21 March 2024

Iwan Davies
Director – Energy Assessments
NSW Department of Planning, Housing and Infrastructure
12 Darcy St
Parramatta NSW

Dear Mr Davies

Subject: SSD-29508870: Request for additional information

I refer to your letter dated 15 February 2024 in relation to a request for additional information associated with the *Birriwa Solar and Battery Project - Amendment Submissions Report*.

This letter provides responses to your request.

1 Landowners consent for all parcels of land which comprise the development, including for road upgrades

The required landowner's consent has been obtained for all parcels of land which comprise the development, and have been previously provided to the Department of Planning, Infrastructure and Housing (DPHI), from the following relevant landowners:

- All private landholders within the project area.
- Crown Lands for the Crown road reserves in the project area, and Lot 7300 DP1149875, which will be impacted by road upgrades.

Further, landowner's consent has been obtained from Warrumbungle Shire Council for the portion of Barneys Reef Road to be upgraded for the project, and from Mid-Western Regional Council for road upgrades along Barneys Reef Road and Birriwa Bus Route, and road crossings along Birriwa Bus Route South. Landowner's consent from the two councils has been provided separately to DPHI. It is also noted that landowner's consent was not required to be obtained from TfNSW, as they are not the owners of any land impacted by the development, as confirmed by TfNSW on 14 March 2024.

2 Responses to the additional agency feedback received

Responses from a number of government agencies were received in relation to the Amendment Submissions Report (EMM 2023). No response is required to the following agencies, who did not raise any further matters or request further information:

- NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) - Heritage NSW
- DCCEEW – Biodiversity Conservation and Science Directorate (BCS)
- NSW Department of Primary Industries (DPI) - Agriculture
- NSW Fire and Rescue
- Rural Fire Service

It is noted that Heritage NSW recommended the applicant provide the relevant landholders with the locations of Aboriginal cultural heritage on their land and aid the landholder in providing appropriate safeguards to ensure they comply with the requirements of the *National Parks and Wildlife Act 1974*. ACEN notes this recommendation.

The following agencies raised matters and/or requested further information in relation to the project:

- DCCEEW - Water Group
- Transport for NSW (TfNSW)
- Warrumbungle Shire Council (WSC)
- Mid-Western Regional Council (MWRC)

Responses to the submissions from these government agencies are provided in the following sections.

2.1 DCCEEW – Water Group

Table 1: DCCEEW - Water Group

<table>
<tr><th>Feedback</th><th>Response</th></tr>
<tr><td>DCCEEW Water has reviewed the Amendment Submissions Report and has recommendations regarding water supply and waterfront land.
Recommendation 1.1:
The proponent must demonstrate the ability to obtain a secure and appropriately authorised water supply for the project.
Insufficient information has been provided to understand the feasibility of the proposed water supplies listed in Section 4.5.2 of the Amendment Submissions Report. Provision of relevant agreements or commitment to agreements including volumes from a third party, assessment of water availability from farm dams and/or to demonstrate sufficient water entitlements can be acquired.
Recommendation 1.2:
Works within waterfront land (40 m of a watercourse) should be conducted in</td><td>Response to recommendation 1.1:
As described in Section 4.5.2 of the Amendment Submissions Report (EMM 2023), several feasible water supply options and regulatory pathways have been identified to support the water requirements of the project. The anticipated total water demand is summarised in Table 4.2 of that report, which is approximately 323 ML over the 28-month construction period (equating to about 139 ML per year); 225 ML during operations (equating to about 7.5 ML per year over 30 years); and approximately 323 ML during decommissioning (again equating to around 139 ML per year).
Water source options to meet this project demand are detailed in Section 4.5.2 of the Amendment Submissions Report (EMM 2023). ACEN notes that sourcing water from bores with existing Water Access Licences (WALs) is considered the most likely option to secure water, but it is not the only option, and will continue the due diligence process to select the best option or mix of options.
Landholders in the region have been identified with existing WALs and bores on their properties and have indicated in discussions with ACEN that they are open to entering into an agreement with ACEN to supply water for the project. The details of these bores and associated WALs are summarised in the table below.
Summary of bores and associated WALs
<table>
<tr><th>WAL</th><th>Capacity (per year)</th><th>Bore location</th><th>Entitlement detail</th><th>Historical use</th></tr>
<tr><td>WAL 34929</td><td>366 ML</td><td>Linked to 80CA716926 – a 203 mm diameter bore located on Lot 2 DP 854326, approximately 22 km north of the project area.</td><td>366 unit shares / 366 ML of entitlement in the Talbragar Alluvial Groundwater Source (within the Water Sharing Plan for the Macquarie-Castlereagh Groundwater Sources 2020)</td><td>Previous water usage has ranged between 5-50% dependent on weather conditions (i.e. 2022 was a wet year and 5% of the available water allocation was used, on a dry year 50% of the water allocation has been used).</td></tr>
</table>
</td></tr>
</table>

