APPENDIX E

Updated mitigation measures table

## E.1 Summary of mitigation measures

Note: New or updated mitigation measures as a result of the amendments (accommodation facility) have been bolded.

**Table E.1 Summary of mitigation measures**

| ID | Mitigation measures |
|---|---|
| **Biodiversity** | |
| BIO1 | A biodiversity management plan (BMP) will be prepared for the project. The BMP will document the measures to avoid and minimise direct and indirect impacts to ecological values and natural assets. |
| BIO2 | Following construction, species consistent with PCT 80 and PCT 281 will be included in landscaping to increase the floristic and structural diversity of the land. |
| BIO3 | Pre-clearance surveys will be conducted prior to removal of hollow bearing trees to mitigate injury to potential fauna species inhabiting hollows. |
| BIO4 | Hollow logs and debris will be retained to be used post construction. This will improve potential fauna habitat within the indirect impact area and study area. |
| BIO5 | Exclusion fencing ('no go' zones) will be used to avoid indirect impact to retained trees. This includes temporary fencing, bunting tape or similar and signage to protect or avoid habitats to be retained. This will be maintained and checked daily through construction. |
| BIO6 | All workers will be made aware of ecologically sensitive areas and the need to avoid impacts including adjacent native vegetation. This will avoid unintentional impacts to Box Gum woodland, Grey Box woodland and native vegetation. |
| BIO7 | Chemicals and fuel will be managed in accordance with Safe Work Australia guidelines (e.g. employ use of barriers, inspecting tanks and containers, etc). |
| BIO8 | Appropriate spill containment materials (or spill kits) will be used to clean-up spills if they occur. This will avoid unintentional impacts to Box Gum woodland, Grey Box woodland and native vegetation due to chemical or fuel runoff. |
| BIO9 | Sediment controls, including fencing and sediments traps, will be installed in any areas where works will occur in proximity to waterways to avoid increased sedimentation and erosion of watercourses. |
| BIO10 | Weeds will be removed prior to clearing. Weeds will be stockpiled appropriately prior to removal from the study area to avoid the spread/introduction of seed and other propagules. |
| BIO11 | Weed hygiene protocols will be put in in place prior to entering the site including wash-down procedures to all plant and machinery. This will avoid weed introduction from outside of the site. |
| BIO12 | Coolatai Grass (*Hyparrhenia hirta*), and St. Johns Wort (*Hypericum perforatum*) are to be managed as per the *Biosecurity Act 2015* and their regional recommended measures (Section 7.3 of BDAR). If any other priority weeds of NSW are identified in the study area during construction, they will be removed from the site. |
| BIO13 | Dust levels will be monitored and dust suppression strategies implemented where required, i.e. wetting down dirt roads or reducing vehicle speeds. |
| **Visual** | |
| VIS1 | Mitigation measures will be undertaken in accordance with Table 5.2 and Table 5.3 of the VIA. |
| VIS2 | Landscape planting will be undertaken in accordance with the Landscape Plan (Figure 6.1 of VIA). |
| VIS3 | Laydown areas will be located in areas with limited visibility from residences and public roads. |
| VIS4 | Clearing and trimming of vegetation will be kept to a minimum. |
| VIS5 | Finishes and products that minimise or eliminate surface glare will be selected as part of design. Neutral colours that blend in with the surrounding landscape i.e. khaki, green, beige, or similar, will also be selected, where possible. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| VIS6 | The principles of the *Dark Sky Planning Guideline* will be implemented. |
| **Traffic and transport** | |
| TT1 | A channelised right turn treatment (CHR) will be installed at the Castlereagh Highway/Barneys Reef Road intersection northbound approach. |
| TT2 | Resurfacing and widening will be completed on Barneys Reef Road and Birriwa Bus Route South in compliance with Austroads rural roads design standards, and in further consultation with relevant authorities during subsequent phases of project design and assessment. |
| TT3 | A detailed construction traffic management plan (CTMP) will be developed in consultation with TfNSW, Mid-Western Regional Council and Warrumbungle Shire Council to the satisfaction of the Secretary, prior to the commencement of road upgrades and construction of the project. The CTMP is expected to be required in the Development Consent and to include a Driver Code of Conduct addressing:<br>• informing drivers about the school bus routes along Castlereagh Highway<br>• direction to avoid compression braking near residential receptors<br>• direction to avoid heavy vehicle trips during school zone times (8:00 am–9:30 am and 2:30 pm–4:00 pm), where possible<br>• in consultation with relevant councils and road authorities, install school bus signs at suitable locations along construction routes if necessary to warn heavy vehicle drivers of student drop-off and pick-up areas; and<br>• responding to local climate conditions that may affect road safety such as fog, dust and wet weather.<br>The CTMP will be prepared by suitably qualified persons in accordance with the TfNSW (2022) *Traffic Control at Work Sites Manual*. |
