APPENDIX B

Detailed description of the amended project

B.1 Overview

The project involves the development, construction and operation of a solar PV electricity generation facility and BESS, which consists of PV modules, trackers, batteries, inverters, transformers and associated infrastructure, as well as the construction and operation of a temporary accommodation facility to accommodate the construction workforce required for the project.

The impact footprint provided in Figure B.1 incorporates the land required for the:

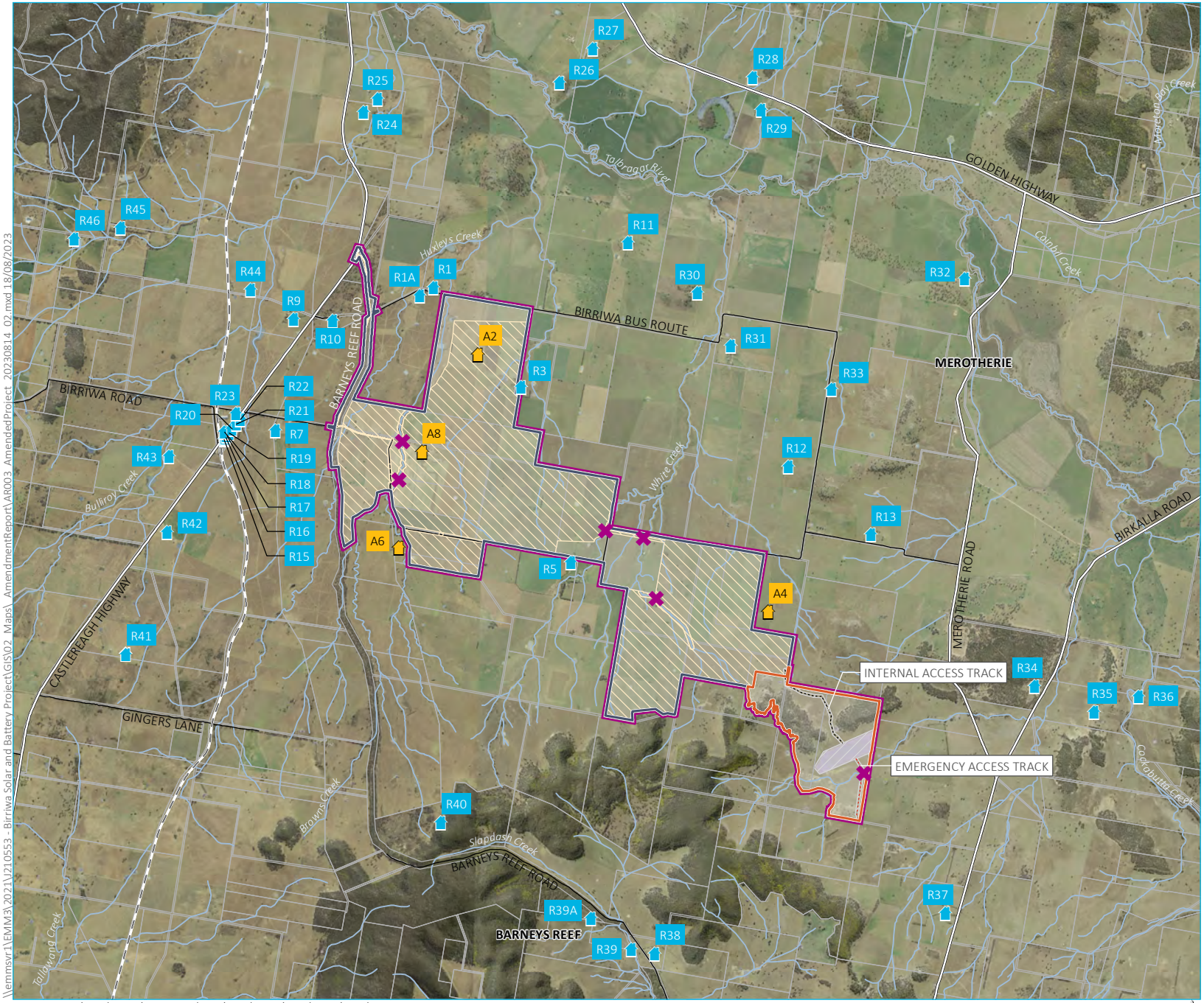
- development footprint, including:
    - PV modules and associated mounting infrastructure including tracking systems
    - operational infrastructure area (including substation, BESS and ancillary infrastructure including an operations and control building)
    - electrical collection and conversion systems
    - underground and aboveground cables
    - parking and internal access roads
    - security fencing
    - a temporary construction compound including laydown area
    - accommodation facility
    - access track from the accommodation facility to the solar and BESS study area
    - emergency access track providing a secondary access from the accommodation facility
- road upgrade corridor (i.e. area of direct impact for public road upgrade works)
- construction footprint of public road crossings (i.e. area of direct impact for public road crossings).

During the preparation of the EIS, the development footprint within the study area was 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.

The project will have a targeted 'sent out' electricity generating capacity of approximately 600 MW (AC) and up to 600 MW energy storage for up to 2 hours (1,200 MWh). The final number of PV modules within the development footprint will be dependent on detailed design, availability and commercial considerations at the time of construction.

The project will connect to the proposed Merotherie Energy Hub via one of two indicative connection points (refer to Figure B.1). The exact location of the interface point between the project and the Merotherie Energy Hub is currently being defined in consultation with EnergyCo.

The 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 development footprint. A section of Barneys Reef Road and Birriwa Bus Route South will require upgrades to provide safe access to the development footprint during construction of the project.



KEY

- Solar and BESS study area
- Accommodation facility study area
- Project area (offset for visual display)
- Accommodation facility infrastructure area
- Accommodation facility development footprint
- Solar and BESS develoment footprint
- Potential creek crossing point
- Associated residence
- Non-associated residence
- Access track
- Emergency access track

Existing environment

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

Amended project

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

0 2.5 5 km

GDA 1994 MGA Zone 55

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Birriwa Solar and BESS Project
Amendment Report
Figure B.1

EMM creating opportunities

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B.1.1 Study area

The study area is around 1,535 ha and extends (wholly or partly) over 20 freehold land parcels and one parcel of Crown land. A schedule of lands for the study area is provided in Table B.1 and shown in Figure B.2. Bolded text indicates additional lots as part of the amendment.

Table B.1 Involved lots within the project area

Project infrastructure component	Lot	Deposited plan (DP)
Solar and BESS study area	82	DP750755
	70	DP750755
	54	DP750755
	48	DP750755
	47	DP750755
	45	DP750755
	43	DP750755
	39	DP750755
	37	DP750755
	36	DP750755
	35	DP750755
	34	DP750755
	32	DP750755
	31	DP750755
	30	DP750755
	16	DP750755
	12	DP750755
	1	DP1004819
	One parcel of Crown land 15 parcels of Crown land (paper roads) 13 parcels of Local Government roads	-
Accommodation facility study area	**53**	**DP750755**
	55	**DP750755**
	Parcels of Crown land (paper roads) – refer to Figure B.2	-

Note: The schedule of lands is also taken to include any crown land and road reserves contained within the study area.