Feedback	Response
accordance with the *Guidelines for Controlled Activities on Waterfront Land.* There is a third order stream that runs through the additional Project area that is being used for the temporary accommodation facility. Based on Figure 1.3 of the Amendment report, a potential crossing may be required, which should be designed and constructed in accordance with the guidelines. Note for the applicant: As water supply works have not been assessed as part of this development application to date, any new water supply works required for the project will require relevant approvals under the Water Management Act 2000. These should be applied for through the Licensing and Approvals team in the DCCEEW as this is a State Significant Development.	WAL 34924 | 276 ML | Linked to 80CA716936 – 2 bores (219 mm and 323 mm diameter) located on Lots 85 & 87 DP 754309, approximately 19 km north of the project area. | 276 unit shares / 276 ML of entitlement in the Talbragar Alluvial Groundwater Source | No water has been used (i.e. 0%) for the available allocation to date. Based on the above, there is sufficient water entitlement in the two identified WALs to meet the anticipated water demands of the project (between 7.5 and 139 ML per year), with historical use accounted for. To enable the use of water from these bores for the project, an application would be made to Water NSW to change the purpose of the work approval (bore/s) to include a commercial purpose. Once approved, ACEN would then enter into an agreement with the landholder in the form of a civil contract to truck the water from the bore/s to the project area, using the WAL already linked to the works. **Response to recommendation 1.2:** It is acknowledged that the project will require works within waterfront land, as described in the Amendment Report (Table 4.1 and Section 7.6.1), including upgrades of existing road crossings and/or establishing new crossings over watercourses within the study area. All waterway crossings will comply with the relevant government policy and guidelines including *Policy and Guidelines for Fish-Friendly Waterway Crossings* (DPI 2003), *Policy and Guidelines for Fish Habitat Conservation and Management* (DPI 2013) and *Guidelines for Controlled Activities on Waterfront Land* (NRAR 2018). **Response to note for the applicant:** Should it be proposed that existing bores currently operated under Basic Landholder Rights provisions be used for the project, ACEN will lodge an application to add commercial use to the Work Approval, prior to commencing construction. ACEN acknowledge that the development application (SSD-29508870) does not seek approval for conversion of use.