| TT4 | If practicable, the portion of the CWCT within the study area will be safely separated during the two-year construction period onto an approximately 2 m dust lane in accordance with relevant cycling guidelines and standards and in consultation with CWCT Inc.<br>In addition to the above following measures will be implemented:<br>• in consultation with the CWC Trail Inc a signage plan will be prepared, highlighting the CWCT within and in the vicinity of the project<br>• within the site induction and driver's code of conduct, the CWCT will be highlighted to increase awareness of cyclists' presence in the area<br>• any site-specific circumstance e.g. peak construction activities, a traffic controller may be required to manage the vehicular traffic and cyclists which is subject to site supervisor's safety assessment and discretion. |
| TT5 | A permit will be obtained (from NHVR) to allow oversize or overmass vehicles to use the road network as part of construction. |
| TT6 | ACEN will design up to three public road crossings to Mid-Western Regional Council's satisfaction, generally in accordance with the design considerations approved at the traffic committee meeting on 17 June 2022. |
| TT7 | A road maintenance program will be developed in consultation with the relevant road authorities to be undertaken during construction and will include route inspections of all the affected local roads. Any new road pavement damage which occurs to these roads during the project construction period from construction activities, which represent a potential traffic safety risk to the travelling public, will be restored to their pre-construction condition at the completion of construction. |
| **Aboriginal heritage** | |
| AH1 | Prior to commencement of construction, an Aboriginal cultural heritage management plan (ACHMP) will be developed in consultation with DPE, the RAPs and Heritage NSW. |
| AH2 | During construction, temporary fencing will be installed around sites identified in the study area (Mangarlowe OS-1, Mangarlowe IF-1 and White Creek OS-1) and the location of all known sites will be shown on appropriate plans to ensure that they are not inadvertently harmed. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| AH3 | One Aboriginal site, Mangarlowe IF-2, will be salvaged prior to the commencement of construction. The methodology for collection of this site will be finalised as part of the ACHMP. |
| AH4 | In the event of discovery of new Aboriginal sites within the study area, the procedure detailed in Section 9.3.1 of the ACHA (Appendix I) will be followed. In the event that newly identified sites will be impacted by the construction of the project and cannot be avoided, they will be managed in a manner commensurate with their assessed significance. |
| **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 ACHMP to be prepared for the project.** |
| **Hazards and risks** | |
| HR1 | Onsite security protocols will be implemented and staff will be present during operational hours. |
| HR2 | BESS units will be certified to UL 9540A and installed in accordance with the manufacturer's instructions for best practice to mitigate fire propagation. |
| HR3 | ACEN will keep a copy of deflagration hazard studies undertaken by manufacturer in accordance with UL 9540 or include explosion control measures such as passive safe ventilation of flammable gases under pressure. |
| HR4 | If the containerised BESS is installed, a minimum one-hour fire rating (REI60) will be applied. |
| HR5 | If the BESS is installed within a dedicated use building, the detailed design will consider:<br>• compartmentalisation<br>• occupancy and means of egress<br>• fire barriers<br>• exhaust and ventilation system<br>• sprinkler system and required water volume<br>• containment system for the expected fire protection system discharge. |
| HR6 | The requirements of the National Construction Code and regulated Australian standards and codes will be met for an indoor BESS within dedicated use buildings (e.g. fire rating of materials, fire detection systems). |
| HR7 | ACEN will consult with Fire and Rescue NSW (FRNSW) during detailed design of the facility to ensure that the relevant aspects of fire protection measures have been included. These may include:<br>• type of firefighting or control medium<br>• demand, storage and containment measures for the medium. |
| HR8 | ACEN will review the investigation reports on the Victorian Big Battery Fire (occurred on 31 July 2021) and implement relevant findings for the BESS component of the project. |
| HR9 | Security fencing, cameras, and warning signs will be installed, and onsite security protocols implemented to deter trespassers and minimise unauthorised person access resulting in vandalism/asset damage to the infrastructure with the potential for self-injury during the act. |
| HR10 | ACEN will engage with Mid-Western Local Emergency Management Committee (LEMC) to discuss how the site will be considered under the Mid-Western Local Disaster Plan (DISPLAN). |