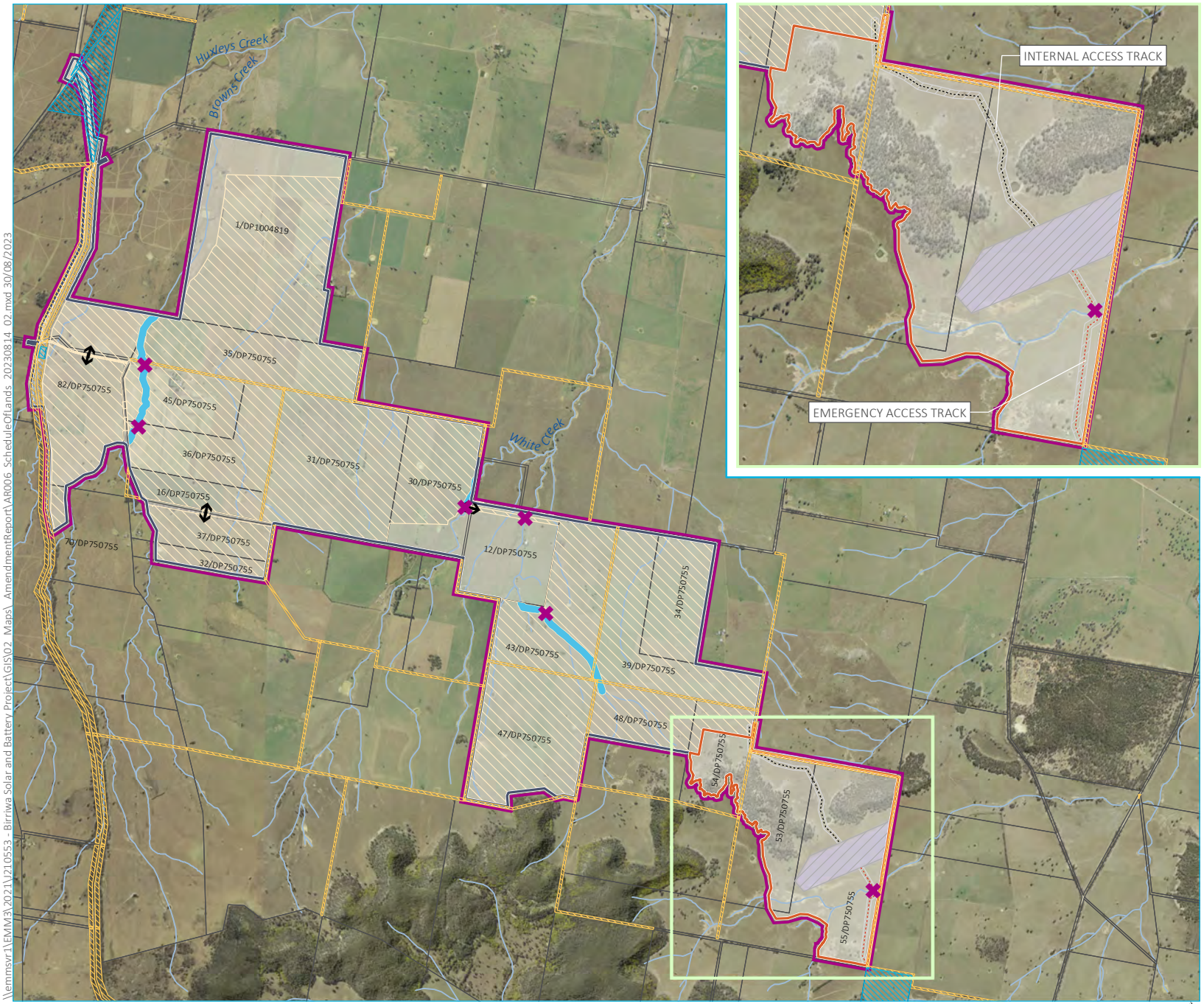
The project development footprint sits within the study area and is the maximum extent of ground disturbing works associated with the construction and operation of the project. The project development footprint has been reduced in size from that originally considered in response to engagement with local residents, and the outcomes of environmental assessments and constraints identification, and comprises:

- the solar and BESS development footprint (area to be developed within land where ACEN hold landholder agreements)
- road upgrade corridor (area of direct impact for public road upgrade works along the access route)
- construction footprint of public road crossings (area of direct impact for construction of public road crossings to allow construction and operational traffic and cable crossings between different land parcels)
- accommodation facility development footprint (area comprising the operational components of the accommodation facility, access track from solar and BESS study area to the accommodation facility, and an emergency access track).

In addition, restricted development areas have been identified which include land within the project development footprint where disturbance will be avoided, wherever possible, with the exception of that required for the provision of fencing, access and electrical reticulation (i.e. private internal access roads and electrical cables).

As described in the EIS (EIS Section 2.5), a number of alternative arrangements have been considered throughout the project refinement process for the placement of internal access roads, as well as the proposed footprints for the substation and BESS infrastructure. ACEN has adopted a flexible approach to design for this infrastructure to ensure that the final location can respond to identified social and environmental impacts and constraints.

As described in Chapter 4 of the EIS, 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. 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. The proposed subdivision is shown in Figure B.3 including indicative areas of existing and proposed subdivided lots.



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

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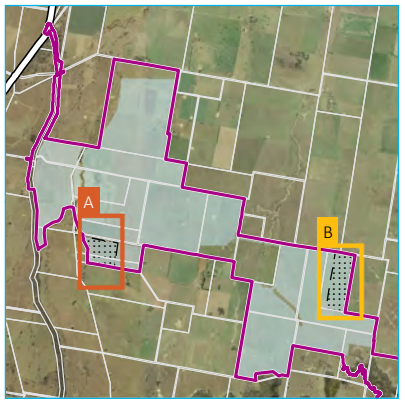
Schedule of lands within the project area

Birriwa Solar and BESS Project
Amendment Report
Figure B.2

EMM creating opportunities



KEY

- Project area
- Proposed operational infrastructure area, including operational area, substation and BESS/proposed subdivision
- Connection point (option A or B)
- Development footprint

Existing environment

- Dwelling not associated with the project
- Dwelling associated with the project
- Cadastral boundary

Note: Indicative substation lot division, subject to detailed design and option chosen

BESS subdivision

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

0 100 200 m

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Birriwa Solar and BESS Project
Amendment Report
Figure B.3

EMM creating opportunities

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B.1.2 Physical layout and design

The project is subject to detailed design. Aspects of the project (including the siting of project elements and construction methodology) are subject to change during the detailed design process but will otherwise not lie beyond the development footprint identified on Figure B.1. This EIS is based on consideration of reasonable worse case environmental impacts to allow flexibility in design and construction methodology. The road corridor upgrade and public road crossings have been based on a concept design plan (refer to EIS Appendix C).

i Project components

a PV modules

The project will involve the installation of rows of PV modules (solar panels) mounted on trackers, with multiple rows making up 'power blocks' or 'arrays' that are connected into a power conversion unit (PCU). The exact number of PV modules and the final configuration will not be determined until the detailed design stage after development approval is granted; however, based on a 600 MW (AC) facility, it is anticipated that there will be approximately 1.2–1.4 million PV modules.

The final electricity generation capacity will also be determined separately through formal consultation with EnergyCo, the to-be-appointed Network Operator of the CWO REZ and the Australian Energy Market Operator and possibly TransGrid, in a distinct connection study process, which will be subject to the capacity limits of the CWO REZ T-Link. As the CWO REZ infrastructure is being developed by EnergyCo on a greenfield basis and the project has been shortlisted by EnergyCo as a Candidate Foundation Generator (CFG) project as part of its recent process, ACEN has every reason to believe that the targeted 600 MW will be achievable. However, considering the early stage of the EnergyCo CFG process and the bespoke connection process that is envisaged as part of this, the MW capacity of the project should not be fixed with regards to the project approval. Regardless, all PV modules will be contained within the development footprint.

The project involves the use of a single axis tracking system. An example of the type of PV modules mounted on a single axis tracking system that may be used is provided in Plate B.1. The PV modules will be installed on racking frames fixed onto a horizontal tracker tube, with this mounted on top of vertical piles driven or screwed into the ground. The PV modules will be installed in rows generally spaced between 8 m and 12 m apart depending on the tracking system selected, the configuration of the panels on the trackers and the final design. The rows of PV modules will be aligned in a north-south direction, allowing the panels to rotate from east to west during the day, tracking the sun's movement.

The PV modules will be up to 1.2 m from the ground when in the horizontal position, while the lower edge of each PV module will be no less than 0.3 m from the ground or above the flood depth level at the maximum tilt angle. The maximum height of the modules to the higher edge from ground level at the maximum tilt angle is expected to be 4.7 m, which is assuming a '2 in portrait' (2P) configuration (i.e. worst case assumption for visual impact assessment). Examples of '1 in portrait' (1P) and 2P configurations are shown in Plate B.1 and Plate B.2.

DC cables will be strung underneath the PV modules, housed in cable trays, or passed through the tracker tubes before being connected to the PCUs.

Source: NexTracker (2018)

Plate B.1 Example of a PV module layout (2 in portrait or 2P configuration)

Source: NexTracker (2018)

Plate B.2 Example of a PV module layout (1 in portrait or 1P configuration)

b Power conversion units

The PCUs comprise three main components (inverters, transformers and a ring main unit) and are designed to convert the DC electricity generated by the PV modules into AC form, which is compatible with the national electricity grid. The PCUs will also increase the voltage of the electricity from 11 kV, which is the typical voltage of the DC system prior to conversion to AC; that is, the electricity generated by the PV modules and the multiple strings collected in Combiner Boxes, converted to AC power and stepped up to 33 kV by the PCUs for transmission to the substation via medium voltage cables buried underground.