2.2 Transport for New South Wales

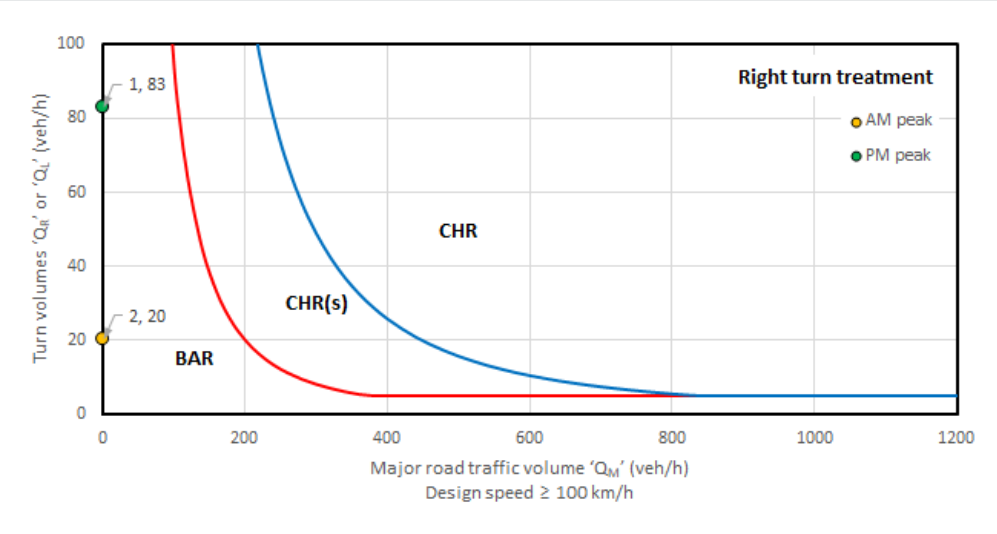
Table 2: TfNSW

Feedback	Response
1 Traffic Generation and Traffic Surveys a) TIA to be revised to account for staff required to run and cater for the accommodation facility. While the addendum TIA moderates the accommodation to 500 beds (at 95% capacity being 450 individual(s)) operational staff do not appear to be included. If these are local employees their movements are likely to affect AM/PM peak flows.	The traffic movements associated with the operation of the accommodation facility have been included in the construction phase traffic movements assessed in the TIA; that is, within the 50 daily light vehicle trips described in Table 4.3 of the Amendment Submissions Report (EMM 2023). 500 workers in total are anticipated to be onsite during peak construction periods, with around 50 of these workers anticipated to be locals (i.e. not staying at the workers accommodation facility and travelling to and from site each day). These 50 local workers include operation of the accommodation facility (i.e. day to day management, security, cleaning, and catering staff).
b) TIA is required to be revised to account for traffic volumes for movements for camp residents to travel into town for social, medical or purchasing	Significant numbers of accommodation facility residents (i.e. construction workforce) will not travel into town for social, routine medical, or purchasing reasons during the AM/PM peak hour as shift change over will not occur during AM/PM peak hours. This measure will be described in the construction traffic management plan. While some trips may be necessary for individuals either in peak times or at other times, e.g. for medical reasons, it is expected that these would be ad hoc and one off/minimal, and therefore would not significantly contribute to traffic flows.

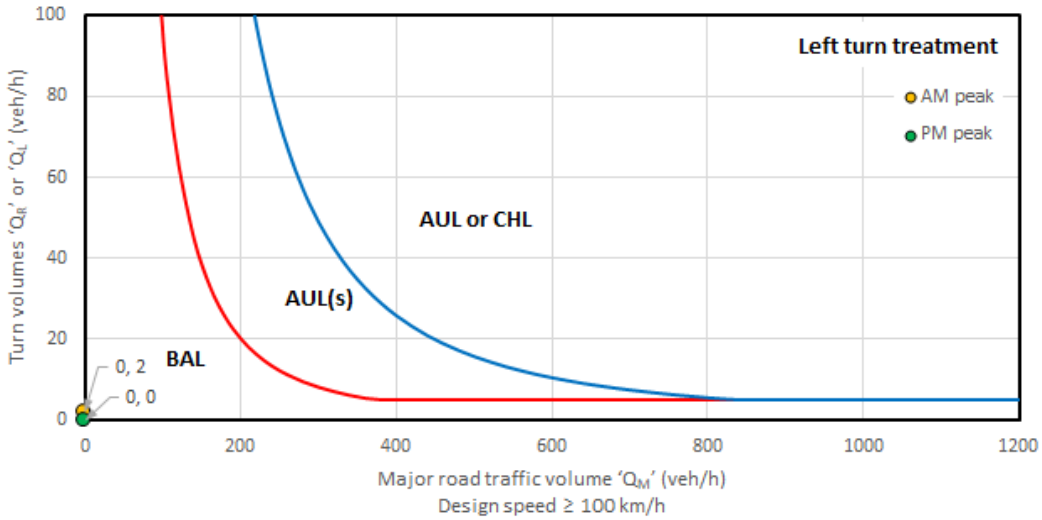
	Feedback	Response
	reasons. These would potentially add additional movements during the AM/PM peaks and don't appear to be addressed in the addendum TIA.	Importantly, and as stated in Section 4.4 of the Addendum TIA, the traffic assessment has been undertaken based on the background traffic volumes during the network peak times while applying the project's traffic volumes during the site peak times. This means the traffic assessment is very conservative (worst case scenario).
c)	Traffic Management Plan will need to consider the allotment for local visitors to attend site.	Adequate parking allotments will be provided for visitors next to the administration office of the accommodation facility. A large footprint for the accommodation facility has been conservatively assessed to ensure there is sufficient room for ancillary infrastructure associated with the accommodation facility, including parking. There will also be adequate wayfinding signage to ensure visitors' safety so that they do not walk along the vehicular paths. This will be covered in the Traffic Management Plan.
d)	Proposed roster indicates staff movements outside proposed peak, potentially Saturday afternoon. If this is after their rostered shift and they may leave the site fatigued, this can have potential safety risks to other road users. Other operations have used defined risk management protocols before allowing shift staff to drive. TfNSW suggests implementing similar industry standard protocols and	Industry standard protocols relating to fatigue management will be implemented and will be described within the relevant traffic management plan.

