprint and will not all be impacted.
Project development footprint (impact footprint)	The development footprint area of 1,159 ha as shown in Figure 3.1 of the EIS.	The additional development footprint associated with the amendment (approximately 38 ha) comprises: • Accommodation facility development footprint (approximately 33 ha); inclusive of the operational components of the accommodation facility (approximately 23 ha), the accommodation facility access track (approximately 6 ha), and the accommodation facility emergency access track (approximately 4 ha). • Re-inclusion of an area of grassland into the development footprint associated with the solar component of the project (approximately 5 ha). **The total project development footprint (impact footprint) associated with the amended project is therefore 1,197 ha.**
Targeted capacity (solar)	600 MW (AC)	No change.
Targeted capacity (BESS)	600 MW for 2 hours	No change.
PV modules	It is anticipated that there will be approximately 1.2–1.4 million photovoltaic (PV) modules (solar panels)	No change.
Power conversion units (PCUs)	It is anticipated that approximately 80–160 power conversion units will be required.	No change.
BESS design	The BESS will be adjacent to the substation within one of two proposed operational infrastructure areas, as shown in Figure 1.2, and will be housed within either outdoor standalone racks, shipping containers or dedicated use buildings.	No change.

Table 3.1 Amended project summary

Element	Original project	Amended project
Substation	Two substation location were assessed. The 600 MW transformer yard is proposed to be up to approximately 200 m by 100 m; and the switch yard is proposed to be up to approximately 150 m by 100 m. No component will be higher than the transmission tower, which is expected to be approximately 30 m high.	No change.
Grid connection	The project will connect to the proposed CWO REZ Merotherie Energy Hub being developed by the Energy Corporation of NSW (EnergyCo).	No change.
Construction duration	The anticipated period of construction for the project is approximately 28 months.	The anticipated period of construction for the accommodation facility will be over a period of approximately 3–7 months (10–28 weeks) within the 28 month construction window for the project. Note, this construction period, however, will be determined once a supplier has been selected and contracts executed. It is also noted that construction of the accommodation facility may be staggered to adapt to the project construction needs.
Construction workforce	The project will require a peak construction workforce of up to 800 people (assuming concurrent construction of the solar and BESS infrastructure). It is anticipated that the average construction workforce throughout the 28-month construction period will be approximately 360 people (solar component only). Construction of the BESS is anticipated to take approximately 16 months with an average construction workforce of approximately 170 people.	The project's peak construction workforce has been revised and is anticipated to be up to 500 people (assuming that the peak construction activities of the solar and BESS infrastructure will not occur at the same time). The site preparation and pre-construction activities associated with the accommodation facility will require indicatively 25–30 staff.
Construction workforce accommodation	Accommodation required for non-local hires was anticipated to be sourced through the use of available rental and motel accommodation in surrounding townships and regional centres (i.e. Dunedoo, Gulgong, Mudgee and Wellington, or potentially as far away as Dubbo if necessary). If approved, the on-site construction workforce accommodation proposed as part of the Valley of the Winds Wind Farm (SSD-10461) may also be used to house non-local hires.	The non-local construction workforce will be accommodated in a temporary accommodation facility, to be constructed adjacent to the solar and BESS study area (refer to Figure 1.3). The accommodation facility will accommodate up to approximately 500 construction workers. While approval is sought for a facility with the capacity to accommodate up to 500 people, it is noted that the accommodation facility may have the potential to expand, enabling capacity for up to 1,000 people, subject to future approvals, to accommodate the construction workforce associated with other ACEN developments within the CWO REZ. It is also noted that this proposal will not restrict ACEN to accommodate all its workforce in the accommodation facility. Indeed, if other options are available prior to construction commencing, they will be considered and addressed in the Accommodation and Employment Strategy.

Table 3.1 Amended project summary

Element	Original project	Amended project
Construction staging	The construction of the project will generally include the following overlapping stages: 1. Public road upgrades including public road crossings. 2. Site establishment including security fencing and internal access tracks. 3. Construction of PV modules and associated infrastructure (including temporary construction ancillary facilities). 4. BESS and substation installation. 5. Commissioning and testing.	The accommodation facility will be established prior to accommodation being required for the project's construction workforce. The construction of the project will generally include the following overlapping stages (some of which may be undertaken in parallel): 1. Establishment of internal access tracks for the project. 2. Public road upgrades including public road crossings for the project. 3. Site establishment including security fencing, and bushfire asset protection zones for the project. 4. Minor earthworks including levelling for the prefabricated demountable units for the accommodation facility. 5. Construction of the accommodation facility including delivery and construction of prefabricated demountable units, and utility infrastructure for a capacity of approximately 500 people. 6. Construction of the project, including construction of temporary ancillary facilities, the PV modules, BESS and substation installation. 7. Commissioning and testing of the project.
Site access	The primary vehicle access route will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. The primary project access point on Birriwa Bus Route South will provide access to the development footprint of the project.	No change will occur to the project's primary vehicle access route. The accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the project and the accommodation facility (Figure 3.1). An internal emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (Figure 3.1).
Operational lifespan	The operational lifespan of the project will be in the order of 30 years, unless the solar farm is re-powered at the end of the PV modules' technical life. The decision to re-power the solar farm will depend on the economics of solar PV technology and energy market conditions at that time. Should the PV modules be replaced during operations, the lifespan of the project may extend to up to 50 years. The BESS's operating life is likely to be 20 years, with the potential for replacing components to extend its life if the market conditions and the cost of the batteries warrant this.	The accommodation facility will be operational for the duration of the solar and battery project construction phase, which is anticipated to be approximately 28 months, unless approved for use by future ACEN developments in the CWO REZ.
Operational workforce	The project will contribute to the employment of up to 20 employees during operation.	No change.

Table 3.1 Amended project summary

Element	Original project	Amended project
Operational traffic	Regular light vehicle access will be required throughout operations; however, is not anticipated to exceed approximately 20 light vehicles per day. Heavy vehicles may be required occasionally for replacing larger components of project infrastructure including inverters, transformers or components of the BESS.	No change.
Decommissioning	Once the project reaches the end of its investment and operational life, the project infrastructure will be decommissioned and the development footprint returned to its pre-existing land use, namely suitable for grazing or cropping, or another land use as agreed by the project owner and the landholders at that time. Project decommissioning will require disturbance of the development footprint during the removal of equipment. A significant number of people, including both staff and contractors, and vehicle movements will be required during the decommissioning stage of the project. Any underground cabling below 600 mm will remain in-situ following project decommissioning unless otherwise agreed with the landholders.	Following the construction of the project, the accommodation facility may be maintained for use by the construction workforce associated with other ACEN developments in the region, if this is approved as part of future development applications. There may also be an opportunity to accommodate the construction workforce of other energy proponents. If these options are not pursued, the accommodation facility will be dismantled, and the site generally restored to its former condition.

3.3 Changes to the development footprint

The project development footprint will be extended to land required for the accommodation facility (Lot 53 DP750775, Lot 54 DP750755, and Lot 55 DP750775). The additional development footprint associated with the amendment (approximately 38 ha) comprises:

- Accommodation facility development footprint (approximately 23 ha).
- Accommodation facility access track (approximately 6 ha).
- Accommodation facility emergency access track (approximately 4 ha).

The total project development footprint (maximum extent of ground disturbing works), inclusive of the amended areas, is approximately 1,197 ha.

The proposed amendments showing the development footprint of the accommodation facility is shown in Figure 3.1. The proposed amendments to the project development footprint, which has been amended to re-include an area of the south-eastern corner is shown in Figure 1.3.

3.4 Accommodation facility layout and design

3.4.1 Accommodation facility components

The proposed accommodation facility infrastructure area will comprise prefabricated demountable units that will be delivered to site. Photograph 3.1 provides examples of a typical accommodation facility for a construction workforce. The final design and layout of the accommodation facility will be confirmed during detailed design; however, all components will sit within the development footprint identified for the accommodation facility as shown in Figure 3.1. This amendment report and associated assessments are based on consideration of reasonable worse case impacts to allow flexibility in design and construction methodology.

Photograph 3.1 Examples of typical construction workforce temporary accommodation facilities

It is proposed that the construction workforce will be accommodated in industry standard four-bed units that feature four self-contained bedrooms with ensuite bathroom facilities. Up to 125 four-bed units will be installed, to accommodate 500 people. A small number of two-person executive style modules may also be installed. Other facilities, such as kitchen, dining room, licensed social area, gymnasium, recreation area, medical centre and laundry, will be provided through communal infrastructure. An example of workforce accommodation units (external view) is provided in Figure 3.2. An example of the typical layout of a four-bed unit is provided in Figure 3.3.

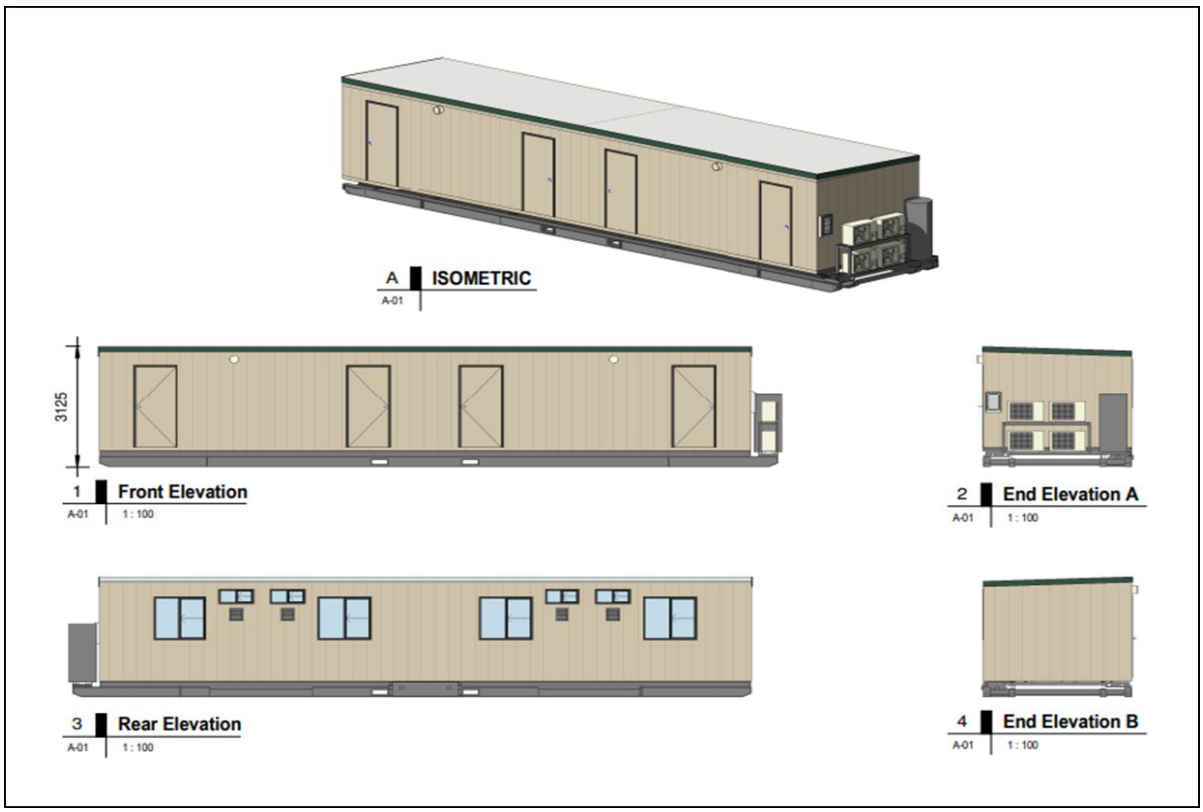


Figure 3.2 **Example of workforce accommodation units – external view**

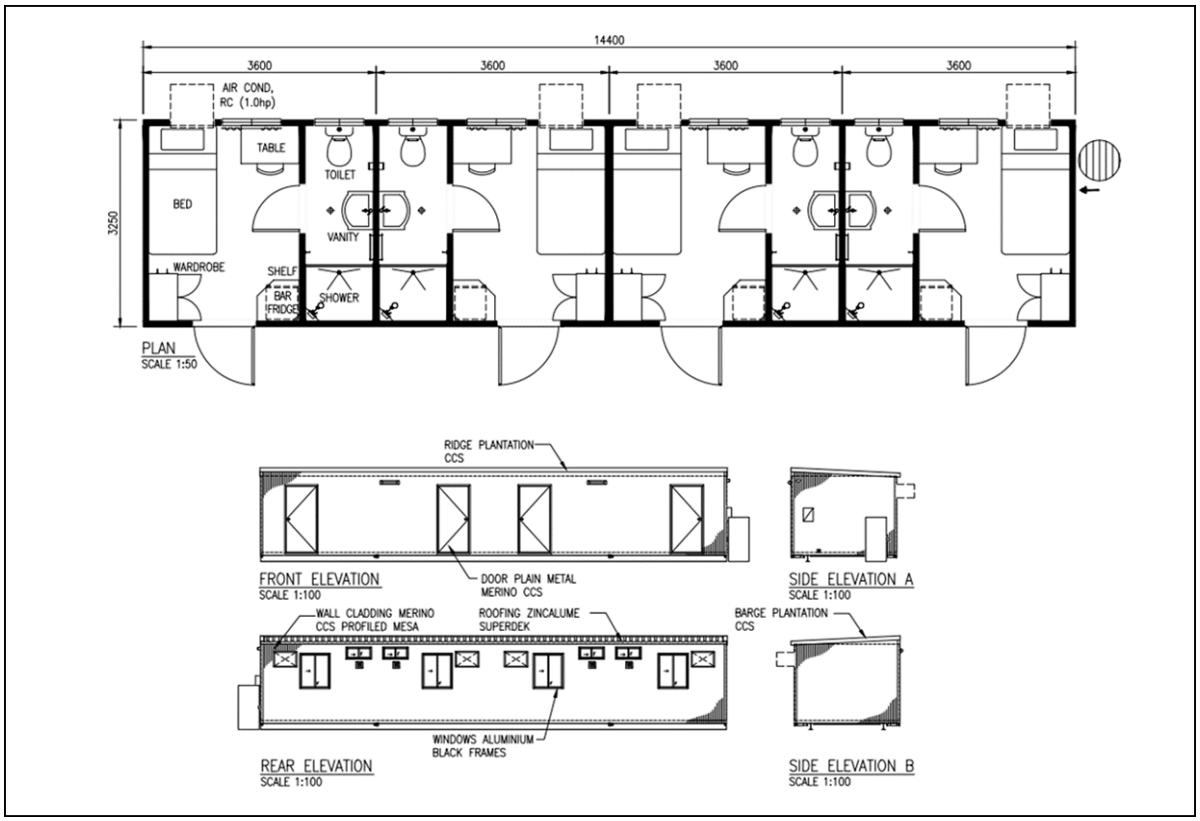


Figure 3.3 **Example of workforce accommodation units – typical layout**

The demountable units may be constructed in stages of up to the 500 person capacity as construction of the project progresses. The capacity of the facility will continuously be monitored in relation to construction progression, with enough beds constructed at any given time to accommodate up to 90% of the construction workforce (based on the assumption that approximately 10% of the workforce will be locally based and therefore will not require accommodation onsite).

Communal infrastructure that can accommodate up to 500 people, readily upgradable to 1,000 people if required for future projects and subject to future approvals, will be installed alongside 125 four-bed units.

Communal facilities will include:

- kitchen and dining hall
- recreational facilities such as a gymnasium
- BBQ facilities
- licensed social area
- laundry and linen store facilities
- medical centre.

Figure 3.4 and Figure 3.5 provide examples of a 500 person capacity accommodation facility layout. The exact layout to be adopted will be confirmed as part of future detailed design and will be based on the specific requirements of the site.