The exact dimensions and configuration of the PCUs will be determined during detailed design and the original equipment manufacturers (OEMs) active in the market are constantly developing new products with slightly different MW capacities, designs and dimensions. The PCUs are typically either containerised (20 ft or 40 ft shipping containers) or a skid-mounted or "outdoor" design, which is with the cabinets and transformers mounted on either a steel platform or a thin concrete pad.

An example of what the PCUs may look like within the development footprint is provided in Plate B.3. This particular example, which might be deployed but has not been chosen and is provided for illustrative purposes only, is an outdoor design mounted on a steel skid with dimensions of approximately 8 m in length by 2.6 m wide by 2.7 m high. The exact manufacturer and model to be used will be determined as part of the grid connection studies and the detailed design and procurement phase.

The quantity of PCUs required will be determined during detailed design; however, based on a 600 MW facility and the current range of products in the market that are relevant for this project, it is anticipated that approximately 80–160 PCUs will be required, depending on the final design and procurement decisions made at the time of construction.

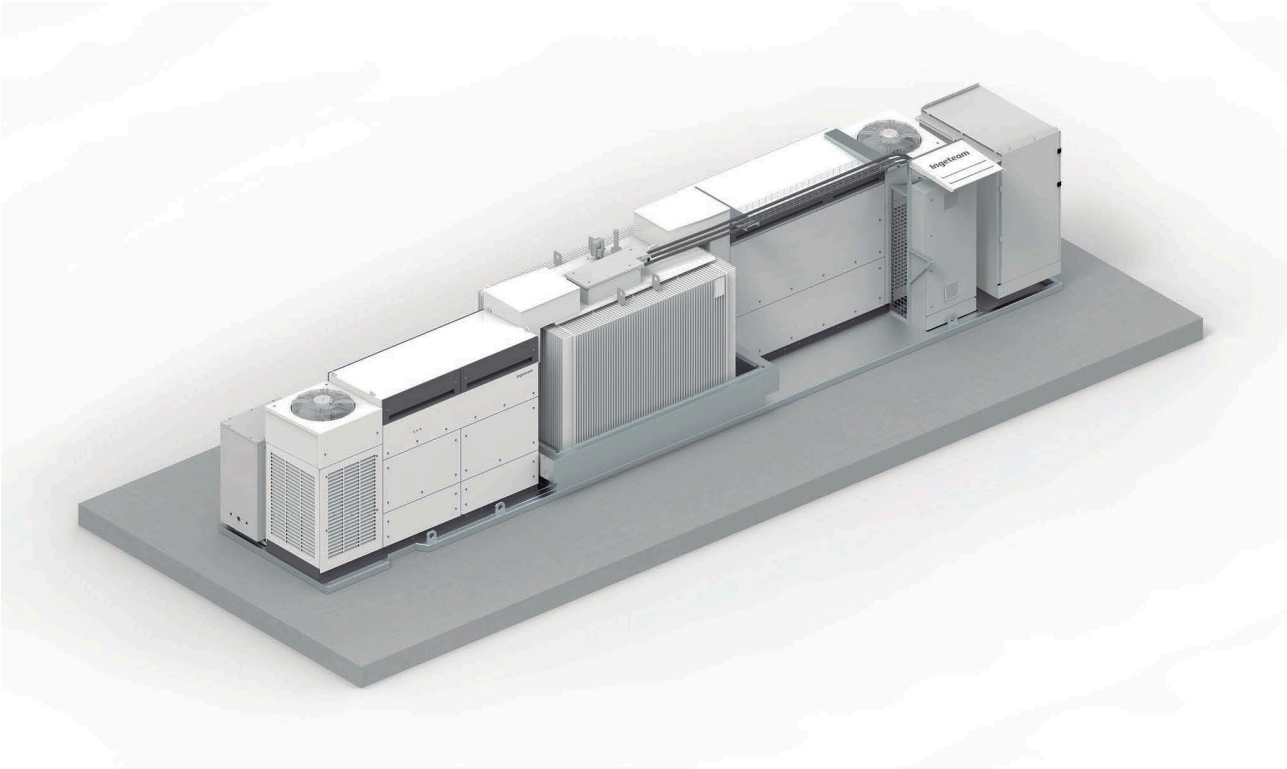


Plate B.3 Example of a PCU mounted on a galvanized steel skid

Source: Ingeteam (2022)

c Electrical reticulation cable network

A medium voltage (MV) cable reticulation network will be required to transport the electricity around the PV module arrays. If underground, cables of either 11 kV, 22 kV or 33 kV will be installed at a depth of at least 600 millimetres (mm) and will be designed and fitted in accordance with relevant Australian industry standards. Electricity from the MV cable network will be stepped up to high voltage (HV) at the substation.

Overhead transmission lines may also be required to transport electricity within the development footprint and restricted areas. The alignment of the overhead transmission lines and design, height and style of the structures required to support them will be determined during the detailed design stage of the project. The easement and distance between each structure required for the overhead transmission lines will be dependent on the type of structure selected.

Small corridors for MV cabling may be required between land parcels in the study area. Disturbance associated with these cabling corridors will be within the development footprint or the construction footprint of public road crossings (Figure B.1). The exact alignments will be determined during detailed design.

As part of the MV cable reticulation network development, waterway crossings will also be required. Waterway crossings will be constructed within the restricted development area (Figure B.1); however, their exact location will be determined during detailed design. It is assumed that each crossing will require a disturbance corridor of up to 40 m wide (including road and cable corridors), which has been allowed for in the biodiversity assessment for the project (refer to Appendix F.1). 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).

d Operational infrastructure area

An operational infrastructure area will be constructed at one of two location options within the development footprint (Figure B.1) and will include the BESS, substation and supporting infrastructure.

Battery energy storage system

The purpose of the BESS will be to support the transmission network via the Frequency Control and Ancillary Services (FCAS) markets, introduce a dispatchable capability to the project's energy generation profile and allow for revenue diversification. Depending on the choice of inverters for the BESS it may also provide system strength related services to support the solar farm's operation in the network, if required in the future.

In relation to the capacity of the BESS, it is noted that while approval is sought for a 600 MW capacity system, the project design initially included a BESS with a 1,000 MW capacity/1,000 MWh system. For the purposes of the impact assessment within this EIS a 1,000 MW/1,000 MWh system was initially assessed. However, following the results of predicted exceedances of the relevant noise criteria at some non-associated residents at a higher storage capacity, the capacity of the BESS has been revised and reduced to 600 MW for a 2-hour duration (1,200 MWh). A higher capacity of 1,000 MW was assumed for the purposes of estimating the required construction workforce for the project, which then defines the traffic assumptions and workforce assessed as part of the traffic and social impact assessment respectively.

The project therefore includes a centralised BESS of up to 600 MW capacity, with a storage duration of up to 2 hours (1,200 MWh). The specific technology, MW rated capacity and energy storage of the proposed BESS will be determined during the detailed design stage of the project and will be dependent on a number of commercial and financial considerations. Primarily, market need is what will dictate the final MW and MWh energy storage configuration, as a battery designed to primarily provide FCAS services for example requires only a short duration, whereas a battery designed for "generation-shifting" of the solar component of the project would logically have a longer duration with the MW capacity possibly aligned with an offtake (Power Purchasing Agreement). The sizing of the BESS may also be driven by government policy given the current focus on mechanisms to ensure reliability and dispatchability of renewable energy power generation, including the Energy Security Board's consultation on the design of a capacity mechanism.

The BESS will be adjacent to the substation within one of two proposed operational infrastructure areas (Figure B.1) and will be housed within either outdoor standalone racks, shipping containers or dedicated use buildings. The specific design details for the BESS and their respective enclosure types have not been confirmed.

Each of the operational infrastructure areas presented in Figure B.1 provide adequate flexibility for design and siting of the applicable BESS at each location. Indicative footprint sizes and infrastructure heights for the potential BESS structures are summarised in Table B.2. These dimensions should be considered indicative only. Exact dimensions will be refined during the detailed design stage of the project.

Table B.2 Comparison of BESS design options

BESS design	Indicative footprint	Height of dominant infrastructure	Maximum height of infrastructure
Outdoor standalone rack	8.6 ha	3.8 m	25 m (lightning protection)
Containerised	9.5 ha	3.8 m	
Dedicated use building	9.4 ha	7.5 m	

The major components for each BESS design include:

- Batteries – the specific battery module manufacturer and model has not been selected; however, it will likely be a type of lithium-ion battery.
- Inverters – convert the DC electricity generated by the PV modules into AC. Potential use of grid forming inverters is to be considered once the grid connection studies are commenced as part of the EnergyCo process.
- Transformers – typically integrated with the PCUs along with the inverters; the exact configuration (size, design etc) of the transformers will be subject to the type and size of battery racks used and the BESS configuration.
- Heating ventilation air conditioning (HVACs) – used as part of the BESS to maintain the batteries at a temperature that will optimise their lifetime and performance.
- Fire protection – fire protection systems will be installed and could include automatic gas fire extinguishing systems, thermal sensors and/or smoke and temperature detectors connected to a fire control panel.