| **Noise and vibration** | |
| NV1 | If the actual fleet of plant and equipment required during construction varies significantly from that assumed within the NVIA, a risk assessment of the proposed works will be undertaken to determine the likelihood of noise impacts on surrounding residential assessment locations. Appropriate management and mitigation measures will be used, where required. A CEMP will be developed as part of the project and will include the risk assessment protocol and detail the management and mitigation measures to be implemented during construction consistent with best practice requirements. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| NV2 | To achieve compliance during construction with the ICNG noise goals, the following will be implemented:<br>• during site establishment works, a construction exclusion zone of 650 m from non-associated residences will be established on Saturdays from 1:00 pm to 6:00 pm<br>• during infrastructure delivery and installation, a construction exclusion zone of 300 m from non-associated residences will be established on Saturdays from 1:00 pm to 6:00 pm. |
| NV3 | The safe working distances for cosmetic damage will be monitored throughout the construction process. If construction is within 25 m of sensitive structures, then work practices will be reviewed so that safe working distances are followed. If safe working distances need to be encroached, real time vibration monitoring with audible and visual alarms will be installed at vibration sensitive structures so actual vibration levels can be monitored and managed appropriately in real-time. |
| NV4 | To achieve compliance with operational noise criteria, the following mitigation measures will be incorporated into the project design:<br>• no electrical infrastructure (i.e. transformers or inverters) will be installed within 250 m of the property boundary of R3<br>• the 1,200 MVA grid transformer, which will form part of the BESS, will be installed with a 6.5 m high barrier, positioned to reduce noise impacts on nearby sensitive receivers (i.e. non-associated residences).<br>Mitigation measures as outlined above may not be required to achieve compliance when more information is available (e.g. during detailed design). These mitigation measures may be refined if additional noise modelling during detailed design identifies alternative measures to achieve compliance with the NPfI (EPA 2017). |
| **Land resources** | |
| LR1 | Prior to the commencement of construction, a Soil and Water Management Plan (SWMP) will be prepared and will include management measures to cover:<br>• erosion and sediment control<br>• soil preservation<br>• dispersive subsoils<br>• any cut and fill activities<br>• drainage and landform design.<br>The SWMP will be implemented during construction and operation of the project. |
| LR2 | As part of the CEMP, land disturbance processes will be developed to ensure unnecessary land disturbance does not occur, including provision for site inspection by the site Environmental Manager or delegate prior to disturbance to identify any necessary drainage and erosion and sediment controls are planned and implemented as required. |
| **Water resources** | |
| **Water quality** | |
| WQ1 | Prior to the commencement of construction, a Soil and Water Management Plan (SWMP) will be prepared, which will outline mitigation measures to be implemented during construction and operation of the project. Mitigation measures may consist of staged construction, construction outside the wet season and erosion and sediment control (ESC) measures such as sediment fences and sediment basins. |
| WQ2 | The SWMP will also outline ESC measures to minimise the risk of erosion from unsealed roads in the study area. Mitigation options may include rumble pads, sediment fencing and sediment basins. |
| WQ3 | The CEMP will include measures to minimise the risk of contamination from chemical spills. |
| **Flooding** | |
| FLO1 | The natural state of the draining flow paths will be maintained whenever possible. Internal access roads, where crossing watercourses, will be designed for the 10% AEP design flow and may include compacted rock causeways to provide low maintenance access with limited impact on the drainage line or culvert structures. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| FLO2 | Foundations for the PV arrays and transmission lines will be located where possible outside of the areas identified as higher flood hazard. Solar panels will be designed to provide a minimum of 300 mm freeboard for the lowest edge above the maximum 1% AEP flood level. The panel posts and footings will also be designed to withstand the predicted flood velocities (adding scour protection if required). |
| FLO3 | Infrastructure with the potential to cause pollution to waterways in the event of flooding (i.e. inverters and BESS components) will be located with a minimum 300 mm freeboard above the maximum 1% AEP flood level. |
| FLO4 | BESS components will be located on pad areas and aligned with local overland flow paths to prevent flows being redirected. |