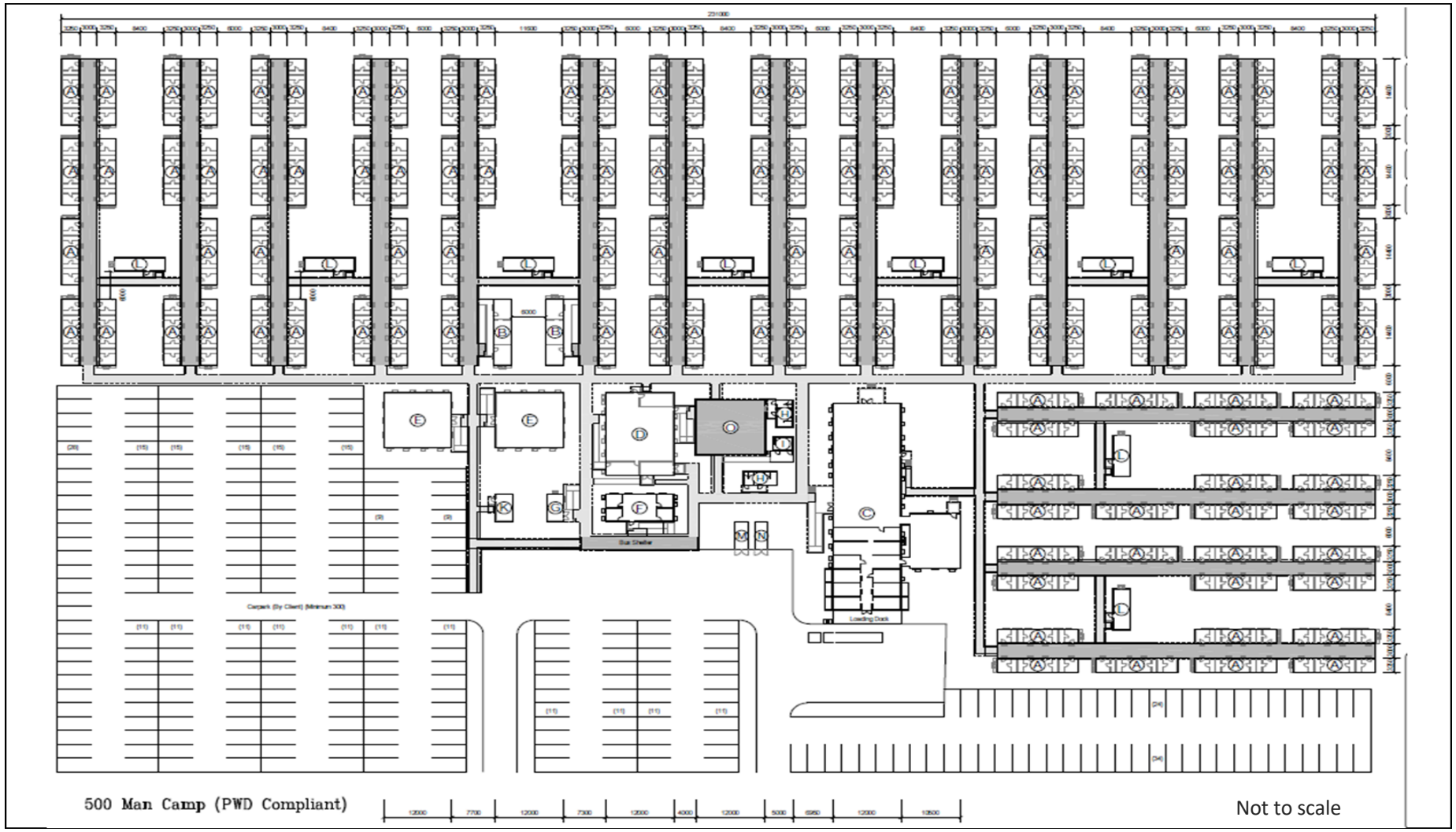


Figure 3.4 Example 1 – layout of a 500-person accommodation facility

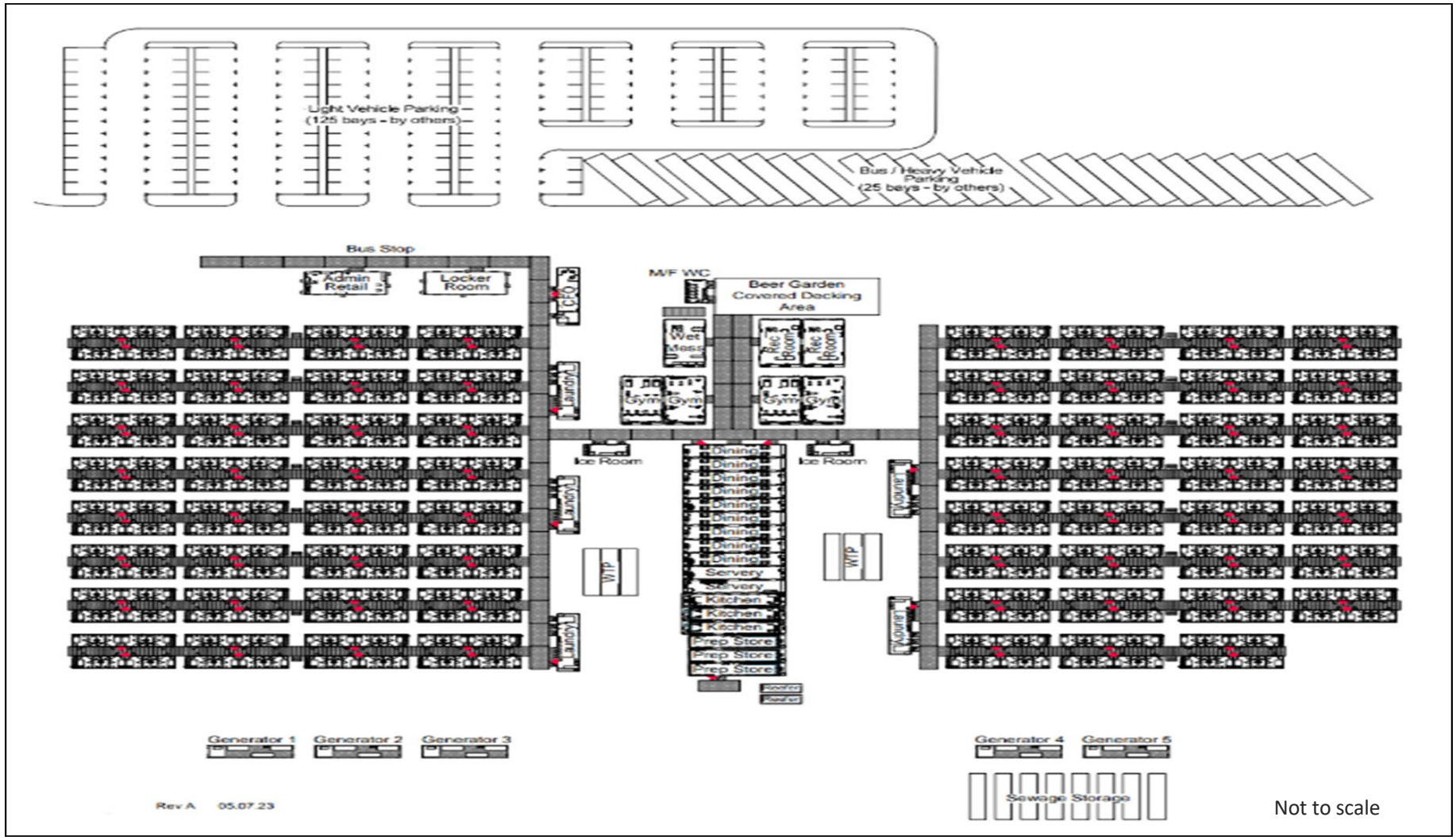


Figure 3.5 Example 2 – layout of a 500-person accommodation facility

3.4.2 Accommodation facility access

No change will occur to the project's primary vehicle access route as described and assessed in the EIS (EMM 2022a), which will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. The primary vehicle access point on Barneys Reef Road will provide access to the development footprint of the project.

The accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the solar and battery project and the accommodation facility (Figure 3.1).

An internal emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (Figure 3.1). This will enable an alternative emergency access to the public road network, directed towards the south-eastern corner of the property. This emergency access track is not intended for general access.

3.4.3 Accommodation facility services

There is no existing water, sewerage or electricity infrastructure at the proposed site. ACEN will continue to consult with Mid-Western Regional Council during detailed design and prior to construction of the accommodation facility commencing, to identify opportunities to avoid or reduce reliance on Council water supply and sewage treatment facilities in the region. Potential options have been detailed below.

A summary of utility requirements is summarised in Table 3.2.

Table 3.2 Summary of utility estimates

Utility	Per person per day	Maximum per day (based on up to 500-people)
Electricity	2.6–2.8 kWh	1,300–1,400 kWh
Water (potable)	250 L	125,000 L
Sewage	250 L	125,000 L
Waste (putrescible, recyclable and general)	0.00857 m^3 8.57 kg (0.00857 metric tons), depending on waste density	4,285 kg
Waste (grease/oil)	0.4 L	200 L

i Water

It is estimated that the accommodation facility will require an addition of approximately 250 litres (L) of potable water per person per day. If water is unable to be obtained from council's potable water supply, water will be delivered to the site by truck weekly, treated on-site and stored in tanks that are connected to the units and communal infrastructure. A rainwater tank/s will be installed to capture water that can be used for non-potable functions such as toilet flushing, laundry, vehicle washing or landscape irrigation.

Water may be sourced from Lake Windemere. Water NSW estimates that Windemere dam is currently at 97% capacity (approximately 356 GL) There may also be opportunities to access bore water on the site by drilling into underground aquifers. This will require a water access licence and the amount of water that can be extracted will be limited to protect groundwater sources from depletion. Water would be treated on-site using appropriate treatment plants.

ACEN will continue to consult with Mid-Western Regional Council to confirm the appropriate water source prior to design and construction of the accommodation facility commencing.

ii Telecommunications

Telecommunication utilities are not available at the site. As such, the cellular network will be used during construction.

iii Sewage

It is estimated that the accommodation facility will produce approximately 250 L of sewage per person per day. The accommodation facility will be serviced by a pump-out sewerage system. A septic holding tank will be connected to the units and communal infrastructure and sewage will be removed by truck to a treatment facility, which has the required capacity, at least weekly.

There may also be an opportunity to install an on-site sewage treatment plant that will produce treated wastewater that can be used during construction of the project. It may also be appropriate to use treated water to supplement rainwater captured for non-potable functions such as toilet flushing. If an on-site system were to be used, the capacity is expected to be approximately 250 L per person per day, or a total of up 125 kL per day, when the facility is up to the maximum capacity of 500 people. This processing capacity is below the threshold specified in Section 36 of Schedule 1 of the POEO Act, and therefore an environment protection licence (EPL) would not be required if an on-site sewage treatment facility was to be installed.

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.

iv Electricity and fuel

It is estimated that the accommodation facility will require 2.6–2.8 kWh of electricity per person per day. This assumes typical energy usage for lighting, heating or cooling systems, electronic devices, and common amenities. Electricity will be generated on-site using solar panels and batteries. Electricity may also be sourced via the local distribution network, where available and via diesel generation where access to the grid is unavailable.

Diesel will be delivered to the site weekly and stored within fuel storage tanks that comply with the relevant standards. The fuel storage tanks will be located within a restricted access area. Diesel will be sourced from local suppliers.

v Waste

a Putrescible, recyclable and general

It is estimated that the accommodation facility will produce approximately 0.00857 m^3 of waste per person per day (weighing approximately 8.75 kg depending on waste density). This includes putrescible waste, recyclable waste and general waste. Waste will be collected and stored in waste bins that are emptied and removed by truck to local landfill and recycling centres, which have the required capacity, at least weekly.

Recyclable materials and food waste will be stored and disposed of separately to reduce the waste entering landfill. There may be opportunities to employ a food waste management process that produces organic fertiliser and water that can be re-used on-site, in construction or shared with the community.

During consultation on the project, Mid-Western Regional Council advised that due to limited capacity the council is unable to receive any construction waste from projects in the REZ. ACEN acknowledges this current position of 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.

b Grease

The kitchen will be equipped with a grease trap that will be pumped out regularly, depending on capacity and grease waste generated. Grease generated is estimated at 0.4 L per person per day. Local contractors will be engaged to perform this service.

3.4.4 Accommodation facility uses and activities

i Construction

a Staging

The accommodation facility will be operational for the duration of the project construction phase, which is anticipated to be approximately 28 months, unless approved for use by future ACEN developments in the CWO REZ.

The construction of the accommodation facility will generally include the following overlapping stages (some of which may be undertaken in parallel):

- Establishment of internal access tracks for the project.
- Public road upgrades including public road crossings for the project.
- Site establishment including security fencing, and bushfire asset protection zones for the project.
- Minor earthworks including levelling for the prefabricated demountable units for the accommodation facility.
- Construction of the accommodation facility including: delivery and construction of prefabricated demountable units, and utility infrastructure for a capacity of approximately 500 people. The demountable units may be constructed in stages of up to the 500 person capacity as construction of the project progresses.
- Construction of the solar and battery project including the construction of temporary ancillary facilities.
- Construction of the solar and battery project including the PV modules, BESS and substation installation.
- Commissioning and testing of the solar and battery project.

b Site preparation

ACEN may commence site preparation and pre-construction activities of the solar and battery project prior to installation of the accommodation facility, assuming the majority of the initial construction workforce are sourced locally.

Site establishment works and pre-construction activities of the project may include:

- the establishment of a temporary construction compound in a fenced-off area within the solar and BESS development footprint
- construction of internal access tracks and installation of boundary/security fencing within the solar and battery project and accommodation facility (including the new access track for the accommodation facility as well as the accommodation facility emergency access track)
- site survey to confirm infrastructure positioning and placement within project
- ongoing geotechnical investigations to confirm the ground conditions within the project
- installation of environmental controls including erosion and sediment management structures and asset protection zones within the project
- identification and demarcation of no-go zones around trees and vegetation to be retained within the project.

As part of site establishment works, management measures will be implemented to mitigate potential impacts on the environment and receptors within close proximity of the project area. Where required, additional or improved drainage channels, sediment control ponds and dust control measures will be implemented. Further, laydown areas and waste handling, fuel and chemical storage areas will be strategically placed to minimise potential environmental impacts. Additional controls required for the accommodation facility are outlined in Chapter 6.

c Pre-construction

Minor earthworks will be limited to the locations required for resurfacing activities to prepare the accommodation facility development footprint for the installation of prefabricated demountable units (including car parking) including some grading or levelling (“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.

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.

d Construction

Upon completion of the site establishment and pre-construction activities described above, the main construction activity phase of the accommodation facility will involve installing communal infrastructure and bedroom units. The size of the accommodation facility will vary to meet demand. This staged approach will mean that the number of four-bed units installed will gradually increase towards the project peak and then decline afterwards. It is anticipated that 12 four-bed units (48 beds) will be installed initially, peaking at 125 (500 beds). Some two-person executive style units may be installed, however the overall capacity will not exceed 500.

e Delivery of construction material and prefabricated units

Construction materials and infrastructure will be transported to the accommodation development footprint via road. Heavy vehicles up to 19 m in length will require access to the accommodation facility development footprint. Construction materials and infrastructure delivered to the accommodation facility development footprint will include:

- pre-fabricated demountable units (staged delivery)
- electrical infrastructure including cabling
- earthworks and lifting machinery and equipment.

f Plant and equipment

The plant and equipment required for the construction of the accommodation facility will include:

- earthmoving machinery and equipment for site preparation (e.g. rollers, dump truck, concrete truck, excavators, grader and compactor)
- cable trenching and laying equipment
- assisted material handling equipment (forklifts and cranes)
- machinery and equipment for installation of the prefabricated demountable units
- generators
- water trucks for dust suppression.

g Transport routes and vehicle movements

Construction materials and infrastructure including the prefabricated demountable units are anticipated to be transported to the accommodation facility via road from either:

- Port of Newcastle (via the Golden Highway and the Castlereagh Highway)
- Port of Sydney (via the Golden Highway and the Castlereagh Highway).

Deliveries may also come from elsewhere in Australia, subject to supplier selection, port capabilities and fees.

The origins of project-related light vehicle movements and preferred transport routes will be dependent on the geographic area from which people travel to the project during construction of the accommodation facility; however, it is anticipated to include people travelling from Gulgong, Mudgee, Dunedoo, Dubbo and surrounds.

All accommodation facility related vehicles will use the project's primary vehicle access route described in Section 3.4.2.

It is anticipated that there will be no oversize over mass (OSOM) vehicles travelling to the accommodation facility.

A 500-person accommodation facility will require approximately 180 semi-trailer deliveries to establish the facility, including delivery of equipment and prefabricated units. A similar number of semi-trailer deliveries will be required to de-mobilise the accommodation facility during decommissioning. Daily light vehicle movements are dependent on the workforce on site and are expected to build up during peak accommodation facility installation activities.

Estimated maximum vehicle movements per day during construction of the project are discussed in Section 6.2.3. It is noted that the peak daily vehicle movements during construction which have been assessed in the EIS have sufficient vehicle movement numbers to allow for the construction of the accommodation facility, particularly since the construction of the accommodation facility will occur prior to the peak construction period of the solar and battery project.

The traffic movements associated with the construction of the accommodation facility will be within the peak movements assessed in the EIS and therefore the amendment to include the accommodation facility will not change the predicted impacts and outcomes of the traffic impact assessment (refer to Section 6.4 and Appendix H of the EIS).

h Workforce

The construction of the accommodation facility will require approximately 25 to 30 staff, accommodated in the local area. Other pre-construction workers, if required, will also be accommodated in the local area.

ii Hours

Activities relating to the construction of the accommodation facility 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.

Once operational, the accommodation facility will be used for 24 hours a day, 7 day a week.

iii Timing

The anticipated construction phase of the solar and battery project is approximately 28 months. The anticipated period of construction for the accommodation facility will be over a period of approximately 3–7 months (10–28 weeks) within the 28 month construction window for the project. Note, this construction period, however, will be determined once a supplier has been selected and contracts executed. It is also noted that construction of the accommodation facility may be staggered to adapt to the project construction needs.

The accommodation facility will be operational for the duration of the solar and battery project construction phase, which is anticipated to be approximately 28 months, unless approved for use by future ACEN developments in the CWO REZ.

iv Operation

a Management

The accommodation facility will be managed by an experienced operator engaged by ACEN. The operator will work closely with ACEN to manage relationships with accommodation providers (responsible for delivering, installing and removing demountable units) and service providers (responsible for servicing the accommodation facility during its operation).

b Services

The accommodation facility will be fully serviced to ensure staff living needs can be met on-site. This will reduce the need for staff to travel to town for basic commodities, recreation, or health and human services.

Services provided onsite are anticipated to include:

- catering
- housekeeping
- provision of alcohol (in a dedicated and licensed social area)
- security (via security officer/s that control access and conduct patrols)
- medical (through an on-site nurse based in the first aid room)
- ground maintenance
- janitorial services
- delivery and removal of water, waste and fuel
- skilled tradesperson services.

Catering will include the provision of meals for breakfast, lunch and dinner every day. These meals will meet the relevant nutrition standards and can be amended to adhere to individual dietary requirements. Alcohol may be sold onsite in a dedicated licensed social area. This would provide local suppliers with the opportunity to sell alcohol without construction staff putting additional pressure on local hospitality venues. The licensed social area will include the requirement for training of service staff in the Responsible Service of Alcohol. All construction staff will be required to register zero drug and alcohol readings when scheduled to work and will be subject to testing.

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.

First aid facilities will be provided onsite. A registered nurse will be available to address more complex health concerns to reduce the reliance on local health services. They will be responsible for the care and supervision of all medical services including formulating care plans, ordering and/or administering medication and referring to external health providers (preferably telehealth services).

ACEN recognises that local health and human services are strained. There may be opportunities for accommodation facility services to be available to the local community during its operation, for example, having an afternoon each week where the nurse is available for the local community. It may also be possible to donate resources once the accommodation facility has been decommissioned, such as security vehicles, to the community.

ACEN will continue to engage with the Mid-Western Regional Council to explore these options so they can benefit local businesses without adversely impacting the local communities.

c Safety and bushfire risk

The operator will implement an ISO 45001 Certified Management system that is compliant with relevant legislative requirements, standards, and codes of practices and include processes and procedures to respond to and manage emergencies. As outlined in Section 3.4.2, the accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the project and the accommodation facility (Figure 3.1). An emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles to provide a safe access to and from the site via existing public roads and tracks (Figure 3.1).

The accommodation facility will be designed and operated to comply with *Planning for Bushfire Protection and AS3959-2018 Construction in Fire Prone Areas*. The accommodation facility development footprint will provide an asset protection zone between bushfire hazards and buildings (including roads) that is compliant with the Asset Protection Zone standards. Other bushfire protection measures such as building, construction and design, water supply, landscaping and site access will be planned in response to the outcomes of the bushfire assessment report (Cool Burn 2023).

d Transport

After the accommodation facility is established, ongoing access for semi-trailer deliveries will not be required, until decommissioning of the accommodation facility. Ongoing heavy vehicle access will be required for provisioning the accommodation facility, including deliveries of consumable goods, water, gas for the kitchen, fuel for generators, and access for waste management.

During operation of the accommodation facility, construction staff will travel to and from the accommodation facility for their shifts via shuttle buses. It has been assumed that there will be approximately 13 shuttle bus trips per day (26 movements). It is anticipated that travel between the solar and battery project and the accommodation facility will occur between 5:00 am – 6:00 am and 6:00 pm – 7:00 pm Monday to Sunday to reflect a 6:00 am – 6:00 pm shift schedule.