The components described above will be similar for each of the BESS structures likely to be constructed as part of the project. As noted above, the specific design details for the BESS have not been confirmed and will not be known until the completion of the detailed design stage of the project.

Substation

Electricity from the medium voltage electrical reticulation cable network will be increased to high voltage electricity at the substation, to match the voltage of the network at the connection point. The substation will sit within one of the two nominated operational infrastructure areas (Figure B.1).

The substation will consist of an indoor switch room to house the medium voltage switchboard and circuit breakers, and an outdoor switch yard to house the transformer(s), gantries and associated infrastructure. A security fence will be installed around the substation to maintain project site security and public safety.

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.

From the substation, electricity generated by the project will be injected into the grid at the development footprint boundary via one of two indicative connection points (Figure B.1). The exact location of the interface point between the project and the Merotherie Energy Hub are being defined in consultation with EnergyCo.

Ancillary infrastructure

In addition to the BESS and substation, the operational infrastructure area will house:

- a workshop and associated infrastructure
- a temperature-controlled spare parts storage facility
- staff office, operations and control room, meeting facilities, amenities and carparking.

e Supporting infrastructure

In addition to the infrastructure described above, the project will also require:

- a number of new internal roads to facilitate access within the development footprint to allow for construction and ongoing maintenance
- fencing and landscaping.

Chain-link (or mesh) security fencing will be installed within the study area to a height of up to 2.4 m. The specific location of the security fencing will be determined in consultation with the contractors selected for the construction of the project and project landholders. Fencing will restrict public access to the development footprint. Where possible, fencing will be positioned to minimise disruption to ongoing agricultural operations on land adjacent to the development footprint.

A temporary laydown area will be required during the construction stage of the project and will include laydown and storage areas and a compound, located within the development footprint. A temporary laydown area for the road upgrade is also proposed on an area previously disturbed at the entrance of Barneys Reef Road, off the Castlereagh Highway. The final location for the temporary laydown area, indicatively shown on Figure B.1, will be defined in consultation with Warrumbungle Shire Council and Mid-Western Regional Council. The area used for the temporary laydown area within the development footprint will be revegetated or have PV modules and associated infrastructure installed once it is no longer required.

f Accommodation facility

The proposed accommodation facility infrastructure area will comprise prefabricated demountable units, that will be delivered to site. Plate B.4 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 B.1. This amendment report and associated assessments are based on consideration of reasonable worse case impacts to allow flexibility in design and construction methodology.

Plate B.4 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 B.4. An example of the typical layout of a four-bed unit is provided in Figure B.5.

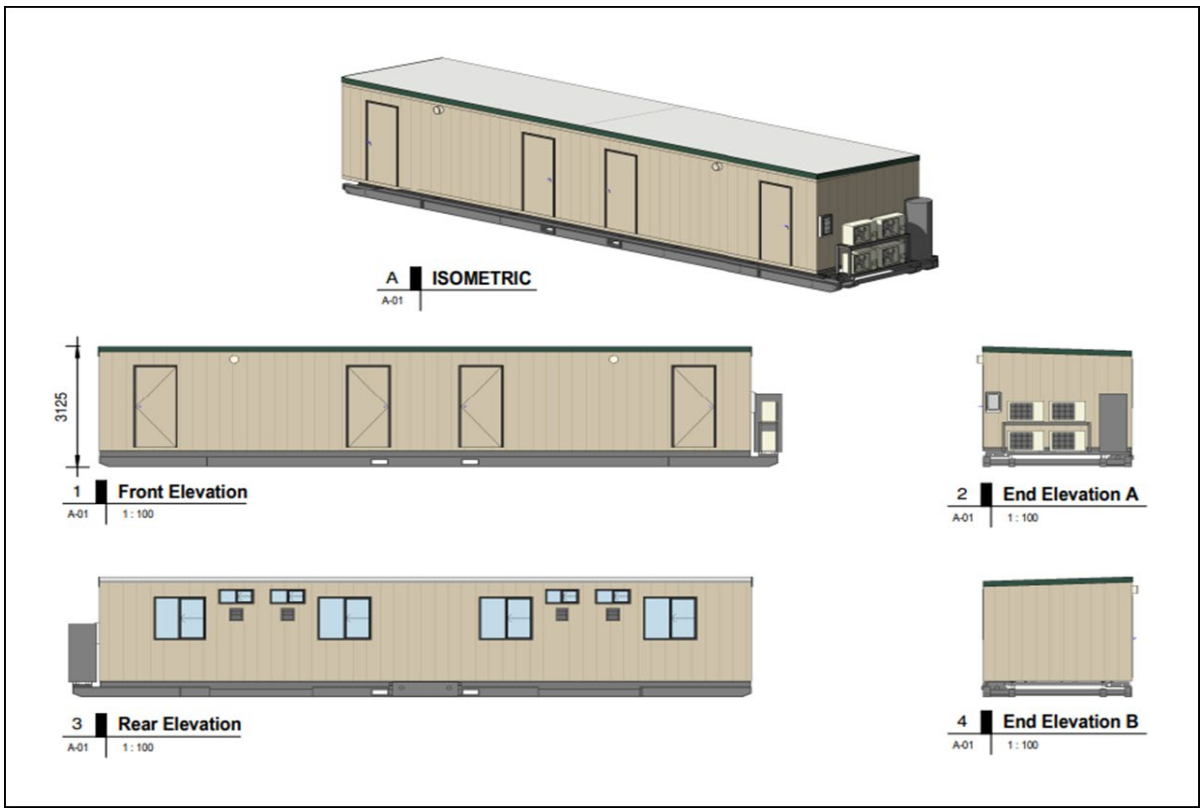


Figure B.4 **Example of workforce accommodation units – external view**

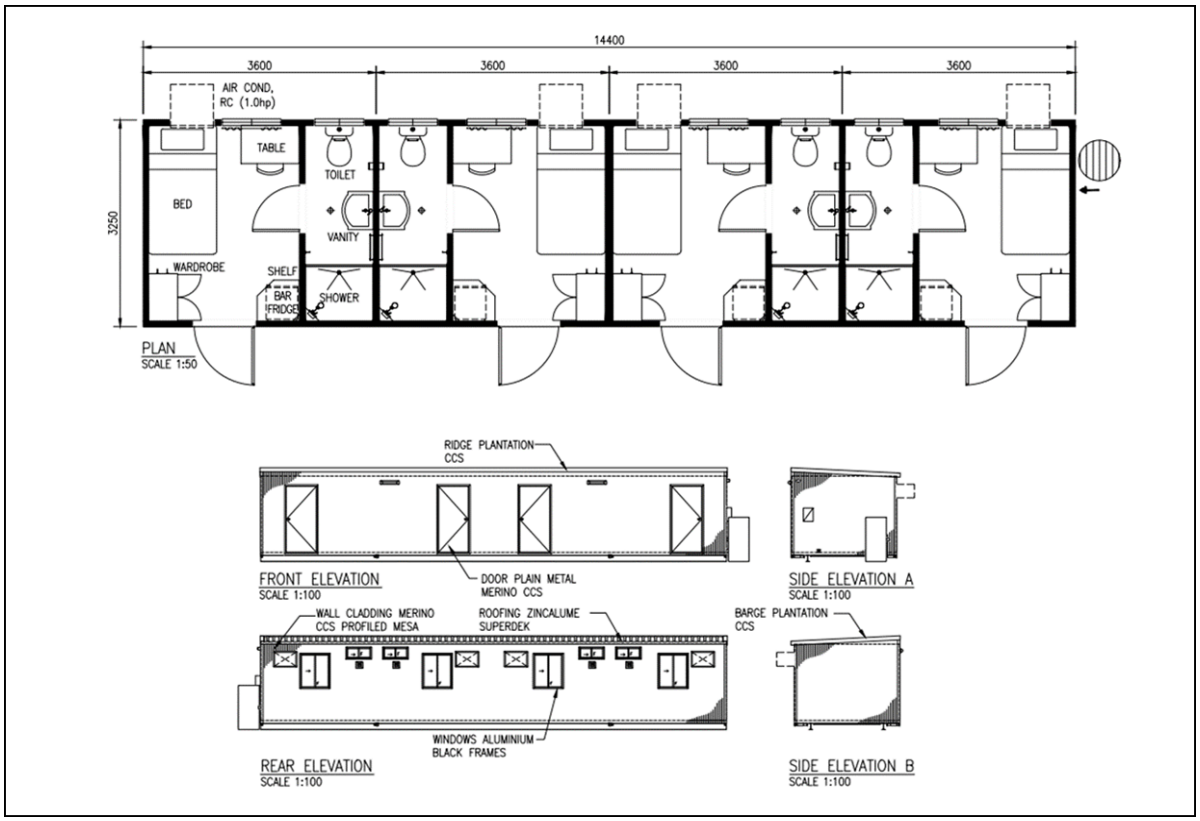


Figure B.5 **Example of workforce accommodation units – typical layout**

The demountable units may be constructed in stages of up to the 500 person capacity as construction of the project progresses. 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 B.6 and Figure B.7 provide examples of a 500 person capacity accommodation facility layout. The exact layout to be adopted will be confirmed as part of detailed design and will be based on the specific requirements of the site.