| FLO5 | The design and construction of waterway tracks and cable crossings and all internal tracks crossing watercourses within the development footprint will be generally in accordance with the *Guidelines for controlled activities on waterfront land – riparian corridors* (Natural Resources Access Regulator 2018), *Guidelines for watercourse crossings on waterfront land* (Department of Primary Industries, Office of Water 2012) and *Guidelines for laying pipes and cables in watercourses on waterfront land* (NSW Office of Water 2012). |
| FLO6 | The best practice principles for stormwater and sediment control will be incorporated into the design, construction and operation phases of the project as part of the SWMP. |
| FLO7 | Fencing will be designed to consider flood levels across the site through construction of floodways or relocating the fencing to reduce the likelihood of fence blockage due to loss of vegetation in storm events. |
| **Social** | |
| SOC1 | ACEN will adopt a shared value approach in their identification of future community funding opportunities, employment, apprenticeship and training opportunities, and community involvement opportunities. |
| SOC2 | ACEN is exploring the development and implementation of an ACEN Central West Orana solar projects Community Benefit Sharing Program (CBSP) that would see investment in a range of opportunities (including shared value opportunities) aligned with the needs of the community. The CBSP will be informed through a tailored community and stakeholder engagement strategy.<br>In the interim, ACEN will continue to provide community support through the recently established Stubbo Solar and Battery project Social Investment Program. |
| SOC3 | Construction workforce behaviour will be managed through the implementation of a construction workforce management plan (CWMP). The CWMP will seek encourage positive workforce behaviour and participation in community activities. |
| SOC4 | ACEN will appoint a locally based resource to coordinate community and workforce engagement across all ACEN projects in the local area. |
| SOC5 | ACEN will develop a Local Participation Plan and Aboriginal Participation Plan for the project construction phase that commits to procurement, employment and investment in job readiness targets for ACEN and its contracting partners. |
| SOC6 | ACEN will comply with the mandatory contribution obligations for the Birriwa Solar and Battery project, under Section 7.11 and/or Section 7.12 of the EP&A Act in consultation with Mid-Western Regional Council, and/or with any requirements introduced specifically for the CWO REZ in place of such Contributions/Levies. The contributions paid under these requirements will be included in the global amount that constitutes the CBSP. |
| SOC7 | ACEN will work with local employment, apprenticeship, and training agencies to enhance the potential of hiring of local and regional workers thereby minimising the need to hire workers from outside of the local and regional areas. Partnership with local employment and training agencies could specifically benefit youth and Aboriginal and Torres Strait Islander People by providing direct employment opportunities. |
| SOC8 | ACEN will implement a Complaints and Grievances Procedure. The procedure will provide an opportunity for stakeholders to raise complaints, grievances, and provide feedback. The procedure will facilitate the timely response to stakeholder complaints and grievances, and enable the monitoring and reporting of grievances and ACEN response. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| **SOC9** | **ACEN will prepare an Accommodation and Employment Strategy (AES) for the project. The AES documents actions that seek to support the following key objectives:**<br>• **Identify how the facility construction workforce will be accommodated, and where they will be accommodated, and measures to minimise pressure on the existing capacity of short-term accommodation in the local area.**<br>• **Facilitate an increase in the extent of the geographic area for local hires and workforce accommodation.**<br>• **Facilitate enhanced local workforce participation.** |
| SOC10 | ACEN will develop a decommissioning and rehabilitation plan for the project that will describe how the development footprint would be returned, as far as practicable, to its condition prior to the commencement of construction. The decommissioning and rehabilitation plan will also describe the approach to disposal/recycling of infrastructure. |
| SOC11 | ACEN will continue to explore opportunities with landholders to support co-location of livestock grazing within the development footprint. |
| SOC12 | Gate and property access procedures, specific to individual landholder needs and requests, will be developed and implemented. |
| SOC13 | ACEN will develop and implement a construction phase stakeholder engagement plan to guide engagement with the community and ensure timely release of project information. |
| **SOC14** | **ACEN will develop and implement safety measures within the facility, including security patrols and adequate fencing and worker training, as well as complaints reporting processes for nearby landholders.** |