Other strategies to minimise the use of private vehicles will be detailed in the Traffic Management Plan and the Accommodation and Employment Strategy, which will be prepared prior to construction.

v Local employment and procurement

ACENs preference and priority is to employ locally first through targeted recruitment and upskilling of local workers. This includes engaging businesses based in the local area (Gulgong, Dunedoo, Leadville) to construct and service the accommodation facility.

The operator will have procurement mechanisms to engage local and Indigenous businesses to install and decommission the accommodation facility, and provide maintenance, laundry, cleaning, catering, security, shuttle bus and waste management services during its operation.

ACENs approach to maximising opportunities for regional participation through the projects 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 engineering procurement and construction (EPC) contracts, management and assurance systems.

vi Decommissioning

Following the construction of the project, the accommodation facility may be maintained for use by the construction workforce associated with other ACEN developments in the region, if this is approved as part of future development applications. There may also be an opportunity to accommodate the construction workforce of other energy developers.

If these options are not pursued, the accommodation facility will gradually be decommissioned when no longer required after the construction peak. The prefabricated demountable units will be removed from the site as the construction workforce decreases. Once construction is complete, communal infrastructure, such as the dining hall, water storage and fencing will be removed to enable the site to be generally restored to its former condition.

In the scenario where the accommodation facility has been de-commissioned after construction of the project, during decommissioning of the solar and BESS infrastructure, a temporary accommodation facility will be re-instated on the land previously used for the project's construction accommodation facility.

4 Statutory context

4.1 Introduction

This chapter describes the relevant Commonwealth and State legislation and regulatory framework under which the proposed amendment will be assessed and determined. There are limited changes to the statutory context for the project as described in Chapter 4 of the EIS (EMM 2022a). Relevant updates as a result of the proposed amendments are described in this chapter.

Section 37 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) provides that a development application may be amended by the applicant at any time before the application is determined. This report supports the amended development application for the project and has been prepared having regard to the *State significant development guidelines – preparing and amendment repor*t (DPE 2022c). It accompanies the Submissions Report for the project and describes the amended project for which approval is now sought, providing a summary of the impacts associated with the amended project compared to those presented in the EIS, and presents an updated evaluation of the merits of the project.

An updated statutory compliance table for the proposed amendments is included in Appendix C. This table identifies all relevant statutory requirements for the amended project and indicates where they have been addressed (either in this amendment report or the EIS).

4.2 NSW State legislation

Table 4.1 details the NSW State legislation applicable to the project and the proposed amendment. Mandatory matters for consideration and an updated statutory compliance table can be found in Appendix C.

Changes that are relevant to the statutory context for the project since the original application are summarised as:

- A water access licence may be required under the NSW *Water Management Act 2000* if bore water is used as a water source for the accommodation facility.
- Crown road parcels are within the accommodation facility development footprint, in addition to the Crown road parcels within the solar and BESS development footprint.

Table 4.1 Applicable NSW State legislation

Aspect/approval	Requirement	Any changes as part of amendment
Approval pathway for the project		
Approval pathway	Approval for the project is sought under Division 4.7 of the EP&A Act, which relates to the application pathway for SSD. The project is classified as SSD as it meets both the requirements of Section 2.6 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), namely: • it requires development consent • is specified in Schedule 1, Section 20 (development for the purpose of electricity generating works that has a capital investment value of more than $30 million). The consent authority for SSD is either the NSW Independent Planning Commission (IPC) or the NSW Minister for Planning. The IPC is the consent authority for this project under Section 4.5(a) of the EP&A Act and Section 2.7 of the Planning Systems SEPP because: • the project is declared to be SSD under Section 4.36 of the EP&A Act • more than 50 submissions have been made by way of objection under the mandatory requirements for community participation in Schedule 1 to the EP&A Act.	No change due to the amendment. The IPC is now the consent authority for the project due to the number of objections received following the public exhibition of the EIS.
Permissibility		
Permissibility	Section 2.36(9) of the *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP) states that development for the purpose of a solar energy system may be carried out by any person with consent on any land. Therefore, the project is permissible with consent. The solar and BESS development footprint in its entirety is zoned RU1 Primary production under the Mid-Western Regional Local Environmental Plan 2012 (Mid Western Regional LEP). The project's primary access route is also zoned RU1 under the Mid-Western Regional LEP and the Warrumbungle Local Environmental Plan 2013 (Warrumbungle LEP). The project is characterised as 'electricity generating works' under the Mid-Western Regional LEP and is permitted with consent on land zoned as RU1. The workers accommodation facility is ancillary to the solar and BESS development and forms part of the project; that is, part of a development that is 'electricity generating works'. An ancillary use or activity is dependent upon and cannot exist without a dominant use or activity. In planning law, an ancillary use is subordinate to a purpose which inspires the other part of it. The dominant use or activity is the solar and BESS development. Without this dominant use, the workers accommodation facility cannot exist or function. Accordingly, the planning framework that applies to the original development as described in the EIS (EMM 2022) therefore still applies, and the accommodation facility is permissible with consent. Notwithstanding, as is the case with the solar and BESS component of the project, the accommodation facility is also on land zoned RU1 under the Mid-Western Regional LEP. Under the LEP, development that is not specified in item 2 or 4 is permitted with consent. Temporary accommodation facilities are not expressly listed in item 2 or 4 and are therefore permissible with consent under the Mid-Western Regional LEP.	No change.

Table 4.1 Applicable NSW State legislation

Aspect/approval	Requirement	Any changes as part of amendment
Other approvals		
Consistent approvals		
An environment protection licence	The generation of electricity from solar power and a temporary accommodation facility are not defined as scheduled activities in Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act) and therefore an EPL is not required. Further, in relation to sewage treatment for the accommodation facility and as described in Section 3.4.3, a septic holding tank will be connected to the accommodation units and communal infrastructure with sewage to be removed by truck to a treatment facility. There may also be an opportunity to install an on-site sewage treatment plant which will produce treated wastewater that can be used during construction of the project. If an on-site system were to be used, the capacity is expected to be approximately 250 L per person per day, or a total of up 125 kL per day, when the facility is up to the maximum capacity of 500 people. This processing capacity is below the threshold specified in Section 36 of Schedule 1 of the POEO Act, and therefore an EPL would not be required if an on-site sewage treatment facility was to be installed.	No change.
Approval under Section 138 of the *Roads Act 1993* (Roads Act)	Approval will be required under Section 138 of the NSW *Roads Act 1993*, for any works in, on or over a public road. This will include the access road upgrade and public road crossings. Approval will be required from: • Warrumbungle Shire Council (Barneys Reef Road) • Mid-Western Regional Council (Barneys Reef Road and Birriwa Bus Route South).	No change.
Other NSW approvals		
Water access licence	Water for the accommodation facility may be accessed from Lake Windemere, or local bore water may be used by drilling into underground aquifers. Use of bore water would require a water access licence.	A water access licence may be required prior to operation of the accommodation facility.
NSW *Conveyancing Act 1919*	The development footprint will require a separate lease from the owners of the affected land. Lease of a solar farm site is treated as a lease of premises, regardless of whether the lease will be for more or less than 25 years. The plan defining 'premises' (being the development footprint) will not constitute a 'current plan' within the meaning of Section 7A of the NSW *Conveyancing Act 1919* and therefore will not require subdivision consent under Section 23G of the Act. The land on which the onsite substation is constructed may require subdivision. At the end of the operational life of the Network Service Provider (NSP) substation, the infrastructure on the subdivided lot will be gifted to the NSP and not reconsolidated back into the lot. At the end of the operational life of the project substation, the infrastructure on the subdivide lot will be decommissioned and the lot will be reconsolidated back into the residual lot. Section 23G of the NSW *Conveyancing Act 1919* will likely apply to the subdivision of the land required for the onsite substation. Once the final location of the onsite substation is determined, the proposed subdivision will be the subject of ongoing discussion with Mid-Western Regional Council, DPE and the project landholders.	No change.

Table 4.1 Applicable NSW State legislation

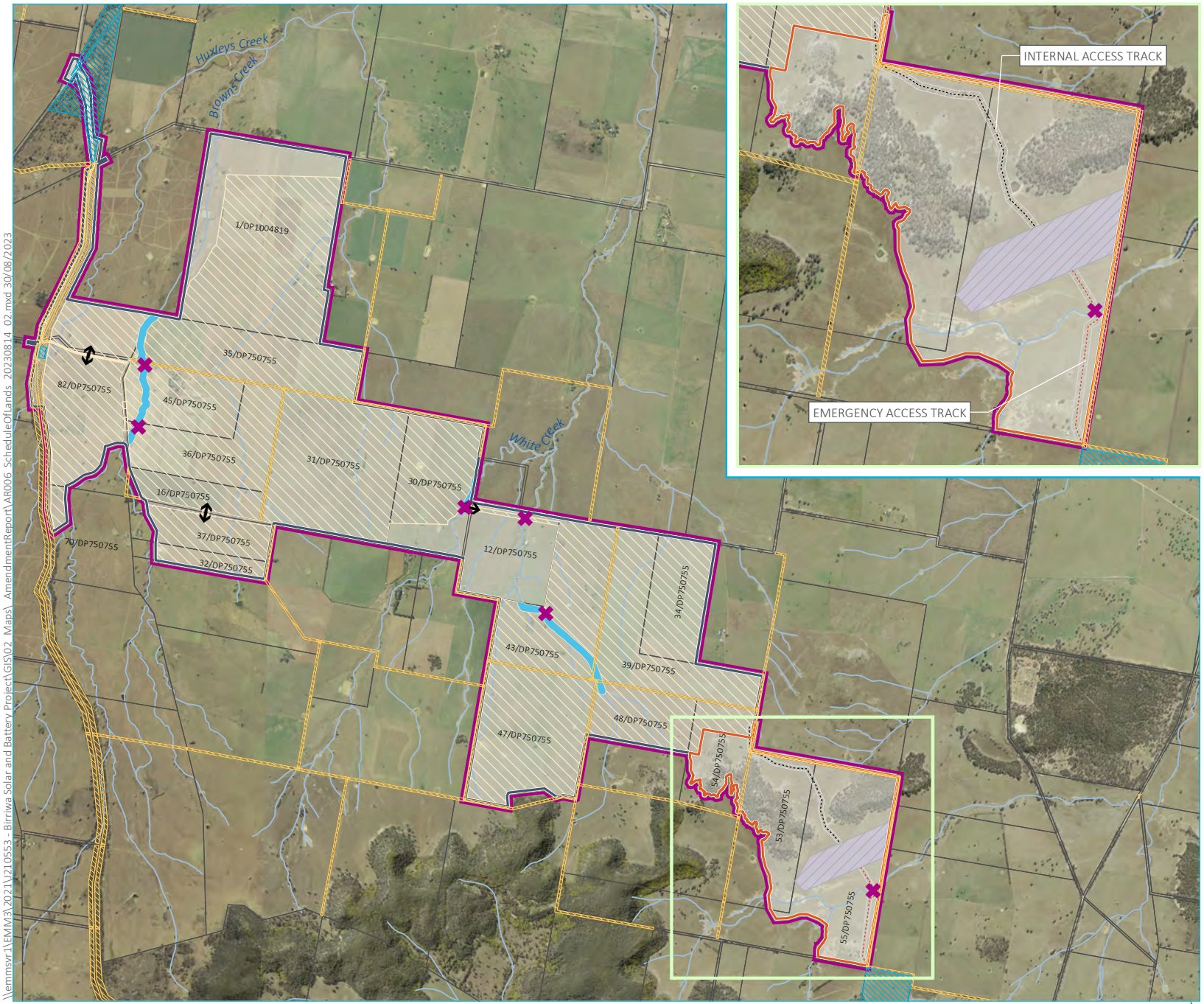
Aspect/approval	Requirement	Any changes as part of amendment
NSW *Crown Land Management Act 2016*	A number of Crown roads have been identified both within the solar and BESS study area and within the accommodation facility study area, as shown in Figure 4.1. Crown roads within the development footprint and road upgrade corridor 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.	A number of crown roads are located within the accommodation facility development footprint (Figure 4.1).
Approvals not required under Section 4.41 of the EP&A Act		
A permit under the NSW *Fisheries Management Act 1994* to block fish passage or dredge or carry out reclamation work on water land	The project will require works within waterfront land, including upgrades of existing road crossings and/or establishing new crossings over watercourse within the study area. These works will be undertaken generally in accordance with *Policy and Guidelines for Fish-Friendly Waterway Crossings* (DPI 2003), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013) and *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018).	No change.
An Aboriginal heritage impact permit under Section 90 of the *National Parks and Wildlife Act 1974*	Avoidance of Aboriginal cultural heritage values have been a key aspect of the project refinement process. Subsequently, one Aboriginal site is within the solar and BESS development footprint, with the impact footprint refined to avoid other identified sites. One additional site has been identified in the accommodation facility development footprint, which will also be impacted by the project. An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed post determination (and pre-construction) in consultation with DPE, registered Aboriginal parties (RAPs) and Heritage NSW and will detail the management and mitigation of known Aboriginal sites along with unanticipated finds procedures, and training and reporting protocols.	One additional site was identified in the accommodation facility development footprint.
A bushfire safety authority under Section 100B of the NSW *Rural Fires Act 1997*	Bushfire risks associated with the project have been assessed in accordance with *Planning for Bushfire Protection* (PBP) (RFS 2019) (refer to Section 6.2.9).	No change.
A water use approval under Section 89, a water management work approval under Section 90 or an activity approval (other than an aquifer interference approval) under Section 91 of the *Water Management Act 2000*	Works near or within watercourses within the study area will be required as part of the project and will be carried out in generally accordance with *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018).	No change.

Table 4.1 Applicable NSW State legislation

Aspect/approval	Requirement	Any changes as part of amendment
Pre-conditions to being able to grant approval for the project		
State Environmental Planning Policy (Resilience and Hazards) 2021, Section 4.6(1) (contamination and remediation to be considered in determining development application)	The project involves a change of use from agricultural use (grazing) to electrical generating works, including the associated accommodation facility. Agricultural activities have occurred on and near the development footprint; however, no potentially contaminative locations have been identified to date. An assessment of land use and soils has been conducted as part of the EIS, and updated to include the accommodation facility development footprint (refer to Chapter 6).	No change.
State Environmental Planning Policy (Transport and Infrastructure) 2021, Section 2.118 (development with frontage to classified road)	The closest classified road to the project area is the Castlereagh Highway, which is approximately 1.3 km west of the project area at its closest point. Upgrades to Barneys Reef Road, which connects to the Castlereagh Highway, will be required as part of the project; however, these upgrades are not expected to impact the safety, efficiency and ongoing operation of the Castlereagh Highway. No further public road upgrades will be required for the amended project. Access to and from the accommodation facility will be via an internal track between the solar and BESS study area and the accommodation facility. Project-related vehicle movements on the Castlereagh Highway during construction and operation were considered as part of the TIA prepared for the EIS (EMM 2022c)	No change.
Mid-Western Regional LEP, Clause 4.1E (Subdivision on land in Zone RU1 for non-agricultural land uses)	The land on which the onsite substation is constructed is likely to require subdivision. At the end of the operational life of the grid substation, the infrastructure on the subdivided lot will be decommissioned and the lot will be reconsolidated back into the residual lot. The subdivision of the lot(s) that is selected for the onsite substation from may result in a lot size that is less than the minimum lot size under the Mid-Western Regional LEP. Notwithstanding, in accordance with the provisions of Section 4.38 of the EP&A Act, the proposed subdivision will be permissible subject to the approval of the Minister for Planning or their delegate.	No change.
Mid-Western Regional LEP, Clause 6.4 (Groundwater vulnerability)	The development footprint of the accommodation facility is not identified as 'groundwater vulnerable' on the Mid-Western Regional LEP Groundwater vulnerability map. Part of the solar and BESS study area is identified as 'groundwater vulnerable' on the Mid-Western Regional LEP Groundwater vulnerability map. However, as discussed in the EIS (EMM 2022a), groundwater is not anticipated to be impacted by the project.	No change.
Mid-Western Regional LEP, Clause 6.5 (Terrestrial biodiversity)	A small area of Barneys Reef Road, which is proposed to be upgraded for project access, is identified as 'high biodiversity sensitivity' on the Mid-Western Regional LEP. A small area of the accommodation facility study area is identified as 'moderate biodiversity sensitivity' and 'high biodiversity sensitivity' on the Mid-Western Regional LEP. This area is not within the accommodation facility development footprint. The BDAR prepared for the project as part of the EIS (EMM 2022b) has been updated to include the accommodation facility, as well as to address comments from the Biodiversity, Conservation and Science Directorate within DPE. The updated BDAR is included as Appendix F.1 of this report.	No change.

Table 4.1 Applicable NSW State legislation

Aspect/approval	Requirement	Any changes as part of amendment
Mid-Western Regional LEP, Clause 6.9 (Essential services)	Essential services have been considered for the project and are described in Chapter 3 of the EIS (EMM 2022a). Essential services for the accommodation facility are described in Chapter 3 of this amendment report.	The required essential services for the amended project are described in Chapter 3.
Warrumbungle LEP, Clause 6.3 (Terrestrial biodiversity)	A small area of Barneys Reef Road, which is proposed to be upgraded for project access, is identified as 'biodiversity' on the terrestrial biodiversity mapping under the Warrumbungle LEP. Potential impacts to biodiversity were assessed as part of the BDAR (EMM 2022b). The accommodation facility study area is entirely within the Mid-Western Regional LGA.	No change.



KEY

- Solar and BESS study area
- Accommodation facility study area
- Project area (offset for visual display)
- Crown land (lot)
- Crown land (road)
- Accommodation facility infrastructure area
- Accommodation facility development footprint
- Solar and BESS develoment footprint
- Restricted development area
- Access track
- Emergency access track
- Potential creek crossing point
- Potential public road crossing location

Existing environment

- Watercourse/drainage line
- Travelling stock reserve
- Cadastral boundary

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

0 0.5 1 km

GDA 1994 MGA Zone 55

N

Schedule of lands within the project area

Birriwa Solar and BESS Project
Amendment Report
Figure 4.1

EMM creating opportunities

4.3 Commonwealth legislation

4.3.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW). It provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places defined as 'matters of national environmental significance' (MNES). If significant impacts are considered likely, and the action is deemed to be a 'controlled action', the proponent may be asked to provide further information about the proposal.

An assessment of the impacts of the project on MNES, considering cumulative impacts of the construction of the project and the proposed road upgrades, was undertaken in the EIS (EMM 2022a) and the BDAR (EMM 2022b). The BDAR has been updated to include an assessment of the amended project, as well as to address comments from BCS. The findings of the updated BDAR are consistent with the BDAR prepared for the EIS, in that it concludes the project is not likely to significantly impact on threatened species, ecological communities or migratory species listed under the EPBC Act. The updated BDAR is included as Appendix F.1 of this report.