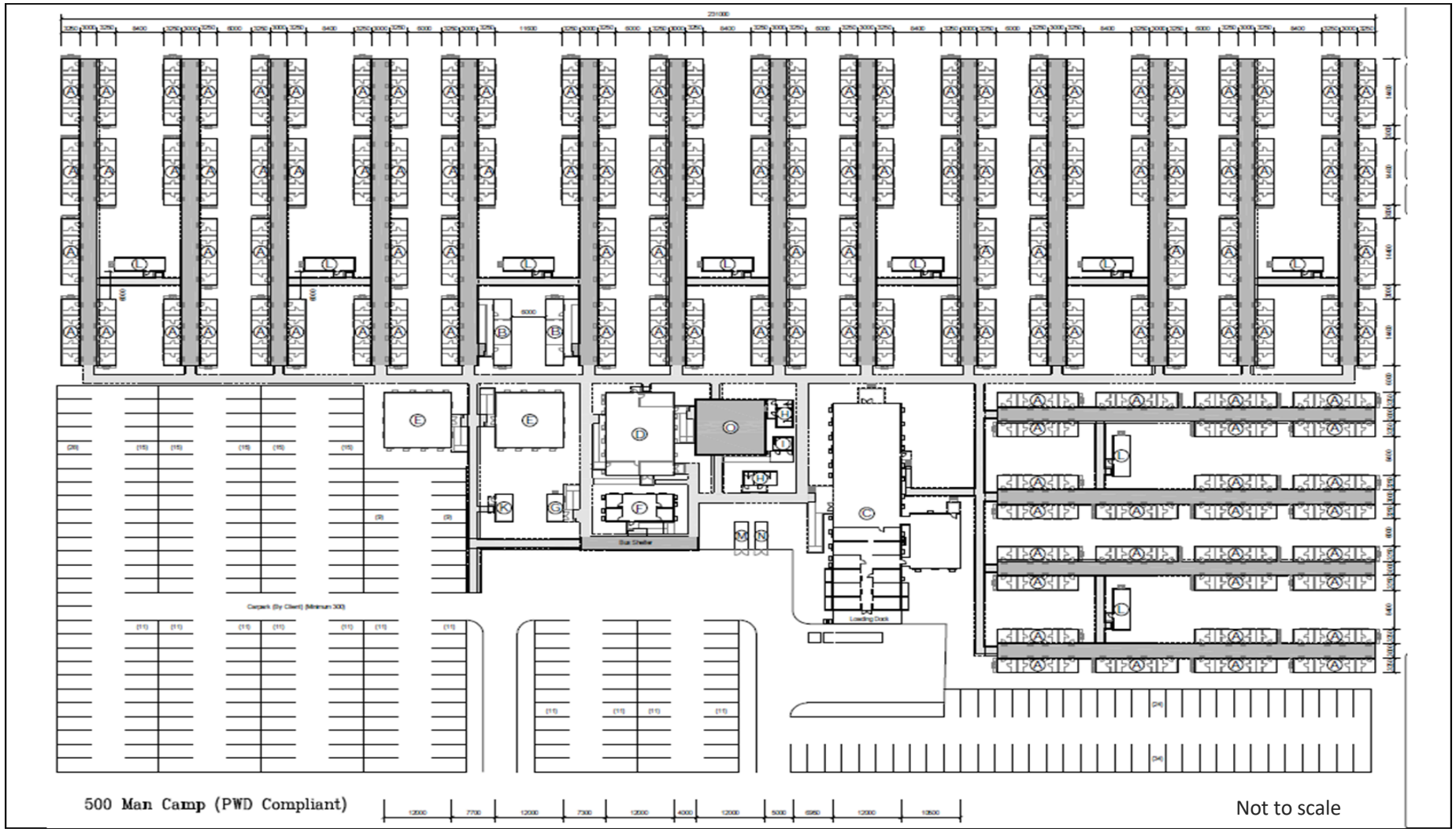


Figure B.6 Example 1 – layout of a 500 person accommodation facility

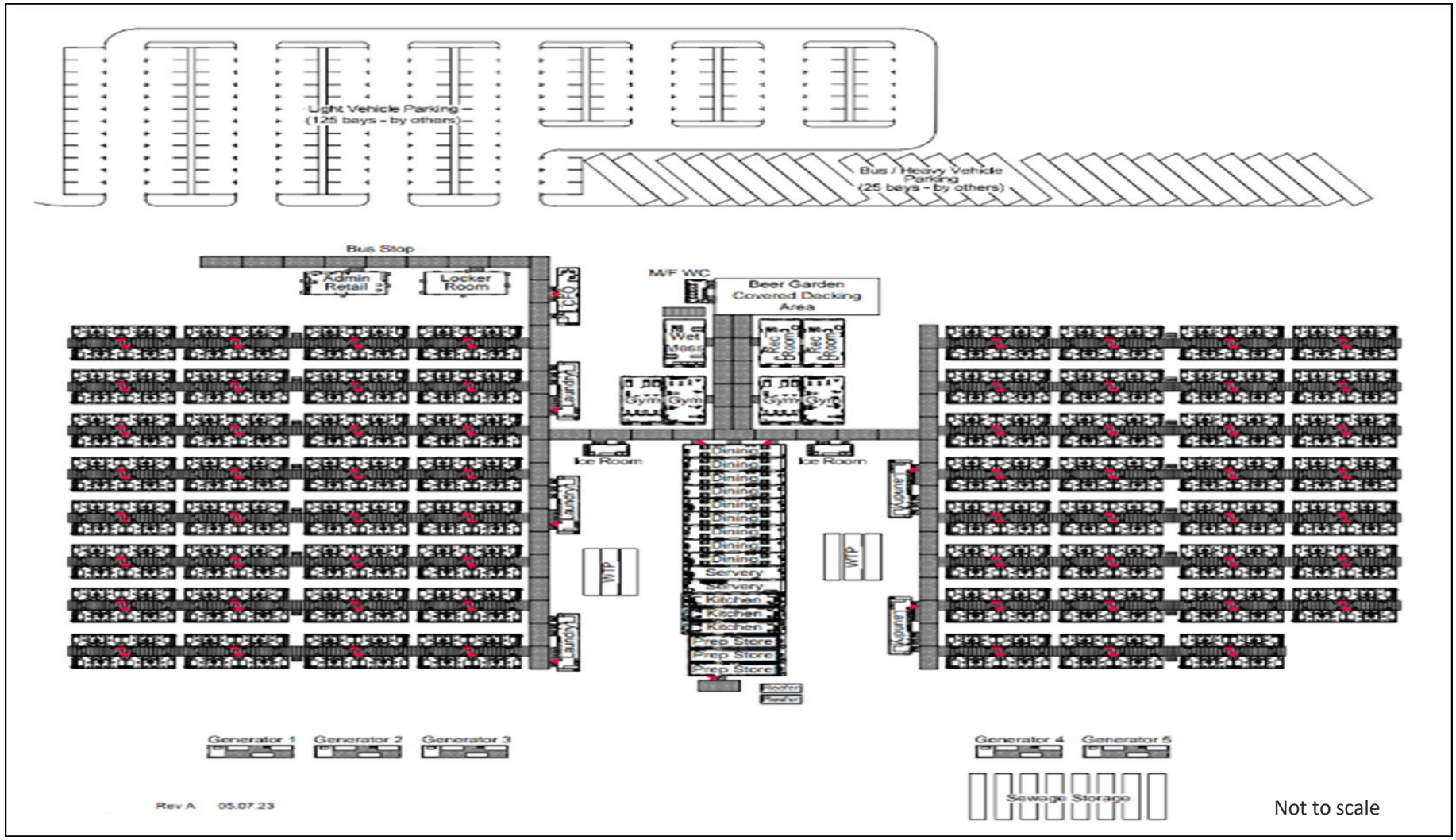


Figure B.7 Example 2 – layout of a 500 person accommodation facility

ii Project access

a 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 (refer to Figure B.1).