| **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, however the onsite nurse should not be sourced from the regional workforce due to existing issues with recruitment for rural positions.** |
| **Bushfire** | |
| BUS1 | A minimum 10-m-wide APZ will be provided around the perimeter of project assets, including solar array and any operational buildings and storage/laydown areas.<br>**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 | The APZ will be installed and maintained for the life of the project to the standard of an Inner Protection Area as outlined within Appendix 4 of PBP and the NSW RFS document *Standards for Asset Protection Zones*<br>• APZ will be maintained free from fuel (i.e. comprised of sand, gravel, etc).<br>• Grass will be kept short and to a height <10 cm.<br>• Where possible any tree canopy will be excluded from the APZ. Where tree canopy cannot be excluded then the following will be implemented:<br>– Ensure canopy cover within the APZ is less than 15% of the total canopy area.<br>– Ensure branches do not touch or overhang any infrastructure buildings.<br>– Ensure lower limbs are removed up to a height of 2 m above ground.<br>– Ensure canopies are separated by at least 2 m.<br>– Preference should be given to smooth barked and evergreen trees.<br>• **Shrubs are to be maintained as follows:**<br>– **Large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided.**<br>– **Shrubs should not be located under trees.**<br>– **Shrubs should not form more than 10% groundcover.**<br>– **Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.** |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| BUS3 | A Bushfire Management Plan will be developed to guide landscape management, monitor and reduce potential fuel loads surrounding the project and APZ areas via ongoing rural activities (e.g. slashing, grazing). The Bushfire Management Plan will also be developed in consultation with the local NSW RFS District Office. |
| BUS4 | All buildings (BESS, substation buildings, management and operational buildings) will provide for minimum ember protection consistent with BAL12.5 construction standards (AS3959-2018).<br>**For the accommodation facility, the following BAL apply:**<br>• **BAL 29 level of construction as per Section 3 and 7 of AS 3959-2018 and Chapter 7.5 PBP to perimeter structures.**<br>• **BAL 19 and BAL 12.5 level of construction as per Section 3 and 5-6 of AS 3959-2018 to internal structures.** |
| BUS5 | 50-80 kL steel tank dedicated water storage will be strategically located in consultation with NSW RFS, to allow for permanent emergency water supply and ease of access. |
| BUS6 | The project site access point and private internal roads will provide for safe, reliable, and unobstructed passage by a Cat 1 firefighting vehicle and maintained for the life of the development. |
| **BUS7** | **The access relevant to property access, perimeter road and non-perimeter road within the accommodation facility comply with Table 5.3b PBP.** |
| **BUS8** | **The provision of water, electricity and gas comply with Table 5.3c of PBP.** |
| **BUS9** | **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*.** |
| **Historic heritage** | |
| HH1 | A historic heritage management plan (HHMP) will be prepared for the project in consultation with DPE, prior to the commencement of construction. The HHMP will include an unanticipated finds protocol that will be implemented if previously unrecorded or unanticipated historic objects are encountered during construction. |
| **Air quality** | |
| AQ1 | Water truck(s) will be used during construction for dust suppression along internal, unsealed access roads and disturbed areas. |
| AQ2 | Vehicle movements will be minimised, where possible. |
| AQ3 | All vehicles, plant and equipment will be cleaned and washed regularly. |
| AQ4 | All vehicles, plant and equipment will be regularly inspected and maintained to ensure that they are operating efficiently. |
| AQ5 | Regular maintenance of unsealed access roads will be undertaken to minimise wheel-generated dust. |
| AQ6 | Dust suppression requirements during construction will take into consideration weather and the likelihood of extended dry periods which could exacerbate impacts. |
| **Waste** | |
| WAS1 | All waste will be managed in accordance with the NSW *Protection of the Environment Operations Act 1997* and NSW *Waste Avoidance and Resource Recovery Act 2001*. |
| WAS2 | All waste produced by the project will be classified, stored and handled in accordance with *the Waste Classification Guidelines – Part 1: Classifying Waste* (EPA 2014). |
| WAS3 | Waste will be managed in accordance with the waste hierarchy, which is listed in order of preference:<br>• reduce waste production<br>• recover resources<br>• dispose of waste appropriately. |

## Table E.1 Summary of mitigation measures

| ID | Mitigation measures |
|---|---|
| WAS4 | A detailed waste management plan will be prepared prior to construction. |
| WAS5 | As part of decommissioning, ACEN will attempt to recycle all dismantled and decommissioned infrastructure and equipment, where possible. |
| WAS6 | General waste bins will be provided for disposal of materials that cannot be cost-effectively recycled. |