4.3.2 Native Title Act 1993

The Commonwealth *Native Title Act 1993* recognises and protects native title rights in Australia. It allows a native title determination application (native title claim) to be made for land or waters where native title has not been validly extinguished, for example, extinguished by the grant of freehold title to land.

There are currently no native title determinations over the accommodation facility study area.

A native title claim covering an area from Dunedoo to Lithgow, that includes the project area (i.e. both the solar and BESS study area and the accommodation facility study area), was registered on 31 August 2018 on behalf of the Warrabinga-Wiradjuri people (NC2018/002). There is another native title claim, registered on 20 December 2011 on behalf of the Gomeroi People (NC2011/006), approximately 2.4 km north of the accommodation facility study area.

5 Consultation

5.1 Consultation

Stakeholder engagement for 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 with the addition of the accommodation facility. An overview of the engagement activities carried out during and after the public exhibition of the EIS is provided in the sub-sections below.

5.1.1 Community consultation

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 5.1.
- 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 5.1.
- ACEN held a public community information day on 6 July 2023. Seven members of the public interacted with ACEN and their representatives, and matters discussed are summarised below:
    - the availability of essential services (police, doctors, water, sewerage)
    - safety risks potentially associated with an accommodation facility near rural residential areas (personal safety, traffic, waste)
    - fire risks and the ability for RFS to manage
    - the benefit of including an accommodation facility in the project to avoid impacts on tourist accommodation
    - 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.
- A three page, paid advertisement was placed in the Dunedoo Diary, that contained information about the community information session, 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 workers 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 indicative location of the proposed Merotherie Hub, approximately 1.5 km east of the project area and to the north of the proposed accommodation facility, and the location of proposed CWO REZ network infrastructure (RNI), including the proposed 500 kV main transmission line and 330 kV transmission line network extensions connecting to the CWO REZ generators' gates.

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 5.1.

As part of the social impact assessment, 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 of this report and detailed in Appendix F.5 (SIA).

Table 5.1 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 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 of the submissions report). • Reasons why the NSW Government selected the CWO region for the development of a REZ (this was described in Section 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 of the submissions report). • Community concerns relating to the changes in the visual landscape (addressed in Section 6.2.2 and Section 5.14.3 of the submissions report). • Community concerns relating to the use of good agricultural land (addressed in Section 5.8 of the submissions report).	Refer to Section 3.2.1 of the submissions report where each matter is discussed and addressed.

Table 5.1 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 amendment report
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, the proposed technology, and the recognition and preservation of historical features in the area. 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 3.2.1 of the submissions 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. Decommissioning is discussed in Section 3.4.4. ACEN will continue to liaise with EnergyCo and Council regarding legacy options.

Table 5.1 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 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. Comments relating to traffic are addressed in Section 6.2.3. The submissions report responds to Council's concerns relating to waste disposal from the project. Utility services required for the accommodation facility are outlined in Section 3.4.3. Key comments relating to bushfire management are addressed in Section 6.2.9 and the Bushfire Assessment Report (Appendix F). Decommissioning is discussed in Section 3.4.4. 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.

5.1.2 Agency consultation

Engagement with key regulatory stakeholders continues and is summarised in Table 5.2.

Table 5.2 Summary of stakeholder engagement undertaken post-EIS submission

Stakeholder group	Engagement method and date	Key outcome	Response to key aspects including section where this has been addressed in the amendment report
Department of Planning and Environment	Video-conference: 25 Jan 2023 16 Feb 2023 23 Mar 2023 24 May 2023 15 Jun 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 the submissions report and this 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 ACENs strategy relating to the accommodation facility.	N/A
EnergyCo	Video conference	ACEN and EnergyCo have had ongoing 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.	Decommissioning is discussed in Section 3.4.4. ACEN will continue to liaise with EnergyCo and Council regarding legacy options.
DPE – Biodiversity Conservation and Science Directorate	Email	EMM consulted with BCS on 3 February 2023 to confirm the approach to responding to BCS' recommendations within the submissions report. 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.	BDAR Appendix F.1.

Table 5.2 Summary of stakeholder engagement undertaken post-EIS submission

Stakeholder group	Engagement method and date	Key outcome	Response to key aspects including section where this has been addressed in the amendment report
Mid-Western Regional Council	Meetings and correspondence: 19 January 2023 26 June 2023	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 approach to accommodation for the construction workforce, and the management of cumulative impacts of surrounding renewable projects within the REZ. Two 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 negotiate the terms of a Planning Agreement with Council to the value of 1.5% of the project capital expenditure spend to offset community impacts. A copy of the letter from Mid-Western Regional Council is included in Appendix D.1. 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). ACEN has agreed to negotiate the terms of a PA 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 D.1. Table 2.3 and Table 2.4 of this report lists the following key insights from Council regarding the accommodation facility: • 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. • Council 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.	An amendment is sought to the project to include an accommodation facility for construction workers, addressing Councils' concerns regarding the pressure an influx of construction workers would place on existing accommodation in the region. Comments relating to the social aspects of the accommodation facility are addressed in Section 6.2.8. The submissions report responds to Council's concerns relating to waste disposal from the project. Utility services required for the accommodation facility are outlined in Section 3.4.3. ACEN and Mid-Western Regional Council have reached an agreement on the key commercial terms of the PA, as provided in Appendix D.1. The PA will be executed prior to construction commencing.

Table 5.2 Summary of stakeholder engagement undertaken post-EIS submission

Stakeholder group	Engagement method and date	Key outcome	Response to key aspects including section where this has been addressed in the amendment report
Warrumbungle Shire Council	Video conference: 27 February 2023 10 July 2023	A meeting was held between Warrumbungle Shire Council and ACEN representatives on 27 February 2023, discussing in particular the PA, accommodation issues and other issues raised in Council's submissions. The submissions report and the amendment report address these issues. A further meeting was held between Warrumbungle Shire Council and ACEN representatives on 10 July 2023 (refer to Table 2.4 of this report for key insights regarding the accommodation facility site selection) to discuss and confirm the terms of a PA with Mid-Western Regional Council. It was agreed that contributions of the PA will be distributed between Mid-Western Regional Council and Warrumbungle Shire Council. Table 2.3 and Table 2.4 of this report lists the following key insights from Council regarding the accommodation facility: • 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.	Utility services required for the accommodation facility are outlined in Section 3.4.3. Key comments relating to social aspects of the accommodation facility are addressed in Section 6.2.8. An agreement on a 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. As a consequence, ACEN will not directly enter a PA with Warrumbungle Shire Council.
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.	Key comments relating to social aspects of the accommodation facility are addressed in Section 6.2.8.

Table 5.2 Summary of stakeholder engagement undertaken post-EIS submission

Stakeholder group	Engagement method and date	Key outcome	Response to key aspects including section where this has been addressed in the amendment report
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. Minutes from the meeting are provided in the Appendix D.2.	Key comments relating to bushfire management are addressed in Section 6.2.9 and the Bushfire Assessment Report (Appendix F.6).
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 (Figure 4.1). 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 has been undertaken in consultation with NSW Crown Lands in parallel with the assessment process for the project. Landowners consent relating to development comprising crown road access on Lots 52–55 DP 750755 was granted on 4 September 2023.	Landowners consent relating to development comprising crown road access on Lots 52–55 DP 750755 was granted on 4 September 2023.

6 Assessment of impacts

6.1 Summary of potential impacts

As described in Chapter 1, 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 included the addition of a temporary accommodation facility, on an adjacent property south-east of the original project study area presented in the EIS. This will provide temporary accommodation for up to 500 construction staff during the construction phase of the project.

The addition of the accommodation facility 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 social impact assessment prepared for the amendment (refer to Section 6.2.8). In particular, it will reduce the impacts that a construction workforce would otherwise have on the availability of short-term accommodation in the local and regional area.

Notwithstanding, the proposed amendment will result in some additional impacts that were not assessed as part of the original project. However, as demonstrated in this chapter, the impacts are not anticipated to be material beyond those described and assessed in the EIS (EMM 2022a) for the project.

A summary of the potential impacts of the proposed amendments is provided in Table 6.1 and discussed further in the below sub-sections. Technical assessments for biodiversity, visual, heritage, noise, social, and bushfire are attached in Appendix F. The aspects of traffic and soils, erosion and agriculture are addressed directly within this Chapter.

Table 6.1 Summary of impacts of the project amendment

Environmental consideration	Summary of impact and/or change
Biodiversity	Due to the proposed amendments, additional biodiversity surveys were undertaken within the accommodation facility study area. Within the initial BDAR prepared for the EIS, owls were assumed to be present due to timing constraints. However, as part of the biodiversity surveys of the accommodation facility study area, targeted owl surveys were also undertaken within the solar and BESS study area. Following completion of the targeted surveys, it was confirmed that no impacts to owls would be likely as a result of the solar and battery project and the accommodation facility. The proposed amendments and additional survey effort have resulted in a number of changed impacts including: • Following completion of the targeted owl surveys, it was confirmed that there would not be any impacts to *Ninox connivens* (Barking Owl), *Ninox strenua* (Powerful Owl), and *Tyto novaehollandiae* (Masked Owl). The initial BDAR for the EIS assumed presence of the owls, equating to 99 species credits. **Hence, due to no impact, no species credits are required for the project.** • Consideration of an additional plant community type (PCT): PCT 479 – *Narrow-leaved Ironbark- Black Cypress Pine – stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion*. This PCT does not meet the criteria as a listed threatened ecological community. **23.51 ha of this grassland (low condition) within the accommodation facility development footprint will be impacted, but does not require offsetting under the NSW Biodiversity Offset Scheme (BOS).** • **Direct impacts on 3.25 ha of potential habitat within the accommodation facility development footprint for the Superb Parrot (*Polytelis swainsonii*). This species is assumed to be present (due to survey timing), requiring 21 species credits.** • A change in the impact area associated with project for PCT 281– *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*, from 291.91 ha to 300.46 ha. **This includes the addition of 8.56 ha within the accommodation facility development footprint, which will be impacted.** • Confirmation that the approximate 5 ha of land within the south-eastern corner of the solar and BESS development footprint (which was originally excluded from the footprint as a conservative avoidance measure, assuming it was PCT 80 (threatened ecological community)) is rather a lower quality derived native grassland (DNG) PCT 479 and **does not require offsetting.** **No additional mitigation measures are required.**
Visual	The proposed amendments will not have a significant impact on any of the assessed viewpoints, or on the 11 residences located within 4 km of the accommodation facility. The residential viewshed analysis (Appendix F.2) demonstrates that only one residence within 4 km of the accommodation facility study area will have any view of the accommodation facility infrastructure (R35), and in that case the impact will be low due to distance (3 km) and existing vegetation filtering views. One residence (R37) may see a small portion of the accommodation facility access track; however, this impact is considered to be low. The assessment for residences predicts: • no visibility from R5, R12, R13, R34, R36, R38, R39, R39a and A4 • a low visual impact from R35 and R37 • no residences with a moderate impact rating • no residences with a high impact rating. **No additional mitigation measures are required.**

Table 6.1 Summary of impacts of the project amendment

Environmental consideration	Summary of impact and/or change
Traffic and transport	The proposed amendments will result in the following: • A substantial decrease in the number of light vehicle movements during peak construction as workers will not be travelling in light vehicles from accommodation in surrounding towns to the project area on a daily basis. • No change to the project access point off Barneys Reef Road. The accommodation facility will be accessed through the solar and BESS study area and then through a new internal access track. • No change to the peak number of heavy vehicles associated with the construction phase of the project. **No additional mitigation measures are required.**
Aboriginal heritage	One additional site, Winora IF-2, was identified in the vicinity of the proposed access track between the solar and BESS study area and the accommodation facility, and may be impacted by the project. **Mitigation measures have been updated to reflect the additional Aboriginal heritage site, with the addition of a new mitigation measure:** • **AH5 – If the final design of the access track cannot avoid Winora IF-2, it will be salvaged prior to the commencement of construction. The methodology for the salvage of this site will be finalised as part of an Aboriginal Cultural Heritage Management Plan (ACHMP) to be prepared for the project.**
Historic heritage	No historical heritage items will be disturbed as part of the proposed amendments. **No additional mitigation measures are required.**
Hazards and risk	The proposed amendments will not result in any significant changes to the hazards and risks associated with the construction and operation of the project. **No additional mitigation measures are required.**
Noise and vibration	Noise and vibration impacts from construction and operation of the accommodation facility are predicted to be negligible and satisfy all relevant NSW noise and vibration criteria. **No additional mitigation measures are required.**
Soils, erosion and agriculture	The impacts of the proposed amendments are consistent with those identified in the EIS: • Increased potential for soil erosion resulting in erosion, sedimentation and reduced soil quantity, which can be effectively managed through the implementation of appropriate erosion and sediment control measures during construction. • An additional 25 ha of agricultural land will be temporarily removed from production; however, this is negligible in the context of regional annual agricultural productivity (i.e. 0.005% of the regional annual agricultural productivity associated with livestock). **No additional mitigation measures are required.**
Water resources	An unnamed third order stream flows to the south of the accommodation facility infrastructure area in a north-easterly direction. The facility has been sited to avoid the mapped 1% Annual Exceedance Probability (AEP) flood zones. The proposed emergency access track crosses this stream. The creek crossing will be constructed in accordance with the methodology described in the EIS (FLO5). **No additional mitigation measures are required.**

Table 6.1 Summary of impacts of the project amendment

Environmental consideration	Summary of impact and/or change
Social	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. Specifically, the accommodation facility will: • Limit the impact on regional housing availability and affordability during the construction phase of the project. • Avoid temporary construction workers utilising the limited tourist accommodation available, which is important to the regional economy. • 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. **Mitigation measures have been updated to reflect the change in the social impacts and benefits associated with the addition of the accommodation facility, including:** • **SOC9 – amended to include the preparation of an Accommodation and Employment Strategy (AES) the project. The AES will document actions that seek to support the following key objectives:** – **Identify how the facility construction workforce will be accommodated and incentivised to stay at the facility, and measures to further minimise pressure on the existing capacity of short term accommodation in the local area, if required.** – **Facilitate an increase in the extent of the geographic area for local hires and workforce accommodation.** – **Facilitate enhanced local workforce participation.** • **An additional mitigation measure (SOC14) – ACEN will develop and implement safety measures within the accommodation facility, including security patrols and adequate fencing and worker training, as well as complaints reporting processes for nearby landholders.** • **An additional mitigation measure (SOC15) – The accommodation facility will consider the provision of a medical centre and first aid station with an onsite nurse to reduce pressure on local health service providers. This nurse should be sourced from outside the regional workforce due to existing issues with recruitment for rural positions.**

Table 6.1 Summary of impacts of the project amendment

Environmental consideration	Summary of impact and/or change
Bushfire	The proposed amendments to the project will result in the introduction of a large number of people (occupants) to an area that has potential bushfire risk. **Mitigation measures have been updated to reflect the requirements of the RFS *Planning for Bushfire Protection 2019* (PBP):** • **BUS1 – this mitigation measure has been amended to include asset protection zones (APZ) for the accommodation facility: A minimum 11 m wide APZ setback from grassland will be provided to the east, south and west, and a minimum 20 m wide APZ setback from forest will be provided to the north of the accommodation facility infrastructure area.** • **BUS2 – this mitigation measure has been amended to include landscaping requirements of shrubs:** – **Large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided.** – **Shrubs should not be located under trees.** – **Shrubs should not form more than 10% groundcover.** – **Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.** • **BUS 4 – this mitigation measure has been updated to include Bushfire Attack Level (BAL) requirements for the accommodation facility:** – **BAL 29 level of construction as per Section 3 and 7 of AS 3959-2018 and Chapter 7.5 PBP to perimeter structures.** – **BAL 19 and BAL 12.5 level of construction as per Section 3 and 5–6 of AS 3959-2018 to internal structures.** • **Additional mitigation measure: BUS 7 – The access relevant to property access, perimeter road and non-perimeter road within the accommodation facility comply with Table 5.3b PBP.** • **Additional mitigation measure: BUS 8 – The provision of water, electricity and gas comply with Table 5.3c of PBP.** • **Additional mitigation measure: BUS 9 – Emergency management: A Bushfire Emergency Management and Evacuation Plan is prepared by the operator consistent with the NSW RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and the AS 3745:2010*.**
Air quality	The construction phase of the amended project has potential for air pollutant emissions from activities such as bulk earthworks, land clearing and the movement of vehicles along unpaved roads. Construction of the accommodation facility will disturb an additional 33 ha of land; however, dust and vehicle emissions associated with this can be managed appropriately through the implementation management measures outlined in the EIS (EMM 2022a). Sources of operational phase air pollutant emissions from the amendments will be negligible. **No additional mitigation measures are required**.
Waste	The amended project will generate additional waste as outlined in Section 3.4.3v. All waste generated by the project will be minimised and managed through the implementation of construction environmental management plan (CEMP), as outlined in the EIS (EMM 2022a). **No additional mitigation measures are required.**

Table 6.1 Summary of impacts of the project amendment

Environmental consideration	Summary of impact and/or change
Cumulative	The project is in the CWO REZ and there are a number of other renewable energy developments proposed in the vicinity of the project. The addition of the accommodation facility to the project will reduce the cumulative impact on short-term accommodation in the local and regional areas from the construction workforce, that could result from overlapping construction timeframes of projects within the REZ. The proposed amendments will not result in significant additional construction activities than those previously proposed as part of the EIS (EMM 2022a) and is therefore unlikely to further contribute to additional cumulative impacts within the surrounding area. Any cumulative impacts contributed to by the project will be managed through the implementation of the management and mitigation measures outlined in Appendix C. **No additional mitigation measures are required.**

6.2 Additional assessments

6.2.1 Biodiversity

An updated biodiversity development assessment report (BDAR) has been prepared by EMM (2023b) and is attached as Appendix F.1.

The purpose of the updated BDAR is to address the issues raised in submissions and to provide a complete, updated assessment of the amended project design in accordance with the relevant legislation requirements and guidelines. The updated BDAR provides:

- a description of the biodiversity values of the study area
- an assessment of the likelihood that threatened species and communities (threatened biodiversity) listed under the NSW BC Act and Commonwealth EPBC Act could occur in the study area
- strategies implemented to avoid and/or minimise impacts of the project on threatened biodiversity
- an assessment of the residual threatened biodiversity impacts, after avoidance and minimisation strategies have been implemented
- provision of environmental safeguards to mitigate threatened biodiversity impacts during construction and operation.

The changes in the BDAR are outlined in the sections below.

i Landscape features

Landscape features are largely as described in the original BDAR, with the addition of an unnamed tributary in the accommodation facility study area (Photograph 6.1 and Photograph 6.2). This unnamed watercourse south of the accommodation facility infrastructure area lacks wooded riparian vegetation, has a sandy substrate, and highly eroded gullies.