Internal access roads will be constructed to facilitate access to the remainder of the development footprint; however, up to three public road crossings will be constructed to allow project-related vehicles to move across public road corridors and between parcels of land that form part of the development footprint (Figure B.1). These crossings will reduce the impact of project-related vehicles on the local road network and maximise the use of the project's internal road network during construction and operations. Design considerations of the public road crossings have been determined in consultation with Mid-Western Regional Council and have been located in areas to avoid vegetation impact or clearance. A typical public road crossing concept design is included in Appendix C of the EIS.

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.

An internal emergency access track will be constructed south of the accommodation facility infrastructure area, suitable for emergency vehicles (Figure B.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.

In addition, waterway crossings will be required to facilitate vehicle movements and cable crossings within the development footprint. Waterway crossings are proposed within the restricted development area (Figure B.1); however, their exact location will be determined during detailed design. It is assumed that each crossing will require a disturbance corridor of up to 40 m wide (including road and cable corridors). The design and construction of waterway crossings and cable crossings will generally comply with the *Guidelines for controlled activities on waterfront land – riparian corridors* (Natural Resources Access Regulator, 2018); *Guidelines for laying pipes and cables in watercourses on waterfront land* (NSW Office of Water 2012); *Policy and Guidelines for Fish Friendly Waterway Crossings* (DPI 2003) and *Guidelines for Watercourse Crossings on Waterfront Land* (DPI 2012).

Proposed transport routes from both Sydney and Newcastle ports are included in Figure B.9.

b Road upgrades

Proposed upgrades to the primary vehicle access route are summarised in Table B.3.

Table B.3 Road upgrades and project access

Road	Location	Upgrade requirements	Timing
Castlereagh Highway/Barneys Reef Road	Intersection	Basic left turn (BAL) and basic right turn (BAR) treatment to cater for the largest vehicle accessing the project (excluding over-dimensional vehicles).	Prior to construction
Barneys Reef Road	Whole road	7.2 m road carriageway (including 3.1 m travel lanes and 0.5 m shoulders).	
Barneys Reef Road/Birriwa Bus Route South	Intersection	Basic left turn (BAL) and basic right turn (BAR) treatment to cater for the largest vehicle accessing the project (excluding over-dimensional vehicles).	

Table B.3 Road upgrades and project access

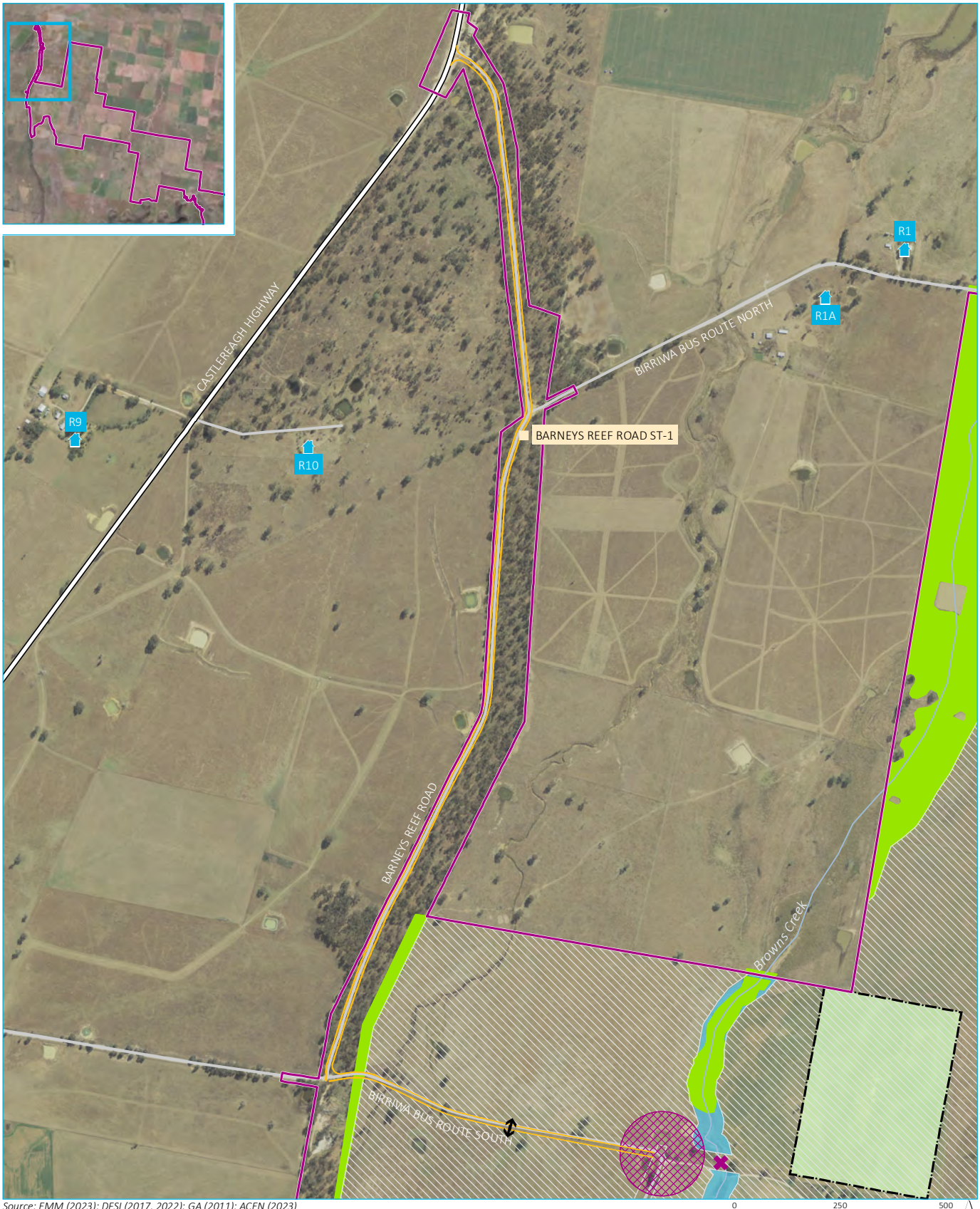
Road	Location	Upgrade requirements	Timing
Birriwa Bus Route South	From intersection with Barneys Reef Road to project access point	7.2 m road carriageway (including 3.1 m travel lanes and 0.5 m shoulders).	
	Project access point	Rural property access type.	
	Public road crossings	The design considerations of the public road crossings have been determined in consultation with Mid-Western Regional Council and have been indicatively located in areas to avoid vegetation impact or clearance. A typical public road crossing concept design has been included in Appendix C of the EIS.	

A concept engineering design (Appendix C of the EIS) for the road upgrade corridor has been developed in consultation with Warrumbungle Shire Council and has been used to inform the extent of the road upgrade corridor in Figure B.8. To facilitate construction, the indicative design works indicate that there will be a requirement for a maximum disturbance of approximately 4 ha. This includes areas of native vegetation, non-vegetated land (i.e. hard surfaces or gravelled tracks and driveways), vegetation within the maintained easement and exotic vegetation. The road upgrade corridor utilises existing roads, tracks and maintained road shoulders to the extent practicable to minimise the amount of vegetation clearing and surface disturbance required. In particular, the conceptual road upgrade design has sought to minimise the clearance of native vegetation as much as possible, with approximately 1.29 ha of native vegetation proposed to be cleared to facilitate the access road upgrade.

The road upgrade corridor that has been assessed as part of the EIS and supporting technical assessments is conservative and provides flexibility for the final road alignment during detailed design. The extent of the road upgrade corridor may be refined (i.e. reduced) prior to determination, subject to the outcomes of consultation with Warrumbungle Shire Council and Mid-Western Regional Council. Wherever possible, the final road alignment will avoid clearance of native vegetation.

Where the road upgrade corridor extends beyond the road reserve into private property, landowner's consent has been sought to support the lodgement of the development application for the project.

A final design will be prepared in consultation with Warrumbungle Shire Council and Mid-Western Regional Council; however, the final design will not increase the extent of the road upgrade corridor.