Photograph 6.1 Unnamed tributary (accommodation facility emergency access track crossing point)

Photograph 6.2 Unnamed tributary (accommodation facility emergency access track crossing point)

ii Native vegetation

Vegetation within the solar and BESS development footprint, the accommodation facility development footprint, and the inclusion of the grassland area that forms part of the solar and BESS development footprint, is classified as shown in Table 6.2.

Table 6.2 Vegetation within the subject land

Vegetation type	Vegetation class	Vegetation formation	Percent cleared	Area within amended development footprint[1] (ha)	Total area[2] (ha)
PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	Floodplain Transition Woodlands	Grassy Woodlands	83	-	76.80
PCT 281 – 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	Western Slopes Grassy Woodlands	Grassy Woodlands	67	8.56	300.46
PCT 479 – Narrow-leaved Ironbark – Black Cypress Pi–e - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	Western Slopes Dry Sclerophyll Forests	Dry Sclerophyll Forests	40	23.51	28.45
Exotic grassland	-	-	-	-	776.66
Exotic trees	-	-	-	-	4.73
Dam	-	-	-	-	5.02
Cleared	-	-	-	0.31	4.39
Total area in hectares (to 2 decimal place)				**32.38**	**1,196.51**

Notes: 1. Amended development footprint includes the accommodation facility development area (approximately 33 ha) and the re-inclusion of the grassland area south-east of the solar and BESS study area (approximately 5 ha).

2. Total area within the project development footprint.

Vegetation zones for the project area are described in Table 6.3.

Table 6.3 Vegetation zones identified within the subject land along with broad condition state as identified by EMM

Vegetation zone			PCT ID	PCT name	Condition	Extent in subject land	Vegetation integrity score
Road corridor	Solar and BESS development footprint	Accommodation facility and access tracks					
1	1	-	80	Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	High	1.01	95.2
2	2	-			Pasture	75.62	4.6
-	3	-			Poor	0.17	46.2
3	4	-	281	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	High	0.35	99.8
-	5	-			Medium	0.55	58.3
4	6	1			Pasture	293.02	3.6
-	7	-			Planted	2.59	50
-	8	-			Poor	3.95	39
-	9	2	479	Narrow-leaved Ironbark- Black Cypress Pi–e - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	DNG	28.45	13.2
Total area in hectares (to 2 decimal place)						405.71	-

iii Threatened species

No additional threatened species were assessed in the updated BDAR. Presence had previously been assumed for three owl species in the original BDAR (EMM 2022b). Targeted survey for these species was completed and these species were not recorded. Presence has been assumed for Superb Parrot (*Polytelis swainsonii*) in some small areas of the accommodation facility development footprint that were not surveyed for this species, due to project timing constraints.

iv Impact assessment

a Impacts not requiring offsets

A summary of the vegetation zones that do not trigger thresholds identified in Section 9.2.1 of the BAM (DPIE 2020c) is provided in Table 6.4.

Table 6.4 Impacts not requiring offsets

Project development footprint	Vegetation zone	PCT	Vegetation zone name	Area (ha)
Road upgrade corridor	2	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	80_Pasture	0.24
	4	PCT 281 – 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	281_Pasture	0.26
The solar and BESS development footprint	2	PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	80_Pasture	75.38
	6	PCT 281 – 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	281_Pasture	284.2
	9	PCT 479 – Narrow-leaved Ironbark- Black Cypress Pi–e - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion	479_DNG	4.94
Accommodation facility development footprint	**1**	**PCT 281 – 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**	**281_Pasture**	**8.56**
	6	**PCT 479 – Narrow-leaved Ironbark- Black Cypress Pi–e - stringybark +/- Grey Gum +/- Narrow-leaved Wattle shrubby open forest on sandstone hills in the southern Brigalow Belt South Bioregion and Sydney Basin Bioregion**	**479_DNG**	**23.51**

b Impacts requiring offsets

A total of 271 ecosystem credits are required to offset the residual impacts of the project, comprising 42 ecosystem credits for the road upgrade corridor and 229 ecosystem credits for the solar and BESS development footprint.

No ecosystem credits require offsetting for the accommodation facility development footprint.

Overall, for the solar and BESS development footprint, impacts to native vegetation requiring offsets include:

- Direct impacts on 1.18 ha of PCT 80 – *Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion* (23 credits from road upgrade corridor, and 29 credits from solar and BESS development footprint).

- Direct impacts on 7.45 ha of PCT 281 – *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* (19 credits from road upgrade corridor, and 200 credits from solar and BESS development footprint).

A total of 265 species credits are required to offset the residual impacts of the project, comprising 38 species credits for the road corridor, 206 species credits for the solar and battery project and 21 credits for the accommodation facility development footprint. Impacts to threatened species habitat requiring offsets include:

- direct impacts on 0.48 ha of foraging habitat for the Large-eared Pied Bat (17 species credits for the solar and BESS development footprint)
- direct impacts on 8.62 ha of habitat for the Koala (38 species credits for the road upgrade corridor, and 189 species credits for the solar and BESS development footprint)
- direct impacts on 3.25 ha of potential habitat for the Superb Parrot (assumed present) (21 species credits for the accommodation facility development footprint).

Following completion of targeted surveys, offsetting will no longer be required for the Barking Owl, Powerful Owl and Masked Owl.

c Biodiversity offset strategy

Offsets will be provided in accordance with the Biodiversity Offset Scheme.

Regarding the satisfaction of credit obligations prior to commencing any on-ground works for the project, it is ACEN's intent to upgrade the site access (road upgrade corridor) before construction of the accommodation facility and solar components, to enable a staged offset delivery model. This strategy is based on clearly defined activities that require vegetation clearance for the project, as per the following key components:

- road upgrade corridor
- accommodation facility and access tracks
- solar and BESS project.

Biodiversity offset liabilities will be finalised before the commencement of each activity listed above. It is ACEN's intent to meet the offset obligations for the key components independently. This allows flexibility in starting construction for the road upgrade corridor, accommodation facility/access tracks, and solar/BESS separately to each other.

In regard to the accommodation facility and access tracks, due to the project's avoidance of woodland patches and impact on lower quality grassland only (PCT 479 DNG and PCT 281 pasture), there are no ecosystem offset requirements for this stage of the project. There are some species credits associated with the accommodation facility and access tracks, which would be offset independently from the road upgrade corridor and solar/BESS project.

v Conclusion

The mitigation actions recommended within the BDAR have been developed in parallel with, and have informed the evolution of, the project design. This process has ensured the avoidance and minimisation of biodiversity constraints as far as practicable. Residual impacts include:

- loss of 76.80 ha of PCT 80, of which 1.18 ha requires offsetting, and associated habitat for flora and fauna species

- loss of 300.46 ha of PCT 281, of which 7.45 ha requires 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.

Mitigation and management measures have been proposed to address predicted impacts on biodiversity. These include pre-clearance, construction, and operational phase measures to avoid impacts at all stages of the project.

ACEN will compensate for these residual impacts through the implementation of a biodiversity offset strategy.

The BDAR has also considered impacts on species and ecological communities listed under the EPBC Act. The project is not expected to result in significant impacts to MNES including threatened ecological communities and species, and migratory species.

6.2.2 Visual

An addendum landscape and visual impact assessment (ALVIA) has been prepared by EMM (2023c) and is attached as Appendix F.2. The ALVIA has been prepared to describe potential visual impacts associated with the revised project amendments, relating to the accommodation facility. The refinement to the development footprint associated with the solar component of the project (as outlined in Section 1.3) was assessed within the original LVIA and EIS and will therefore have no additional visual impact.

The landscape typical of the region is predominantly cleared, open grazing land with scattered groupings of remnant native trees. Existing trees are generally found along water courses, roadsides and along the perimeter of paddocks and property boundaries. Woody vegetation is also common on outcrops such as Barneys Reef.

The accommodation facility development footprint is clear of woody vegetation, having been highly modified by historic and recent farming practices.

Visual assessments have been conducted from four representative viewpoints surrounding the accommodation facility development footprint to demonstrate the potential visual impacts of the project. The ALVIA identified that the visual impact rating is low for all viewpoints and no mitigation is required.

Visual impacts were also assessed via viewshed analysis from the 11 residences within 4 km of the accommodation facility development footprint. The analysis demonstrated that only one residence within 4 km will have any view of the accommodation facility infrastructure (R35), and in that case the impact will be low due to distance (3 km) and existing vegetation filtering views. One residence (R37) may see a small portion of the accommodation facility access track; however, this impact is considered to be low.

The only lighting proposed is for security and maintenance purposes. This will primarily occur around the buildings. The night lighting would be inwardly focused and shielded so it does not result in light spill impacts to neighbouring properties or the night sky.

Cumulative visual impacts have also been considered, which can arise from the presence of similar projects and can have a significant visual impact on the landscape when viewed together. There are several state significant development projects approved or proposed in the local area, as identified through DPE's Major Projects Planning Portal at the time of writing the amendment report. A radius of approximately 25 km from the project was used to identify future projects for consideration of potential cumulative impacts. Of the SSD projects:

- the majority are located in the LGAs of Mid-Western Regional and Warrumbungle
- two are approved (Stubbo Solar and Battery project construction has commenced and Dunedoo Solar Farm construction yet to commence)
- six are in various stages of the SSD assessment process

- one is approved and operational (Beryl Solar Farm).

Anticipated cumulative impacts to the closest identified projects are summarised below:

- Barneys Reef Wind Farm:
  - Low visual impact for residents near the accommodation facility.
  - Low visual impact for travellers along the Central West Cycle Trail (Merotherie Road and Birriwa Bus Route South).
- Narragamba Solar project:
  - Very low chance of any cumulative impact due to low visibility of the accommodation facility from Merotherie Rd.
- Valley of the Winds:
  - The Valley of the Winds project is not expected to be visible from the accommodation facility location.

6.2.3 Traffic and transport

i Access

As detailed in Section 3.4.2, the project's primary vehicle access route as described and assessed in the EIS (EMM 2022a) will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. This will remain the same for the accommodation facility. The primary vehicle access point on Barneys Reef Road will provide access to the project development footprint. The accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the solar and BESS study area and the accommodation facility (refer to Figure 3.1). A secondary internal emergency access track will also be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (refer to Figure 3.1). The proposed emergency access track will lead onto a public track (Crown land) and then onto Merotherie Road.

It is anticipated that travel between the solar and battery project (via shuttle bus) and the accommodation facility during construction will occur via the internal access track between 5:00 am – 6:00 am and 6:00 pm – 7:00 pm Monday to Sunday to reflect a 6:00 am – 6:00 pm shift schedule.

ii Traffic movements

a Heavy vehicles

Construction of the accommodation facility

As detailed in Section 3.4.4, it is estimated that approximately 180 semi-trailers will travel to the site during the construction of the accommodation facility, which equates to 360 heavy vehicle movements (in and out) for the transportation of temporary prefabricated units and other relevant construction materials *over a period* of 3–7 months within the 28-month construction window for the project. Note, site preparation and pre-construction activities for the accommodation facility will require minimal local workforce (approximately 25–30 staff) and therefore generate minimal associated traffic. The maximum size of heavy vehicles (semi-trailer) will be 19 m long and there will not be any over-size over mass (OSOM) deliveries during the construction of the accommodation facility.

As described in the EIS (refer to Section 3.4.1), prefabricated units, construction materials and other infrastructure are anticipated to be transported to the site via road from either:

- Port of Newcastle (via the Golden Highway and the Castlereagh Highway), or
- Port of Sydney (via the Golden Highway and the Castlereagh Highway).

Deliveries may also come from elsewhere in Australia, subject to supplier selection, port capabilities and fees.

As described in the EIS (refer to Section 6.4.3 and Table 6.5), the estimated *daily* heavy vehicle movements associated with the construction phase of the Project is 240. Given that the 360 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 be considerably less than the peak daily movements already assessed as part of the EIS (re-produced in Table 6.5). Therefore, no additional traffic impacts associated with the amended project in relation to heavy vehicle movements are anticipated. Further, heavy vehicle movements associated with the construction of the accommodation facility will occur prior to peak construction activities of the solar farm and BESS.

Table 6.5 Estimated daily and peak hourly heavy vehicle construction trips for the project[1]

Peak construction stage	Daily		Peak hour	
	Trips[1]	Movements	Trips	Movements
Heavy vehicles	120	240	14	28

1. A 'trip' is defined as a vehicle entering the site once (1 movement) and a vehicle exiting the site once (1 movement)

Operation of the accommodation facility

Once operational, the accommodation facility will be used 24 hours a day, 7 day a week.

During the operation of the accommodation facility, approximately 250 L of potable water per person per day will be required.

Assuming the accommodation facility is operating at full capacity (i.e. 500 people), approximately 125,000 L of water will be required per day (250 L x 500 people). 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. It is anticipated that a similar amount of heavy vehicle movements per day will be generated for the delivery of fuel and collection of sewage and waste.

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 TIA 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 battery project.

Hence, the heavy vehicle movements associated with the delivery of water and fuel and collections of sewage and waste have been assessed within the daily peak trips during the construction stages of the solar and battery project. Therefore, no additional traffic impacts associated with the project amendment in relation to heavy vehicle movements during operation of the accommodation facility are anticipated.

[1] Extracted from EMM Traffic Impact Assessment report for Birriwa Solar and Battery Project dated 21 July 2022

b Light vehicles

Construction of the accommodation facility

Light vehicle generation during the construction of the accommodation facility is likely to be minimal. The preparation and pre-construction activities associated with the accommodation facility will require approximately 25 to 30 staff, generating approximately 25 to 30 light vehicle trips per day (AM peak inbound and PM peak outbound).

Operation of the accommodation facility

Once the accommodation facility is operational, construction workers will travel to and from the accommodation facility for their shifts via shuttle buses, along the internal access track between the accommodation facility and the solar and BESS study area. It is estimated that there will be approximately 13 shuttle bus trips per day (26 movements) transporting the construction workforce.

As described in the EIS (EMM 2022a, refer to Section 6.4.3 and Table 6.6), the estimated *daily* light vehicle movements associated with the construction phase of the project is 720 (in and out).

Table 6.6 Estimated daily and peak hourly light vehicle construction trips for the project[2]

Peak construction stage	Daily		Peak hour	
	Trips[1]	Movements	Trips	Movements
Light vehicles	360	720	360	360[2]
Shuttle buses	13	26	13	13[2]

1. A 'trip' is defined as a vehicle entering the site once (1 movement) and a vehicle exiting the site once (1 movement)
2. Light vehicle and shuttle bus movements will be incoming during morning and outgoing during evening peak hours

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.

As the estimated peak light vehicle movements associated with the solar and battery project construction is significantly higher than those associated with the construction of the accommodation facility, no further traffic assessment is required. The impacts and proposed mitigation measures, as reported in the EIS, remain valid.

As the construction workforce will be transported to the site by shuttle buses, there will be minimal parking demand due to the construction of the accommodation facility. However, for any site personnel or construction contractors visiting by private vehicles, there will be ample open spaces to park within the project area, hence there will not be any parking impact on Barneys Reef Road, Birriwa Bus Route South or Castlereagh Highway.

[2] Extracted from EMM Traffic Impact Assessment report for Birriwa Solar and Battery Project dated 21 July 2022

iii Conclusion

The amendment to the project will not result in traffic impacts beyond those assessed in the EIS. The construction of the accommodation facility will create approximately 180 semi-trailer (heavy vehicle) trips and approximately 25 to 30 light vehicle trips over 3 to 7 months. This number of trips does not warrant a new traffic impact assessment for the amendment, as the assessment prepared for the original project remains valid and conservative.

During the operation of the accommodation facility, the light vehicle generation would be substantially less as the construction workforce of the solar and battery project would reside in the accommodation facility, rather than driving to and from the site from various accommodation. Hence, the EIS light vehicle estimates are conservative and remain valid. The mitigation measures proposed in the EIS relating to traffic and transport remain appropriate, and are summarised in Appendix E.

6.2.4 Aboriginal heritage

An addendum Aboriginal Cultural Heritage Assessment and Historic Heritage Impact Assessment Report (addendum heritage report) has been prepared by OzArk (2023) and is attached as Appendix F.3.

The purpose of the addendum heritage report is to present the results of additional survey effort related to the accommodation facility study area and identify potential Aboriginal cultural heritage sites. The addendum ACHAR assesses the potential impacts associated with the amended project, including significance assessment of any identified sites.

Additional survey was completed with the assistance of representatives from two Registered Aboriginal Parties (RAPs). Five additional Aboriginal heritage sites were recorded in the accommodation facility study area (Winora OS-2, Winora OS-3, Winora OS-4, Winora IF-1, and Winora IF-2). These sites include three artefact scatters and two isolated finds. No potential archaeological deposits (PADs) were identified.

Based on the outcomes of the field survey, the accommodation facility development footprint (including associated access tracks) was designed to avoid four of the five recorded sites. One of the sites, Winora IF-2, is in the vicinity of the proposed access track and will be collected prior to commencement of construction if it cannot be avoided.

Table 6.7 provides a summary of the significance assessment for Aboriginal sites recorded during the field survey.

Table 6.7 Significance assessment for identified Aboriginal sites

Site name	Social or cultural value	Archaeological/ scientific value	Aesthetic value	Historic value	Potential impact
Winora OS-2	High	Low	Low	None	None
Winora OS-3	High	Low	Low	None	None
Winora OS-4	High	Low	Low	None	None
Winora IF-1	High	Low	Low	None	None
Winora IF-2	High	Low	Low	None	Total loss of value

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed for the project in consultation with Representative 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.

6.2.5 Historic heritage

An addendum Aboriginal Cultural Heritage Assessment and Historic Heritage Impact Assessment Report (addendum heritage report) has been prepared by OzArk (2023) and is attached as Appendix F.3.

The purpose of the addendum heritage report is to present the results of additional desktop and field survey effort related to the accommodation facility study area and identify potential heritage sites. The addendum HHA assesses the potential impacts associated with the amended project.

No listed heritage items were identified within the accommodation facility study area, and there is limited potential for historical heritage items to be present. Any potential heritage values associated with the accommodation facility study area would be associated with the area's use for agricultural grazing, an activity that leaves few material traces. The current physical fabric, such as fencing, has been upgraded throughout the use of the area, and no historic remnants were recorded during the survey.

No additional impacts are expected from the amended project.

6.2.6 Noise and vibration

An addendum noise and vibration impact assessment (EMM 2023d) (ANVIA) has been prepared and is attached as Appendix F.4.

The purpose of the ANVIA is to assess the potential noise impacts from the accommodation facility design. It considers the changes to construction noise from the construction of the facility, construction vibration, and noise emissions associated with the operation of the accommodation facility.

i Construction noise

Construction noise levels have been predicted using a computer-generated model that calculates total noise levels at each assessment location from the concurrent operation of multiple noise sources. Predicted noise levels over a typical worst case 15-minute scenario has been modelled and assessed for comparison against the relevant noise management levels (NMLs).

The results of the modelling demonstrate predictions of compliance with the construction NML for all assessment locations during daytime standard construction hours and daytime non-standard construction hours.

ii Construction vibration

The nearest non-associated residences are located beyond 2 km from the closest proposed construction activities likely to produce significant vibration levels within the accommodation facility development footprint. These assessment locations are well beyond the safe working distances for structural damage and human response. Vibration impacts from construction at residential assessment locations are considered unlikely.

iii Operational noise and vibration

During operation, noise emissions from the camp will primarily be related to light vehicle movements, equipment deliveries, and occupant noise while on site. While each of these sources is likely to be minimal due to the size of the facility, cumulative emissions may be higher. However, it is not expected that noise emissions during operation of the camp will exceed those during construction of the camp, and therefore it is expected that operational noise emissions will achieve compliance with the *Noise Policy for Industry* (NPfI) (EPA 2017) criteria, and noise impacts at nearby associated and non-associated noise sensitive receivers are highly unlikely.

iv Conclusion

Noise and vibration impacts from construction and operation of the accommodation facility are predicted to be negligible and satisfy all relevant NSW noise and vibration criteria.

6.2.7 Soils, erosion and agriculture

i Existing environment

a Soils and erosion

The land, soil and erosion assessment (LSEA) prepared for the EIS was conducted with reference to existing NSW mapping of soil orders and associated hazards, to identify possible soil and erosion constraints within the solar and BESS study area. The soil environment observed in the accommodation facility study area is consistent with the findings of field surveys and available data from the eSPADE database (DPIE 2020d) previously summarised in the LSEA for the solar and BESS study area, which was included as Appendix L of the EIS (EMM 2022d).

Soil orders encapsulated within the accommodation facility study area are classified under the *Australia Soil Classification* ('ASC', Isbell & NCST 2021) as Sodosols and Tenosols, as shown in Figure 6.1, with further detail provided in Section 6.2.7.c and in Table 6.8.

b Topography and geology

Based on a review of the digital elevation models (DEMs), the proposed accommodation facility development footprint is situated on a gently inclined (3–10% slope) footslope of a gently inclined hillslope underlain by igneous intrusive granite that commonly forms tors throughout the region. The accommodation facility development study area is bordered by sedimentary units, which includes the Barney's Reef formation and unconsolidated alluvial deposits. Alluvial assemblages along the northeast boundary are likely associated with channel migration and infill throughout the Quaternary. Regolith and unconsolidated colluvium are commonly observed in the valley flats.

c Australian Soils Classification

The Australian Soil Classification scheme ('ASC', Isbell & NCST 2021) is a multi-category scheme with soil classes defined based on diagnostic horizons or materials and their arrangement in vertical sequence as seen in an exposed profile. State-wide mapping (DPIE 2021b) identifies that the site encompasses two soil orders; Sodosols and Tenosols (Figure 6.1).

Most of the accommodation facility development footprint is within an area mapped as Sodosols. Sodosols are limited to generally low agricultural potential with high sodicity leading to high erodibility, poor soil structure and low permeability which present issues such as hard-setting topsoils and gully erosion, as evidenced within the solar and BESS study area. Despite the generally low relief of the accommodation facility development footprint, the potential erosion risk from construction is very high due to dispersive nature of the subsoils and less resilient nature of the topsoils. Soil management practices will be key to maintain suitable soil cover, minimise exposure of subsoils and maintain topsoil resources to ensure soil profiles are returned in a similar condition to minimise the exposure of erosion-prone subsoils and maintain soil productivity.

The other prominent soil order present within the accommodation facility study area are Tenosols, which are generally poorly developed soils that typically have low clay content and are weakly structured, sandy soils. They are typically benign from a soil chemistry perspective, being typically non-saline and non-sodic with poor fertility. Their low clay content and poor structure should be considered in construction of the accommodation facility as they are susceptible to erosion due to their sandy, non-cohesive nature.

d Land and soil capability

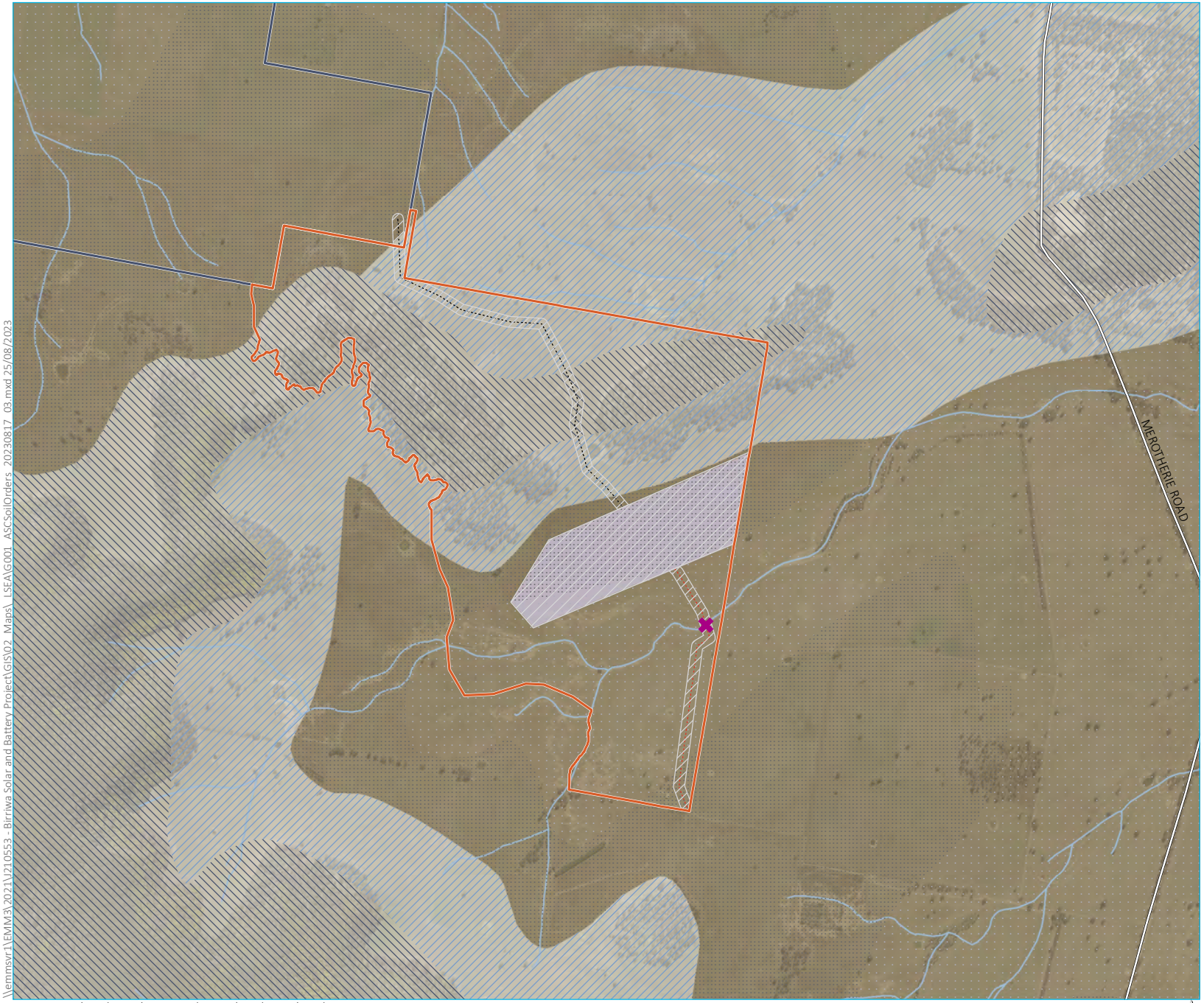
The *Land and Soil Capability Assessment Scheme* (OEH 2012) ('LSC Scheme') assesses the inherent physical capacity of the land to sustain a range of land uses (and management practices) in the long term without leading to degradation of soil, land, air and water resources.

With reference to the eSPADE database (DPIE 2020d) and DPIE (2020e) the state scale mapping completed for NSW shows the study area is Class 5 and proximal to Class 7, representing land with moderate-low capability to very low capability (Table 6.8).

Table 6.8 Land and soil capability classifications mapped in the accommodation facility study area

LSC Class[3]	Description	ASC (Land system)
Class 5 – moderate to low capability land	• Land has high limitations for high-impact land uses. • Will largely restrict land use to grazing, some horticulture, forestry and nature conservation. • The limitations will need to be carefully managed to prevent long-term degradation. • Present within the accommodation facility development footprint.	Sodosol (Home Rule, Rouse)
Class 7 – very low capability land	• Land has severe limitations the restrict most land uses and generally cannot be overcome. • On-site and off-site impacts of land management practices can be extremely severe if limitations are not managed. • There should be minimal disturbance of native vegetation. • Present within the Accommodation facility study area but not the development footprint.	Tenosol (Lees Pinch, Bald Hill)

[3] IAW OEH 2012



KEY

- Solar and BESS study area
- Accommodation facility study area
- Accommodation facility development footprint
- Accommodation facility infrastructure area
- Access track
- Emergency access track
- Potential creek crossing point

Existing environment

- Major road
- Watercourse/drainage line

Australian soil classification (ASC)

- Sodosols
- Tenosols

Soil landscape (DPIE 2020)

- Home Rule
- Lees Pinch
- Rouse
- Turill

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Source: EMM (2022); DFSI (2017, 2022); ACEN (2022); DPIE (2020)

0 250 500 m

GDA 1994 MGA Zone 55

N

ASC Soil Orders

Birriwa Solar and BESS Project
Amendment Report
Figure 6.1

EMM creating opportunities

e Summary

The Home Rule (hr) and Rouse (rs) soil landscapes are the most extensive land system present within the accommodation facility study area and are host to Sodosols. Variation occurs in proximity to Barneys Reef, which is approximately 2.7 km from the closest point of the project area, in the presence of the Lees Pinch (lp) and Turill (ti) soil landscapes, associated with Tenosols. The erosion hazards discussed for all three soil landscapes highlight:

- erosion hazard is high when surface cover is sparce or flows are concentrated
- importance of maintaining surface cover for erosion control
- soils in drainage depressions are highly susceptible to gully erosion without adequate protection from high runoff
- severe gully erosion may occur where the sodic dispersible subsoils in drainage lines and depressions are exposed
- satellite imagery reveals extensive gully erosion where dispersive subsoil are exposed across lower slopes, specifically the lower (south-western) corner of the accommodation facility development footprint. These areas should be stabilised as priority to prevent further degradation prior to the commencement of works in these areas.

The fertility of all soil types present in the landscape is noted as low, as indicated by the inherent soil fertility mapping (DPIE 2020f) and subsequent low land and soil capability classes.

The Sodosols, as texture-contrast soils typically have lighter topsoils, which have low resilience to disturbance, particularly with their noted hardsetting behaviour. The Sodosol subsoils are likely to be sodic or high in exchangeable magnesium, which results in dispersive behaviour and high erosion potential. These soil types result in very fine sediment movement, which is difficult to capture using traditional erosion and sediment controls (ESC), so prevention of erosion will be critical. The area of the accommodation facility study area not mapped as Sodosols is covered by Tenosols, which are noted to have very high erosion potential due to their sandy, non-cohesive nature. However, their coarse nature does mean they are easier to control with typical ESC measures.

The soil chemistry of samples BSF1 and BSF3, which were taken within the solar and BESS study area for the LSEA prepared as part of the EIS (Appendix L of the EIS, EMM 2022d), is likely to have dispersive characteristics that would present a high erosion risk, as indicated by the exchangeable sodium percentage and low Ca:Mg ratio. This is subject to the uncertainty of the low cation exchange capacity of the soils. The erosion risk is consistent with the presence of rilling and gullying within the solar and BESS study area as observed during the site inspection and illustrated in Photograph 6.3.

Localised rocky outcropping was observed in the preliminary site inspection of the solar and BESS study area and is consistent with descriptions of shallow soils over rocky slopes associated with the valley margins. The outcropping is likely to originate from the Narrabeen Group sandstones; composed of shale, conglomerate, mudstone, chert and coal and torbanite seams. Possible hazards associated with these soils include poor water holding capacity, sheet erosion and acid surface drainage.

Photograph 6.3 Shallow soils and rock outcropping

Photograph 6.4 Localised gully erosion contributing to bank instability

ii Potential impacts

Impacts associated with the accommodation facility construction are consistent with those identified in the LSEA prepared for the Birriwa Solar and Battery Project EIS, primarily:

- impacts to soil quality and quantity reducing environmental value and agricultural capability
- removing agricultural land from production
- increased potential for soil erosion resulting in erosion, sedimentation and reduced soil quantity.

a Erosion hazard

The soil erosion hazard, as previously assessed, is deemed high due to the presence of dispersive subsoils. The rainfall and slope erosion hazard has been assessed as low where slopes do not exceed 3(H):25(V) (12%). The maximum slope over the accommodation facility development footprint was measured to be 2(H):25(V) (8%) with an average of 1(H):40(V) (2.5%). The accommodation facility development footprint exhibits a north-west to south-easterly aspect that may be exposed to diurnal wind patterns that peak between 30-40 km/h, with 20–30% frequency over morning and afternoon observations (BoM 2022). Potential impacts may include tunnel and gully erosion, downstream sedimentation and turbid runoff during wet cycles, and wind erosion in dry periods.

The likely erosive outcomes in response to slope and rainfall are assessed using methodology detailed in Section 4.4.1 of Landcom (2004). Regional mapping is used in conjunction with approximation derived from the revised universal soil loss equation (RUSLE) [t/ha/y] to inform the appropriate erosion mitigation measures required. The RUSLE equation represents the product of computed soil loss utilising rainfall erosivity, soil erodibility, slope length, erosion control practice and ground cover variables and is limited by simplified assumptions described in Appendix A in Landcom (2004). A soil loss class (SLC) is derived from the RUSLE equation over a nominal slope length of 80 m. A consolidated summary is provided in Table 6.9 and Table 6.10 and an erosion hazard map based on SLC and slopes is shown in Figure 6.2.

Table 6.9 Soil erosion factors

Rainfall erosion hazard			Soil erodibility hazard	
Average monthly rainfall (mm)	**Erosion potential**	**Annual distribution[4]**	**K-factor**	**Erosion potential**
0–30	Very low	-	< 0.02	Low
31–45	Low	Apr, May, Jun, Aug, Sep	0.02 < K < 0.04	Moderate
46–100	Moderate	Jan, Feb, Mar, Jul, Oct, Nov, Dec	0.04 < K < 0.06	High
101–225	High	-	> 0.06	Extreme
>225	Extreme	-		

Rainfall erosivity periods (Zone 7, Landcom (2004))												
SLC	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
1–4	L	L	L	L	L	L	L	L	L	L	L	L
5	H	H	L	L	L	L	L	L	L	L	L	H
6	H	H	H	L	L	L	L	L	L	H	H	H
7	H	H	H	H	H	H	H	H	H	H	H	H

[4] Bureau of Meteorology weather station 064009 (Dunedoo Post Office)

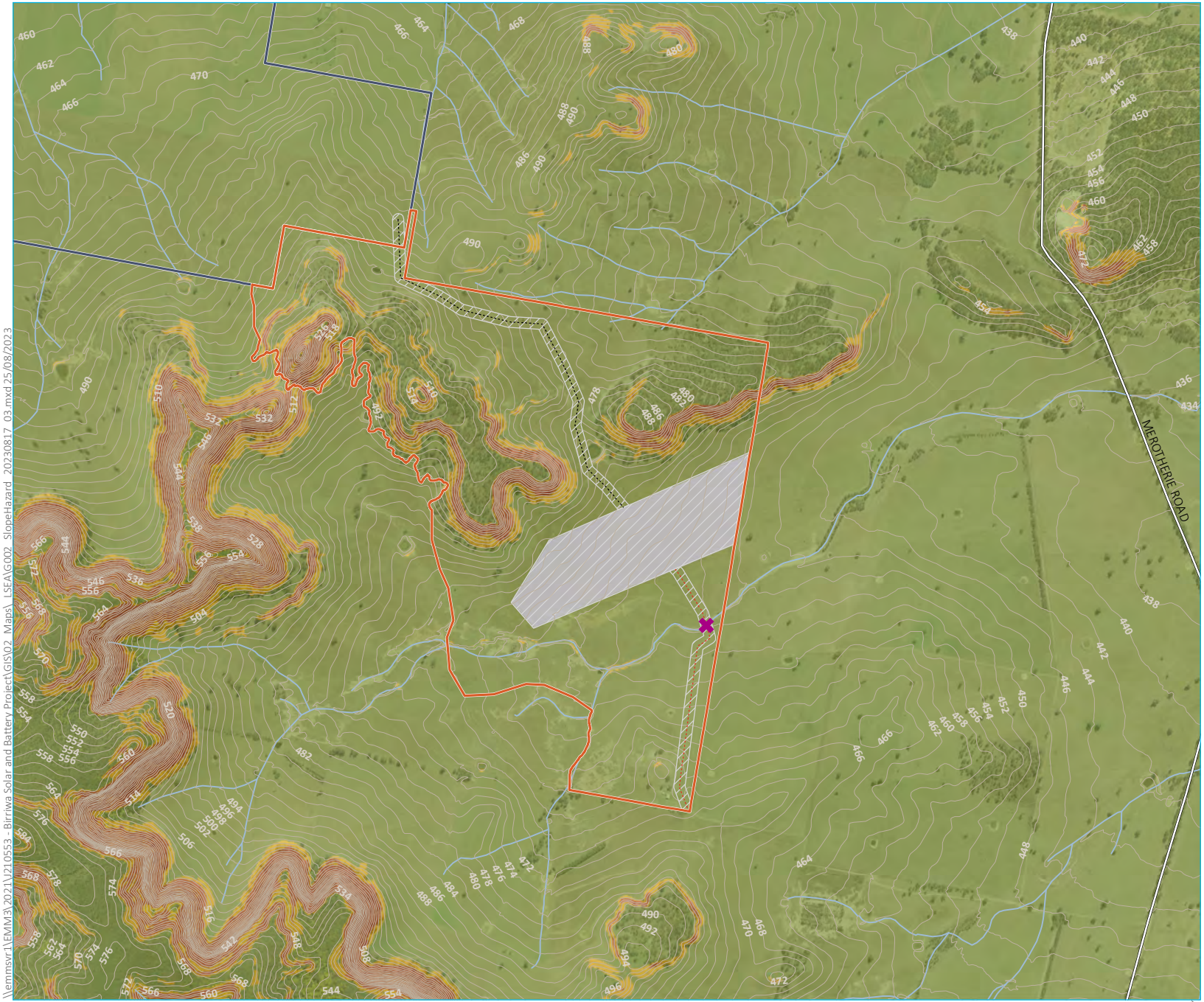
Table 6.10 Soil loss estimates

Average annual soil loss					
RUSLE variables (Landcom 2004)	**Slope**				
	1%	**3%**	**5%**	**10%**	**12%**
R-factor	1393	1393	1393	1393	1393
K-factor	0.071	0.071	0.071	0.071	0.071
LS-factor (USDA 1997)	0.19	0.65	1.19	2.81	3.70
P-factor	1.3	1.3	1.3	1.3	1.3
C-factor	1	1	1	1	1
Soil loss (t/ha/yr)	**24.40**	**83.60**	**153.0**	**361.3**	**475.8**
SLC	**1**	**1**	**2**	**4**	**4**

Slope ranges and erosion hazard					
Project element	**$Slope_{MIN}$ (%)**	**$Slope_{MAX}$ (%)**	**$Slope_{AVG}$ (%)**	**Std. Dev. (σ)**	**Erosion hazard**
Accommodation facility development footprint	0.00	7.87	2.53	1.40	Low

Maximum recommended slope lengths for soil erodibility (Landcom 2004)	
Slope gradient (H:V)	**Limit**
3:1	29 m
2.5:1	24 m
2:1	19 m

The outcomes from the erosion hazard assessment provided in Table 6.9 and Table 6.10, considering both the project elements, environment and potential soil erodibility, indicated erosion hazard is predicted to be low with soil loss likely to be less than 150 t/ha/yr. This classification is provided as per Table 4.2 of Landcom (2004).