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

0 250 500 m

GDA 1994 MGA Zone 55

N

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KEY

- Project area

Impact footprint

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

Project layout

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

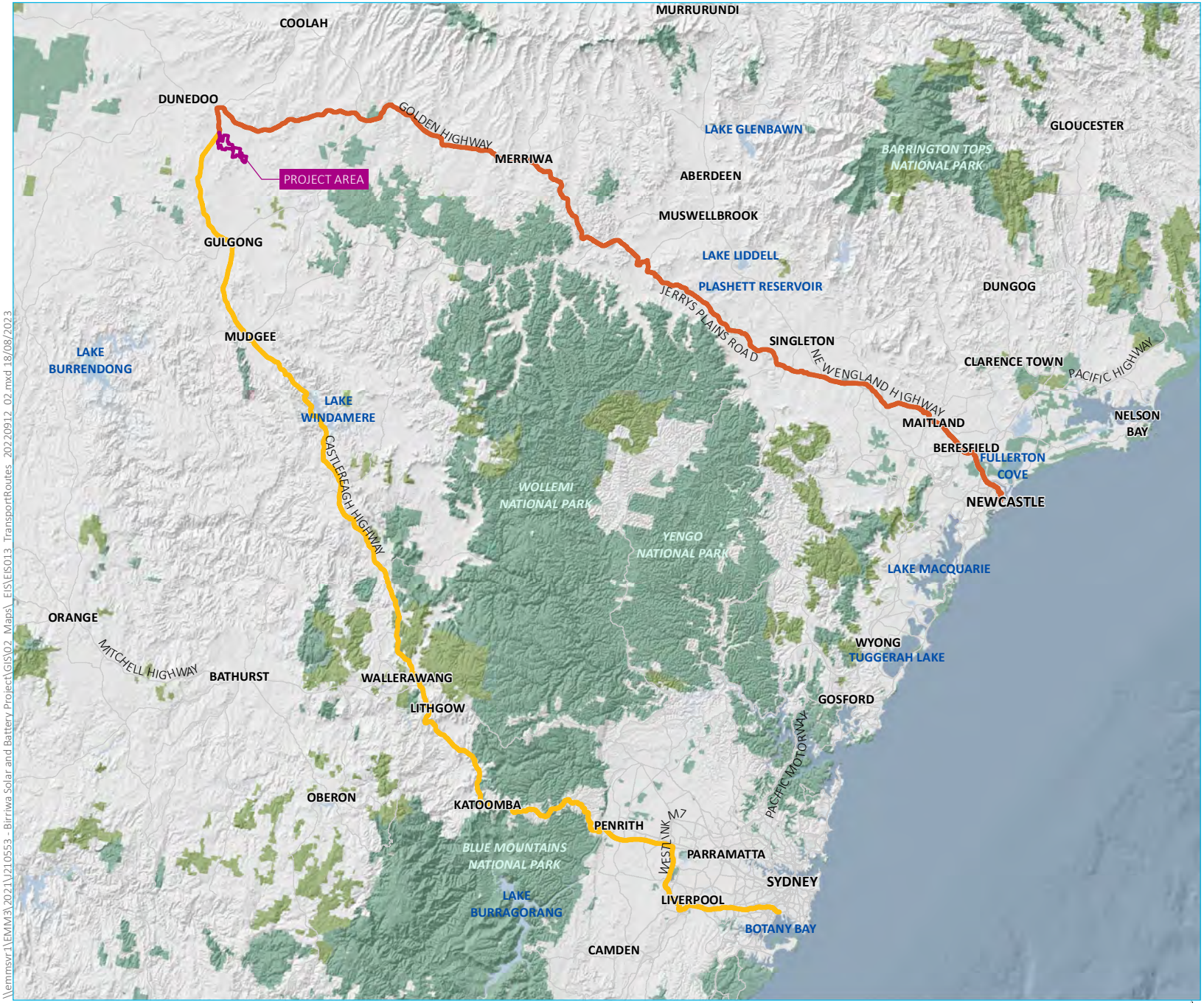
Existing environment

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

Proposed road upgrades

Birriwa Solar and BESS Project
Amendment Report
Figure B.8

EMM creating opportunities



KEY

- Project area
- Proposed transport route
  - Sydney
  - Newcastle
- **Existing environment**
  - Major road
  - Named waterbody
  - NPWS reserve
  - State forest

Source: EMM (2023); DFSI (2020, 2021); GA (2011); ACEN (2023)

0 25 50 km

GDA 1994 NSW Lambert

N

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Proposed transport routes

Birriwa Solar and BESS Project
Amendment Report
Figure B.9

EMM creating opportunities

iii 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 Water

Solar and battery project

Water demands for the solar and battery project during both construction and operation will be sourced preferentially from:

- commercial suppliers of treated wastewater (water trucks), or
- farm dams within the study area (for non-potable construction purposes to minimise use of imported water and in accordance with the harvestable rights provisions).

Water sources will be determined in consultation with suppliers and landholders and be subject to availability. The project will not impact adjacent licensed water users or basic landholder rights during construction.

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

During operations, approximately 7.5 ML of non-potable water will be required annually for ongoing maintenance activities such as cleaning PV modules (indicatively once a year) and vegetation management and for amenities and potable purposes by operational staff.

Additional water will also be required for fire protection. Volumes will be determined during detailed design; however, it is anticipated that up to 80 kL will be required as an emergency water supply for firefighting within the development footprint and up to 650 kL will be required for the fire protection systems associated with the BESS.

In summary, project water requirements are anticipated to be:

- construction (assuming 28 month construction period) = 218 ML
- operations (assuming a 30 year operational life and an allowance of 1 ML for fire protection) = 225 ML.

Accommodation facility

It is estimated that the accommodation facility will require an addition of approximately 250 litres (L) of potable water per person per day (up to 125,000 L per day based on 500 people). 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.

b Telecommunications

Telecommunication utilities are not available at the site. As such, the cellular network will be used during construction. During operations, connection to telecommunications will be via optical fibre expected to be installed along transmission lines, with cellular backup.

c Sewer

Solar and battery project

There is no sewer access at the site. Amenity facilities for the solar and battery project construction will be pumped out via tanker and delivered to the closest available sewage treatment facility or as agreed with Mid-Western Regional Council during construction. ACEN or its contractors will consult with Mid-Western Regional Council prior to commencement of construction to reach an agreement.

Accommodation facility

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.

d Electricity

Solar and battery project

Access to electricity during construction activities will be via the local distribution network where available and via diesel generation where access to the grid is unavailable.

Electricity requirements during operation will include lighting, staff computers, domestic appliances and on-site security systems during operations. Electricity generated by the project will be used for most activities during operations, except for maintaining the inverters and transformers during the night which will involve a small amount of auxiliary load being supplied from the grid.

Accommodation facility

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.

e Waste (putrescible, recyclable and general)

Accommodation facility

It is estimated that the accommodation facility will produce 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 tanks 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.

ACEN will continue to consult with Mid-Western Regional Council to identify opportunities to limit the solid waste entering local landfill facilities, prior to finalisation of detailed design and construction of the accommodation facility commencing.

f Waste (grease)

Accommodation facility

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.

B.1.3 Uses and activities

i Construction

a Staging

The anticipated period of construction for the project is 28 months, which is expected to commence in early 2024. The accommodation facility will be operational for the duration of the project construction phase, unless approved for use by future ACEN developments in the CWO REZ.

The construction of the project will generally include the following overlapping stages:

- 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 temporary construction 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 and pre-construction activities

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

Site establishment works and preparation for construction may include:

- The establishment of a temporary construction compound in a fenced-off area within the development footprint including:
  - a project office
  - containers for storage
  - workshops
  - parking areas
  - workforce amenities
  - temporary laydown areas, including those associated with public road upgrades.
- 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 the project.
- Ongoing geotechnical investigations to confirm the ground conditions within the project.
- Preliminary earthworks and 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 development footprint. 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 during the construction stage of the project.

Earthworks will be limited to the locations requiring resurfacing activities for temporary construction facilities (including laydown areas, construction compounds and carparking areas) and permanent operational infrastructure such as the substation, BESS and ancillary infrastructure. A small level pad area may need to be prepared for the PCUs depending on which specific solution is chosen in detailed design.

Minor earthworks will also be required to prepare the development footprint for the installation of prefabricated demountable units, car parking, and the rows of PV modules including some grading or levelling including "cutting and filling" where required. The need for heavy earthworks and compaction is expected to be low due to the flat topography of the development footprint and will be minimised as much as practicable. Farm dams may be filled in if this does not have adverse hydrology impacts as assessed in this EIS.