KEY

- Solar and BESS study area
- Accommodation facility study area
- Accommodation facility development footprint
- Accommodation facility infrastructure area
- Access track
- Emergency access track
- Potential creek crossing point

Existing environment

- Major road
- Watercourse/hydroline
- Topographic contours (2 m interval)

Gradient (% rise)

- < 8
- 9 - 12
- > 12

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

0 250 500 m

GDA 1994 MGA Zone 55

N

Erosion hazard

Birriwa Solar and BESS Project
Amendment Report
Figure 6.2

EMM creating opportunities

b Soil and land capability impacts

The soil characteristics of the accommodation facility study area do not vary significantly from those in the solar and BESS study area and as reported in the LSEA (Appendix L of the EIS, EMM 2022d) and potential impacts therefore are considered to be consistent with those identified in the LSEA. Dispersive subsoils and shallow rocky soils present the greatest hazard that can be mitigated by applying the measures detailed in the LSEA (Appendix L of the EIS, EMM 2022d). A summary of findings is presented in Table 6.11.

Table 6.11 Regional soil mapping summary

ASC	Agricultural potential[5]	Associations	Inherent soil fertility	LSC class	Erosion hazards
Sodosols	• Typically have very low agricultural potential with high sodicity leading to high erodibility, poor structure and low permeability. • Subsoils are often dispersive and prone to gully and tunnel erosion. • Often hard- setting when dry and prone to crust formation. • Low to moderate chemical fertility and can be associated with soil salinity.	**Landscapes:** Home Rule, Rouse. **GSG:** Solodic Soils and Siliceous Sands. **Geology**: Common minerals are quartz, feldspar, and biotite. The presence of amphibole is characteristic. And unconsolidated sand, gravel, clay and silt form by the weathering of bedrock and limited transportation by mass movement, sheetflood or talus processes.	Moderately low	5	• Soils in drainage depressions are highly susceptible to concentrated flows. • Severe gully erosion is observed where sodic dispersible subsoils are exposed. • Slopes are sufficient to pose a high risk of sheet erosion where groundcover is disturbed.
Tenosols	• Generally low or very low agricultural potential. • Typically, very sandy with low chemical fertility, water holding capacity and structure. • Alluvial soils are often deep, fertile and have high agricultural potential.	**Landscapes:** Lees Pinch, Turill. **GSG:** Shallow Siliceous Sands, Shallow Acid Soils, Yellow Earths. **Geology:** Sandstone, siltstone and mudstone. Deposited in fluvial and floodplain systems, or in shallow marine environments. Also includes coal seams in some areas. And quartz-lithic to quartz-rich sandstone with conglomerate, mudstone and siltstone. Deposited in high energy braided river systems.	Low	7	• Steep slopes pose high erosion risk when groundcover is disturbed. • Rock exposures are common and mass movement has been observed in exposures with low wet-bearing capacity.

c Agricultural impacts

Assessment of agricultural impacts pertaining to biophysical strategic agricultural land (BSAL) and critical industry clusters (CICs) was undertaken in the EIS for the solar and BESS study area. For the amended project, a desktop assessment was conducted using state mapping for CICs and BSAL and no conflicts were identified within the Accommodation facility study area. On a broader scale, the closest mapped BSAL is approximately 5 km north of the site.

[5] Grey and Murphy (2002)

The project is situated within the Mid-Western Regional LGA where the majority of land use is associated with livestock production (58% of land), followed by nature conservation (31.2% of land) and then intensive and cropping purposes (7.31% of land). Consistent with the regional profile, the primary agricultural productivity of the Mid-Western Regional LGA is livestock products and disposals (including domestic slaughtering and exports).

Indicative $/ha values for selected commodities, consistent with those derived in the LSEA (EMM 2022d) are contained in Table 6.12. These provide a broad indication of land productivity for agricultural land use categories and the relative impacts on agricultural productivity associated with the project. These figures are limited by the variation between recorded parameters for both agricultural productivity and land use for the Mid-Western Regional LGA.

Table 6.12 Indicative annual commodity value per hectare

Area (ha)	Commodity sector	Production value ($m)	Land use (ha)[1]	Value ($/ha)	Estimated land value ($/y)
25.00	Livestock	$76.93	507,639	$151.55	$3,789
	Cropping	$13.5	31,662	$426.38	$10,660

The accommodation camp would remove some 25 ha of the Mid-Western Regional LGA land utilised for livestock, and account for 0.005% of the regional annual agricultural productivity associated with livestock. This is a minor and temporary loss based on the assumption that the land will be returned to a similarly productive state at the end of the accommodation facility lifecycle with suitable soil management.

iii Mitigation measures

Soil management measures should be implemented consistent with those recommended in the LSEA (EMM 2022d) to ensure the preservation of soil resources for successful rehabilitation and minimising impacts to the environment and agricultural capability. The mitigation measures are included in the updated mitigation measures for the project in Appendix E.

The proposed accommodation facility development footprint and associated access roads included in the amended project will adopt the erosion and sediment control management strategies identified in the LSEA (EMM 2022d). These strategies will serve as the primary mitigation measures for the erosion hazard assessed as part of the additional project elements.

iv Conclusion

The proposed accommodation facility development footprint shares many characteristics with the solar and BESS study area as assessed in the LSEA (EMM 2022d). The accommodation development footprint is wholly contained within the Sodosol soil order, assessed to be highly susceptible to gully and tunnel erosion due to dispersive subsoils, and is of LSC Class 5. Gully erosion is observed on foot slopes and banks of existing creeks where flows are concentrated (Photograph 6.2) and is consistent with observations throughout the landscape. Disturbance of topsoils and groundcover is likely to expose dispersive subsoils to rainfall erosion and should be avoided during high rainfall periods if special erosion control measures are not in place.

Outcropping of sedimentary units and granitic tors is commonly associated with these soil types (Photograph 6.3) such that increased erosion potential is associated with shallow soils underlain by bedrock or regolith.

Observations made of the proposed accommodation facility development footprint using the DEM indicate that the maximum slope does not exceed 12%, such that erosion hazard is low with SLC class 1–4 based on conservative R and K factors. The maximum recommended flow lengths during construction should be between 19–29 m depending on the slope, to further mitigate the potential for erosion. Minimising cut and fill construction methods and stabilising disturbed topsoils and ensuring subsoils are not exposed are priority erosion control measures with further methods detailed in the LSEA (Appendix L of the EIS, EMM 2022d).

Overall, soils within the proposed accommodation facility development footprint are low capability, low fertility soils that are highly sensitive to disturbance. The erosion control measures recommended in the LSEA (Appendix L of the EIS, EMM 2022d) are valid for this area and should be adhered to preserve the structure and fertility of the landscape, should the land be converted back to agricultural use post-development.

6.2.8 Social

An addendum Social Impact Assessment (ASIA) has been prepared by EMM (2023e) and is attached as Appendix F.5.

The purpose of the ASIA was to consider the proposed changes to the project, and to satisfy the SEARs for the project, the *Social Impact Assessment Guideline for State Significant Projects* (SIA Guideline 2023) (DPE 2023a) and the *Technical Supplement: Social Impact Assessment Guideline for State Significant Projects* (SIA Technical Supplement 2023) (DPE 2023b).

Additional community stakeholder engagement was undertaken as part of ongoing engagement for the project, including phone and face to face interviews with local landholders, local stakeholders, service providers, business representatives and the members of the local community.

The assessment of impacts and benefits associated with the ASIA concludes that the addition of the accommodation facility substantially reduces the significance of key social impacts which would otherwise be experienced by the community as a result of the project. This is as expected given that the accommodation facility has been specifically added to the project by ACEN to avoid the potential impacts associated with the mobilisation of a large construction workforce into the area for the project. It will also further enhance a number of social benefits associated with the project and generate new benefits. Specifically, the accommodation facility will:

- Limit the impact on regional housing availability and affordability during the construction phase of the project as demonstrated by:
    - the impact on affordability and availability of rental housing previously ranked as **medium** (negative) for the original project, now considered a **low** (negative) mitigated risk as a result of the amendment
    - project contribution to restricted access to short-term accommodation previously ranked as **medium** (negative), now considered a **low** (negative) mitigated risk as a result of the amendment
    - the reduced capacity and availability of community services previously identified as a **medium** (negative) risk, now ranked as a **low** (negative) mitigated risk as a result of the amendment.
- Avoids temporary construction workers utilising the limited tourist accommodation available, which is important to the regional economy. The effect of the proposed amendment is to resolve the tourism impact identified in the EIS.
- Provides contracting and employment opportunities for local providers for the construction and servicing of the accommodation facility. Enhanced employment and training opportunities remain a **high** (positive) benefit of the project.

- Reduces safety risks associated with traffic movements through accommodating the majority of the workforce in one location and by internalising traffic within the site to avoid use of public roads between the accommodation facility and the project. Risks associated with an increase in population in an isolated location, close to rural properties was previously ranked as a **medium** community cohesion risk, now considered to be a **low** (negative) mitigated risk.

- Enhances health and well-being for workers through appropriate accommodation design and reduced fatigue. New improved worker health and wellbeing (**high**) enhanced benefit.

There are no high or very high mitigated impacts as a result of the amended project. The residual 'medium' mitigated impacts associated with the accommodation facility principally include amenity impacts during project construction.

The social impacts and benefits that have changed as a result of the amended project are summarised in Table 6.13.

Table 6.13 Social impacts and benefits

Category	Impact	Original project – impact and significance (mitigated/enhanced)	Perceived risk (unmitigated/ unenhanced)	Additional proposed mitigation and management strategies	Amended project – Significance (mitigated/enhanced)
Accessibility	Impact on affordability and availability of rental housing	Way of life impacts (personal disadvantage) related to access to affordable housing. Significance (mitigated): Medium	Low	ACEN will prepare an Accommodation and Employment Strategy (AES) for the project. The AES will seek to mitigate negative impacts and facilitate: • an increase in the extent of the geographic area for local hires and workforce accommodation • enhanced local workforce participation. ACEN will also progress industry engagement (i.e. with EnergyCo) in relation to the management of cumulative workforce accommodation issues.	**Low**
	Project contribution to restricted access to short-term accommodation	Accessibility impacts due to capacity of short-term accommodation. Significance (mitigated): Medium	Medium	ACEN will prepare a AES for the project. The AES will include how the facility construction workforce will be accommodated, and where they will be accommodated. The AES will also describe the actions ACEN has taken or plan to take to further minimise pressure on the existing capacity of short-term accommodation in the local area.	**Low**
	Reduced capacity and availability of community services	Accessibility related to community infrastructure and services. Significance (mitigated): Medium	Medium	The approach to workforce accommodation of including a medical centre and first aid station with an onsite nurse is likely to reduce pressure on local health service providers, however the onsite nurse should not be sourced from the regional workforce due to existing issues with recruitment for rural positions.	**Low**
Livelihoods	Limited workforce supply and job competition	Livelihood impact due to limited workforce supply and job competition (construction). Significance (Mitigated and enhanced): High (positive) Livelihood impact due to limited workforce supply and job competition (operations). Significance (Mitigated and enhanced): Medium (positive)	Medium	No additional mitigation.	**Medium**

Table 6.13 Social impacts and benefits

Category	Impact	Original project – impact and significance (mitigated/enhanced)	Perceived risk (unmitigated/ unenhanced)	Additional proposed mitigation and management strategies	Amended project – Significance (mitigated/enhanced)
	Impacts to agricultural producers	Livelihood impacts to the agricultural sector. Significance (Mitigated and enhanced): Medium (positive)	High	No additional mitigation.	**Low**
	Use of local goods and services	Livelihood benefit related to use of local goods and services. Significance (Enhanced): High Community benefit related to growth and economic development. Significance (Enhanced): Medium	High	No additional mitigation.	**High (benefit)**
	Enhanced employment and training opportunities	Livelihood benefit related to access to employment and training opportunities (Youth). Significance (Enhanced): High Livelihood benefit related to access to employment and training opportunities (Aboriginal and Torres Strait Islander People). Significance (Enhanced): Medium	Medium	No additional mitigation.	**High (benefit)**
Surroundings	Changes in amenity due to generation of dust, noise, vibration and lighting.	Way of life impacts (changes in social amenity) resulting from construction activities. Significance (mitigated): Medium Way of life impacts (changes in social amenity) resulting from project operation. Significance (mitigated): Medium Health impacts arising from sleep disturbance due to operational noise. Significance (mitigated): Low	Medium	No additional mitigation.	**Medium – no change**

Table 6.13 Social impacts and benefits

Category	Impact	Original project – impact and significance (mitigated/enhanced)	Perceived risk (unmitigated/ unenhanced)	Additional proposed mitigation and management strategies	Amended project – Significance (mitigated/enhanced)
	Changes to the visual landscape affecting how neighbours and other stakeholders experience their surroundings	Surroundings impacts experienced by near neighbours due to changes in the visual landscape. Significance (mitigated): Medium Surroundings impacts experienced by other stakeholders due to changes in the visual landscape. Significance (mitigated): Low	High	Adaptation of previous proposed mitigation to incorporate landscape and visual screening elements for the facility as part of the project to reduce the visual impact of the project, as viewed from the local road network and key visual receivers.	**Medium – no change**
	Impact to surroundings from changes in ecological values and natural assets	Surroundings impacts due to changes in ecological values and the quality of natural assets. Significance (mitigated): Low	Medium	No additional mitigation.	**Low – no change**
	Perceived reduction in local property values.	Livelihood impacts due to changes in rural property values. Significance (mitigated): Low	Medium	No additional mitigation.	**Medium**
Culture	Change to land use results in a sense of loss of cultural heritage for Aboriginal and Torres Strait Islander people	Cultural impacts related to Aboriginal and Torres Strait Islander Values: Significance (mitigated): Medium	High	No additional mitigation.	**Medium – no change**
Health and wellbeing	Safety risks for transport network users	Public safety related to increased traffic movements on the local road network. Significance (mitigated): Medium Health and wellbeing impacts related to safe use of the Central West Cycle Trail. Significance (mitigated): High	Very High	No additional mitigation.	**Medium**

Table 6.13 Social impacts and benefits

Category	Impact	Original project – impact and significance (mitigated/enhanced)	Perceived risk (unmitigated/ unenhanced)	Additional proposed mitigation and management strategies	Amended project – Significance (mitigated/enhanced)
	Risks associated with an increase in population in an isolated location close to rural properties	New impact	Medium	Implementation of safety measures within the facility, including security patrols and adequate fencing and worker training, as well as complaints reporting processes for nearby landholders.	**Low**
	Health and wellbeing impacts related to bushfire risk	Health and wellbeing due to fire risk to public safety. Significance (mitigated): Medium	Very High	ACEN will implement the recommendations of the Bushfire Assessment Report (Cool Burn 2023).	**Medium – no change**
	Project related stress and anxiety	Health and wellbeing impacts due to project related stress and anxiety (associated and non-associated landholders). Significance (mitigated): Medium Health and wellbeing impacts due to project related stress and anxiety (Broader local communities). Significance (mitigated): Low	Medium	No additional mitigation.	**Medium**
	Improved worker health and wellbeing	New benefit.	Medium	The accommodation facility provides a benefit for worker health and safety (and the safety of other road users) by reducing the risk of fatigue associated with travel from the site to accommodation. This benefit could be further enhanced by ensuring facility design further facilitates rest and relaxation and provision of onsite mental health support.	**High (benefit)**
Decision-making systems	Lack of trust in decision-making systems	New impact.	Medium	The NSW government and particularly Energy Co have a role in ensuring that approval processes sufficiently consider impacts on communities, per relevant regional plans and strategies.	**Medium**

6.2.9 Bushfire

A Bushfire Assessment Report (BAR) has been prepared by Cool Burn Fire and Ecology (Cool Burn 2023) for the amended project and is attached as Appendix F.6.

The proposed accommodation facility will involve introducing a large number of people (occupants) to an area that has potential bushfire risk and is assessed as an 'increase in residential density' as defined in the *Planning for Bushfire Protection 2019* (PBP) (RFS 2019). Increased resident densities of existing lots that are bush fire prone may heighten the level of risk to the occupants.

The accommodation facility study area is not mapped as bushfire prone land by the Mid-Western Regional LEP. However, the accommodation facility could potentially be exposed to a bushfire threat. Bushfire prone vegetation posing the highest risk to the accommodation facility is grassland and some forest on the ridges.

The aim of PBP is to provide for the protection of human life and minimise impacts on property from the threat of bush fire, while having due regard to development potential, site characteristics and protection of the environment. Bushfire protection measures included in the design of the accommodation facility include the following provisions:

- Asset protection zones (APZ): 11 m setback from grasslands (east, south, west), 20 m setback from forest (north), and incorporation of a perimeter road.
- Landscaping: vegetation is to be managed to the prescribed standards for Inner Protection Area as detailed in the PBP.
- Construction standards: Bushfire Attack Level (BAL) is a means of measuring the ability of a building to withstand attack from bushfire and is defined in the Australian Standard AS 3959-2018 Construction of buildings in bushfire-prone areas (AS 3959-2018). The following BAL are recommended:
    - BAL 29 level of construction as per Section 3 & 7 of AS 3959-2018 and Chapter 7.5 PBP to perimeter structures.
    - BAL 19 and BAL 12.5 level of construction as per Section 3 & 5-6 of AS 3959-2018 to internal structures.
- Access: The access relevant to property access, perimeter road and non-perimeter road within the workers accommodation camp comply with Table 5.3b PBP.
- Services: The provision of water, electricity and gas comply with Table 5.3c of PBP.
- Emergency management: A Bush Fire Emergency Management and Evacuation Plan is prepared by the operator consistent with the NSW RFS publication: *A Guide to Developing a Bush Fire Emergency Management and Evacuation Plan, and the AS 3745:2010*.

The proposed project amendments adequately consider bushfire risk and can conform to the specifications and performance requirements of PBP, providing a suitable outcome commensurate with the bushfire risk.

6.3 Conclusion

Additional impacts as a result of the project amendments and proposed mitigation measures are summarised as follows:

- 23.51 ha of PCT 479 grassland will be impacted by the accommodation facility and does not require offsetting under the NSW BOS. An additional 8.56 ha of PCT 281 will be impacted. The BDAR has assumed presence of the Superb Parrot (*Polytelis swainsonii*). Offsets have been adjusted for the project and these are detailed in the updated BDAR (Appendix B).

- The accommodation facility infrastructure area has been carefully sited to minimise the potential for views of the facility from surrounding rural residences. As a result, the proposed amendments will not result in any significant visual amenity impact. Only one residence within 4 km of the accommodation facility study area will have any view of the accommodation facility infrastructure (R35), and in that case the impact will be low due to distance (3 km) and existing vegetation filtering views. One residence (R37) may see a small portion of the accommodation facility access track; however, this impact is considered to be low.

- One additional Aboriginal cultural heritage site (Winora IF-2) may be impacted by the proposed internal access track to the accommodation facility. 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 temporarily removed from production.

- 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 it will reduce 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 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.

7 Justification of the amended project

This chapter provides a justification and evaluation of the amended project, having regard to the economic, environmental, and social impacts and benefits of the project and the principles of ecologically sustainable development (ESD).

7.1 Summary

The justification of the project, as described in the EIS, remains valid. The development and operation of the project, in conjunction with other large-scale renewable energy projects, has potential to fill the need for replacement power as ageing coal-fired generators face closure. 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. 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).

In addition to its location within the CWO REZ, 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 residences living within close proximity. In addition, the project's proximity to the proposed CWO REZ T-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.

An accommodation facility has been included in the project in response to matters raised in submissions and the outcomes of ongoing engagement with the local community and stakeholders. The accommodation facility will provide housing and accommodation to workers for the duration of the construction phase of the project. 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.

Were this project not to proceed, the project's benefits, including contributions to the generation of renewable energy and increased energy security, would 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 more significant requirements for grid connection infrastructure and environmental and social impacts. The project also has the potential to provide accommodation for workers associated with other projects in the CWO REZ, subject to future approvals and needs at the time.

The project will have both impact and benefits on the surrounding natural and built environments. The impacts have been investigated and are not predicted to be significant; these 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.

7.2 Design development

During the preparation of the EIS and amendment report, the development footprint within the study area has been refined based on environmental constraints identification, stakeholder engagement, community consultation and design of project infrastructure with the objective of developing an efficient project that avoids and minimises environmental and social impacts.

Throughout the project refinement process ACEN has made effort to avoid potential environmental impacts where possible. This is evident for the accommodation facility, where the accommodation facility and access tracks have been specifically sited in areas of lower quality grassland and areas that avoid potential habitat for most candidate species. In those instances where the potential for impacts cannot be avoided, ACENs design principles have sought to minimise environmental impacts and/or implement mitigation measures to manage the extent and severity of any residual impacts. The proposed mitigation measures that will be implemented for each of the key environmental matters assessed in this EIS are summarised in Appendix E. The development footprint reflects the most appropriate area for the project infrastructure based on inputs provided during consultation activities with regulatory and community stakeholders, environmental assessments undertaken to date and the functional requirements of project infrastructure. In a number of instances, the irregular shape of the development footprint is a result of avoidance of identified impacts.

During detailed design and prior to the commencement of construction, it is anticipated that the placement of infrastructure and extent of construction activities will be further refined to ensure avoidance and minimisation objectives are met.

7.3 Strategic context

The strategic context of the amended project remains unchanged from that described in the EIS. The project is supported by Commonwealth, State, regional and local plans and policies (as described in Table 2.6) and will support the Commonwealth and State governments to achieve their respective renewable energy and greenhouse gas emission reduction targets. Importantly, the project will also contribute to the continued growth of renewable energy generation and storage capacity in the CWO REZ.

7.4 Objects of the EP&A Act

The objects of the EP&A Act are set out in clause 1.3 of the Act. An assessment of the consistency of the project with the objects of the EP&A Act is provided in Table 7.1.

Table 7.1 Amended project's consistency with the objects of the EP&A Act

Object	Consistency with the project
To promote the social and economic welfare of the community and better environment by the proper management, development and conservation of the State's natural and other resources.	Resources within the project area and, more specifically, the development footprint, include land that is being used for agricultural production and land which has biodiversity and Aboriginal cultural heritage values. This constitutes the 'natural resources', which must be properly managed, developed or conserved. It is acknowledged that the development of the project will reduce the utilisation of the land within the development footprint for agricultural production; however, this impact will be mitigated by a number of factors including: • The use of single axis tracking PV modules involves a typical row spacing of 8–12 m, which would leave a significant area of land that could still be utilised for sheep grazing during operations. • Site selection – the development footprint has been strategically placed so that primary production can continue within the immediate surrounds and to reduce potential impacts on the use of neighbouring farmland for primary production purposes. • Return to agricultural land – the development footprint can be returned to agricultural land use at the completion of the project's operations. Land management practices will avoid or minimise potential impacts to neighbouring agricultural operations that have been identified during engagement with the local community and as part of the LUCRA presented in the EIS. Through design, the project will have minimal impact on biodiversity values and Aboriginal cultural heritage resources. The existing agricultural use of the development footprint means that impacts on biodiversity will be minimal, and largely associated with the road upgrade corridor; the footprint of which has been minimised in consultation with Mid-Western Regional Council and Warrumbungle Shire Council. engineers. The residual biodiversity values that will be impacted by the project will be offset. The impact of the project on Aboriginal cultural heritage will be limited to two sites, which will be salvaged prior to construction. The development footprint has been altered to avoid the other Aboriginal cultural heritage sites identified in the study area.
To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	This EIS describes the economic, environmental and social context of the project and the potential impacts of it to allow informed consideration of these aspects in determining the development application. The project will contribute to the continued growth of renewable energy generation and storage capacity, as well as providing energy security and reliability.
To promote the orderly and economic use and development of land.	The orderly and economic use of land is best served by development that is permissible under the relevant planning regime and predominately in accordance with the prevailing planning controls. The project is permissible with consent, is consistent with statutory and strategic planning controls and will connect to the Merotherie Energy Hub. As detailed in this EIS, the project will result in positive economic impacts, with appropriate mitigation measures and management strategies being proposed to reduce any adverse environmental and social impacts.
To promote the delivery and maintenance of affordable housing.	Not directly applicable to the project. However, with the addition of the temporary accommodation facility for approximately 500 people during the construction of the project, the need for local accommodation will be substantially reduced.
To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	Measures to avoid and minimise impacts to native vegetation and threatened species habitat were considered during the initial design stages of the project, resulting in avoidance of significant biodiversity values and minimisation of impacts on other areas of native vegetation. Further, the road upgrade corridor utilises existing roads, tracks and maintained road shoulders to the extent practicable to minimise the amount of vegetation clearing required. All unavoidable impacts will be offset in accordance with NSW Government policy. Establishing offsets will enhance biodiversity values in the medium to short-term.

Table 7.1 Amended project's consistency with the objects of the EP&A Act

Object	Consistency with the project
To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	Avoidance of Aboriginal cultural heritage values has been a key aspect of the project refinement process. The majority of sites identified in the project area will be avoided; however, two Aboriginal sites, Mangarlowe IF-2 and Winora IF-2, are in the development footprint, and will be collected prior to commencement of construction. The project will not impact any historic heritage sites.
To promote good design and amenity of the built environment.	Potential visual, noise and air quality impacts on sensitive receptors (including residences) have been fully assessed and described in Chapter 6 of the EIS and Chapter 6 of this amendment report.
To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	Over the life of the project, infrastructure will be maintained, or upgraded, to ensure safe and efficient operations. All construction associated with the project will be compliant with the Building Code of Australia and all other relevant statutory requirements.
To promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State.	This is a matter for the different levels of government in the State. A wide range of government agencies have been consulted regarding the project, including Mid-Western Regional Council, Warrumbungle Shire Council, and DPE, throughout the planning phase of the project and the preparation of the EIS, submissions report and amendment report. As such, it is deemed that both local and State levels of government have been provided with sufficient opportunities to share in responsible environmental planning of the project.
To provide increased opportunity for community participation in environmental planning and assessment.	There have been a range of engagement activities to inform the community about the project and to seek community (and other stakeholder) feedback. The EIS and this amendment report provides further detailed information regarding the project and its potential impacts. The EIS was placed on public exhibition by DPE, with community members able to make formal submissions. A submissions report has been prepared responding to matters raised in these submissions. This amendment report has also been prepared to describe the amendments to the project in response to matters raised in the public exhibition period.

7.5 Consideration of community views

Consultation conducted for the project is described in Chapter 5 of the EIS and Chapter 5 of this Amendment report. Feedback from the community included both positive and negative views on a range of topics.

Some stakeholders recognised the benefits of the project. In particular, stakeholders acknowledged the project as a source of local employment, particularly during construction. Stakeholders were also interested in understanding how the benefits of the project could be shared within the community.

Some concerns were raised by community stakeholders regarding how the project will change the landscape, associated visual amenity impacts and the cumulative effect of multiple projects in the area.

Following the EIS public exhibition period, submissions were received from 88 community members, comprising 82 objections and six providing comment. There were also submissions from two Councils and two submissions from special interest groups. These have been addressed in the *Birriwa Solar and Battery Project: Submissions Report* (EMM 2023a).

7.6 Summary of project impacts

The EIS and this amendment report have considered the potential impacts associated with the project, as well as the need for the project and alternative development options. This section summarises the potential impacts and provides a justification for the project on environmental, economic and social grounds.

7.6.1 Environmental impacts

The potential impacts of the project to the biophysical environment are summarised below:

- Biodiversity – the project has been designed to avoid and minimise impacts to biodiversity, resulting in the avoidance of areas of high biodiversity value as much as possible. The project will result in residual impacts to 76.80 ha of PCT 80, of which only 1.18 ha is of condition to require offsetting under the NSW BOS, and associated habitat for flora and fauna species, and 300.46 ha of PCT 281, of which only 7.45 ha is of condition to require offsetting under the NSW BOS, and associated habitat for flora and fauna species. The project is not expected to result in significant impacts to MNES. To compensate for unavoidable disturbance of native vegetation and threatened species habitat, offsets are proposed.

- Aboriginal cultural heritage – avoidance of Aboriginal cultural heritage values has been a key aspect of the project refinement process. Two Aboriginal sites, Mangarlowe IF-2 and Winora IF-2, may be impacted by the project, and if unable to be avoided, will be collected prior to commencement of construction.

- Historic heritage – the project will not impact any historic heritage sites.

- Land resources – the project will result in a temporary change of land use for land within the development footprint. Land management will include consideration of the viability of sheep grazing throughout the life of the project. Land management practices will avoid or minimise potential impacts across the study area and to neighbouring agricultural operations and ensure that the development footprint is not precluded from being returned to a productive agricultural use at the end of operations.

- Visual – the development of the project will result in some changes to the landscape. Visual impacts will occur during the construction and operational stages of the project. Landscape screening is proposed to mitigate visual impacts at two non-associated residences and will reduce the visibility of project infrastructure.

- Water – the project is not expected to have a significant impact on water resources in the local area. The moderately sloping nature of the catchment means that flood depths are relatively shallow flood across the study area, and velocities in most of the overland flow paths are generally under 0.5 m/s and pose a low risk.

- Areas of higher and low flood hazard have been identified across the study area, using the flood depths and velocities from the 1% AEP event, to guide the detailed design of the project. 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).

7.6.2 Economic impacts

The project is justified economically due to the economic benefits and stimulus it will provide to the local region. The project will generate up to 800 jobs during construction and 20 full time equivalent jobs throughout operations and 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.

ACEN will work in partnership with Mid-Western Regional 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.

7.6.3 Social impacts

The project is justified on social grounds for three principal reasons:

- The main issues raised by the local community have been addressed and mitigated.

- It will contribute to the local and regional economy.

- It will provide indirect benefits through the use of services and facilities both locally and regionally.

It will also generate energy from a renewable energy source, contributing to filling the need for replacement power as ageing coal-fired power stations progressively close.

The inclusion of an accommodation facility is in response to stakeholder and community concerns. The accommodation facility will mitigate impacts related to a lack of housing in the local area and impacts to accommodation for tourism. The accommodation facility will be developed adjacent to the solar and battery project to address concerns about impacts to the local community and reducing light vehicle traffic on the surrounding road network during construction.

While the project has potential negative impacts, it is considered that these can be managed to acceptably low levels and are outweighed by the project's benefits. 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.

Public safety risks, including bushfire, hazards and risks associated with project infrastructure, will be mitigated through design of buildings, construction areas and other assets to include appropriate bushfire protection measures (e.g. asset protection zones), and emergency access and evacuation protocols, which will be developed as part of the emergency response plan.

7.6.4 Cumulative impacts

The project has potential for cumulative impacts with nearby development and future projects. Cumulative impacts have been addressed in Section 6.14 of the EIS. The accommodation facility will reduce demand on housing and accommodation in the local area resulting from multiple projects in the CWO REZ.

Since exhibition of the EIS, Stubbo Solar is in the construction stage; and Narragamba Solar Project is in the EIS preparation stage of the assessment and approval process.

7.7 Ecologically sustainable development

The principles of ESD are outlined in Part 8, Division 5, Section 193 of the EP&A Regulation and are addressed in Table 7.2.

Table 7.2 Consideration of principles of ecologically sustainable development

Principle	Ecologically sustainable development principle	Evaluation of project impact against principle
Precautionary principle	The **precautionary principle**, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by— i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment ii) an assessment of the risk-weighted consequences of various options.	During the project planning phase and preparation of this EIS, experts in their respective fields have carefully considered environmental outcomes through the preparation of quantitative technical assessments, providing a high degree of certainty around the impacts that may arise from the project. The project has been designed with regard to the precautionary principle and in response to legislation, policies, and guidelines to ensure that it does not pose an unacceptable risk to human health or the environment. Management measures have been proposed for all potential environmental impacts. Taking these measures into account, it is considered that there would be no threat of serious or irreversible damage to the environment. Therefore, the project is consistent with the precautionary principle.

Table 7.2 Consideration of principles of ecologically sustainable development

Principle	Ecologically sustainable development principle	Evaluation of project impact against principle
Social equity including inter-generational equity	**Inter-generational equity**, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.	A range of mitigation measures are proposed that will minimise the impacts of the project during construction and operation. The project will contribute to the sustainable transition of electricity generation in NSW to a more reliable, more affordable and cleaner energy future and contribute to a net reduction in greenhouse gas emissions. 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, both of which would provide benefits for future generations. Further, the project will enable the generation of electricity for a renewable energy source. Given the above, it is considered that the project supports inter-generational equity.
Conservation of biological diversity and maintenance of ecological integrity	**Conservation of biological diversity and ecological integrity**, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration.	The conservation of biological diversity and ecological integrity was a fundamental consideration in the development of the project. The location of the project on land with a long history of agricultural use means that biodiversity values are minimal in the study area. In addition, the project has been sited within the study area to minimise impacts to biodiversity values where possible. Specifically, the development footprint was refined to avoid areas of high biodiversity value once these areas were identified by the biodiversity assessment carried out for the project, namely the two areas on the north-east side, and the small area of DNG in the south-east corner of the study area. The updated BDAR was prepared to assess the project's potential impacts on biodiversity (Appendix F.1). Direct impacts to 1.18 ha of PCT 80 and 7.45 ha of PCT 281 (and associated habitat for flora and fauna species) will require offsetting under the NSW BOS. Management and mitigation measure have been prescribed to minimise, manage and offset residual impacts on biodiversity.

Table 7.2 Consideration of principles of ecologically sustainable development

Principle	Ecologically sustainable development principle	Evaluation of project impact against principle
Improved valuation and pricing of environmental resources	**Improved valuation, pricing and incentive mechanisms**, namely, that environmental factors should be included in the valuation of assets and services, such as— i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste iii) established environmental goals should be pursued in the most cost effective way by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.	Project benefits are considered to outweigh the costs. The project will generate up to 800 jobs during construction and 20 full time equivalent jobs throughout operations and will provide economic benefits to the local community. The project also supports the transition away from fossil fuel (coal and gas) energy generation, thereby contributing to a net reduction in greenhouse gas emissions. ACEN accepts the financial costs associated with all the measures required for the project to avoid, minimise, mitigate and manage potential environmental and social impacts.

7.8 How compliance will be ensured

A monitoring and management framework will be developed to enable the potential positive and negative impacts to be monitored over time. It is proposed that the monitoring and management framework identifies the following key aspects:

- Track progress of mitigation and management strategies.
- Assess actual project impacts against predicted impacts.
- Identify how information will be captured for reporting to impacted stakeholders including landholders, communities and government on progress and achievements.
- Key performance indicators, targets and outcomes.
- Responsible parties.
- Mechanisms for ongoing adaption of management measures when required.

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

7.9 Key uncertainties and proposed measures

ACEN is developing and operating solar and battery projects internationally and has experience in the construction and operation of their facilities to meet relevant standards and best available technologies. A competitive bid process will select an engineering, procurement and construction contractor with a demonstrated ability to build the project in a manner that is consistent with those mitigation and management strategies that have been proposed.

7.10 Conclusion

The amended project involves the development and operation of a large-scale solar PV generation facility along with battery storage and associated infrastructure, including a temporary construction workers accommodation facility. The project is within the NSW Government declared CWO REZ and 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.

The residual environmental and social impacts identified throughout the EIS and this amendment report will be managed through the mitigation and management measures described throughout, such that the project will not result in significant impacts on the environment or the local community.

The proposed accommodation facility will provide accommodation for up to 500 workers associated with the construction of the solar and BESS infrastructure, reducing impacts to the local community and housing demand that would otherwise potentially be experienced because of the project. While the construction and operation of the accommodation facility will result in some additional impacts to those assessed as part of the original project, the impacts are not anticipated to be material beyond those described and assessed in the EIS (EMM 2022a) for the project. The project remains consistent with the relevant objects of the EP&A Act and the principles of ESD, and the proposed amendments do not significantly change the nature of the project originally proposed.

Overall, the project will achieve the following benefits:

- Contributions 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.
- Alignment with Commonwealth and NSW Government electricity policies and strategies and regional plans.
- Provision of 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.

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