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

c Activities

Upon completion of the site establishment and pre-construction activities described above, construction activities will typically be rolled out as follows:

- Accommodation facility:
  - Installation of 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.
  - 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.
- Solar and battery project:
  - installation of steel piles and mounting system for the tracking system and PV modules
  - secure PV modules to mounting system
  - trenching and installation of DC cabling and medium voltage cables
  - installation of PCUs either on steel skids, concrete pads or in modified shipping containers
  - construction of workshop and associated infrastructure, temperature-controlled spare parts storage facility, permanent staff office, operations and control room, meeting facilities, amenities and carparking

- construction of the substation (including grid connection-related infrastructure)
- establishment of the BESS compound
- installation of battery racks either in cabinets, modified shipping containers or sheds
- installation of inverters associated with the BESS
- test and commission project infrastructure
- removal of temporary construction facilities.

d Plant and equipment

The plant and equipment required for the construction of the project 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
- pile-driving equipment
- assisted material handling equipment (forklifts and cranes)
- machinery and equipment for installation of the substation and BESS
- generators
- water trucks for dust suppression.

e Delivery of construction material and infrastructure

Construction materials and infrastructure will be transported to the development footprint via road. Heavy vehicles up to 19 m in length will require access to the accommodation facility development footprint, and heavy vehicles up to 26 m in length and over-dimensional vehicles will require access to the solar and BESS development footprint. Construction materials and infrastructure delivered to the project development footprint will include:

- pre-fabricated demountable units (staged delivery)
- PV modules
- piles
- tracking tubes and associated tracker equipment (e.g. motors, bearings, drivetrains, etc)
- electrical infrastructure including cabling and PCUs
- construction and permanent operations and maintenance buildings and associated infrastructure
- earthworks and lifting machinery and equipment.

f Transport routes and vehicle movements

Construction materials and infrastructure are anticipated to be transported to the study area 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.

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; however, it is anticipated to include people travelling from Gulgong, Mudgee, Dunedoo, Dubbo and surrounds.

All project-related vehicles will use the primary vehicle access route described in Section B.1.2iia.

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 is expected to build up during peak accommodation facility installation activities.

Approximately 40 oversize and/or overmass (OSOM) vehicles will be required during the construction phase of the solar and battery project for deliveries (e.g. transformers and prefabricated buildings). It is anticipated that there will be no more than one OSOM vehicle travelling to the study area per day. The maximum estimated length of the OSOM vehicles is estimated to be up to 120 m. It is anticipated that decommissioning will require the same number of OSOM vehicles (i.e. to remove the infrastructure). The OSOM vehicles considered in the EIS relate to high-risk over-dimensional vehicles. Special purpose vehicles, restricted access vehicles and exempt OSOM vehicles are included in the number of heavy vehicles assessed in the EIS.

No OSOM vehicle movements are anticipated during operations.

Estimated maximum vehicle movements per day during construction are provided in Table B.4.

Table B.4 Estimated *peak daily* vehicle movements during construction

Vehicle type	Peak movements per day
Light vehicles	720
Heavy vehicles	240
Shuttle buses	26
OSOM	1
Total	**987**

The potential impacts of project-related vehicle movements on the local and regional road network have been assessed as part of the Traffic impact assessment (EMM 2022c, Appendix H of the EIS) and in Section 6.2.3 of this amendment report.

g Hours

Construction activities will be undertaken during standard daytime construction hours consistent with the *Interim Construction Noise Guideline* (ICNG) (DECC 2009), with the addition of work on Saturday afternoons from 1:00 pm to 6:00 pm, as follows:

- 7:00 am to 6:00 pm Monday to Friday
- 8:00 am to 6:00 pm on Saturdays
- no works on Sundays or public holidays.

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

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.

The allowance for works to be undertaken on Saturday afternoons is being requested by ACEN to help minimise the construction schedule duration without significantly increasing the peak workforce numbers. This is seen as having two primary benefits for the community, which is firstly that workers who move to the area for the construction phase will not be idle on a Saturday afternoon, and secondly that by limiting the need for additional workers to stay within a given construction schedule, this will have less of an impact on local accommodation availability. The noise assessment has considered this out of hours work on Saturday afternoons (EMM 2022d, Appendix K of the EIS), and proposed mitigation measures to ensure compliance with the relevant noise management limits (NMLs).

Other out of hours work and extended construction hours may be required on limited occasions such as for special deliveries to minimise road traffic disruption, or in the case of emergencies. The Secretary, Mid-Western Regional Council, Warrumbungle Shire Council and surrounding landholders will be notified of any foreseeable exceptions.

h Workforce

The project will require a peak construction workforce of up to 800 people (assuming concurrent construction of the solar and BESS infrastructure). The construction of the accommodation facility will require approximately 25–30 staff, accommodated in the local area. 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.

Consultation will continue with Mid-Western Regional Council, Warrumbungle Shire Council, business owners and key stakeholders throughout the assessment and development phases of the project regarding managing potential impacts and opportunities associated with the construction workforce and accommodation capacity.

The construction workforce will be sourced from the local area as far as practicable with ACEN considering options to provide training for local hires. Where possible, ACEN will also consider the construction schedules of other renewable and transmission projects in the CWO REZ in the scheduling of the project's construction to minimise the impact on the local community.

Non-local hires will be accommodated in the Birriwa solar accommodation facility.

i 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.

ii Operations

a Accommodation facility 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 Accommodation facility 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 Accommodation facility 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 B.1.2iia., 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 B.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 B.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 (Cool Burn 2023).

d Solar and BESS activities

It is anticipated that the facility will require regular maintenance throughout its operational life. This will include the following ongoing tasks:

- site maintenance including:
  - vegetation maintenance
  - weed and pest management
  - fence and access road management
  - landscaping
- infrastructure maintenance including:
  - PV module cleaning

- PV module, PCU and tracker system repair (if required)
- inverter and PCU replacement (within every 7–10 years)
- equipment, cabling, substation and communications system inspection and maintenance.

ACEN is currently in discussions with a number of the landholders to enable sheep grazing to resume on portions of the development footprint following the completion of construction of the project, if practicable. A detailed protocol will be developed to ensure biosecurity is maintained and that grazing does not impact on the safe and efficient operation of the project or result in injury to farm workers, stock or operations staff.

To ensure the optimal electricity production output for the project is maintained, the PV modules may need to be washed periodically to remove dirt, dust and other matter. Water for panel cleaning will be transported to the project via water trucks. Washing will not require any detergent or cleaning agents.

The operational workforce will also be responsible for ongoing security monitoring of project infrastructure. Perimeter security cameras may be utilised to assist with monitoring.

e Transport route and vehicle movements

All project-related vehicles will use the primary vehicle access route described in Section B.1.2iia.

Accommodation facility operations

After the accommodation facility is established, ongoing access for semi-trailer deliveries will not be required, until decommissioning of the accommodating 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.

Solar and battery project operations

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.

f Hours

The project, which includes both a solar PV component and a BESS, will have the ability to operate 24 hours per day, 7 days per week, 365 days per year.

g Workforce

Throughout operations of the solar and battery project, it is anticipated that a workforce of up to 20 people will be required.

Highly technical operations and maintenance activities will typically be undertaken by specialist subcontractors and/or equipment manufacturers whereas routine activities such as fencing maintenance and vegetation management are likely to be offered to local contractors wherever available.

iii 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), management and assurance systems.

iv Decommissioning

Accommodation facility

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 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.

Solar and battery project

Once the solar and battery 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.

Solar and battery 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.

ACEN will attempt to recycle all dismantled and decommissioned infrastructure and equipment, where possible. Structures and equipment that cannot be recycled will be disposed of at an approved waste management facility.

v Environmental management

An environmental management strategy will be implemented to provide the strategic framework for environmental management of the project. The strategy will:

- incorporate a project environmental management plan (EMP), all other required plans, protocols, management and mitigation measures proposed in this EIS
- identify all relevant statutory approvals
- establish roles, responsibility, authority and accountability of all key personnel involved in the environmental management of the project
- establish procedures for consulting with the local community and relevant agencies about the operation and environmental performance of the development
- establish procedures for handling of complaints, disputes, non-compliances and emergency response.

A consolidated summary of the management measures that will be implemented during the construction and operation of the project to manage, mitigate and/or monitor potential impacts is provided in Appendix E.

B.1.4 Timing

The operational lifespan of the solar and battery 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.