Feedback	Response
education/training is enacted/required.	
e) Extract from Section 4.6.1 acknowledges that site establishment activities will potentially overlap. The traffic generation represented in the TIA does not reflect the potential for the overlapping site establishment work and the construction of the workforce accommodation facility. The TIA is required to be revised to address the traffic volumes that would be attributed to the overlapping of the site establishment and the workforce accommodation camp. The Trans Traffic Survey conducted between the 14/11/2023 to the 21/11/2023 was not collected at the intersection of Barneys Reef Road/Castlereagh	The construction of the accommodation facility will occur prior to the major construction works for the solar and BESS component of the project, noting that some solar and BESS site establishment activities may overlap with the accommodation facility construction. Table 4.3 of the Amendment Submissions Report considers pre-construction stage traffic movements (i.e. construction of the accommodation facility). The worker/vehicle movement assumptions in this pre-construction stage account for some overlap of site establishment of the solar and BESS and accommodation facility, i.e. 30 light vehicle and 3 heavy vehicle trips. The Trans Traffic Survey conducted was undertaken of the Barney's Reef Road/Castlereagh Highway intersection. The raw survey data and videos of these surveys were provided to TfNSW on 7 March 2024. The GPS coordinates (-32.097851, 149.485161) provided are correct (refer to figure below).  Map for -32.097851, 149.485161

	Feedback	Response
	Highway intersection this is based on the provided GPS coordinates. The data therefore does not provide an accurate representation of the through traffic and turning traffic movements at Barneys Reef Road/Castlereagh Highway intersection. The traffic count survey is required to be undertaken at the intersection of Castlereagh Highway and Barneys Reef Road intersection.	
f)	Birriwa Bus Route Road is identified within the TIA as part of the construction traffic routes. No information has been provided regarding the TIA.	The site access/haulage route includes Birriwa Bus Route Road between Barneys Reef Road and the site access point. The proposed upgrades to the portion of Birriwa Bus Route to be used by the project were considered and described in the Traffic Impact Assessment prepared for the project (EMM 2022) and the EIS (refer to Section 3.3.2ii). As described, and as per Table 4.5 in *Austroads Guide to Road Design: Part 3*, a 9.2 m road width is required which includes 7.2 m seal and 2 m unsealed shoulders (2 x 3.1 m travel lanes + 0.5 m sealed shoulders on both sides + 1 m unsealed shoulders on both sides). Both Barneys Reef Road and Birriwa Bus Route South will be upgraded as per the above Austroads requirements. As part of the Addendum TIA, the Barneys Reef Road/Birriwa Bus Route South Road intersection was surveyed on Wednesday 15 November 2023 for the whole day to confirm traffic volumes. The survey collected 16 two-way daily movements on Barneys Reef Road and 12 two-way daily movements on Birriwa Bus Route South. Further, the project will result in an additional 340 daily

Feedback	Response
	movements along Barneys Reef Road and Birriwa Bus Route South. The road dimensions described above (as per Table 4.5 of Austroads) apply to daily traffic volumes between 150 and 500 vehicles, and therefore remain appropriate for the project. For the 2026 baseline + project + cumulative scenario, a basic right turn (BAR) treatment is required from Birriwa Bus Route South (east approach) to Barneys Reef Road (north approach).  A basic left turn (BAL) does not need to be considered as there is no project related traffic anticipated to travel from Birriwa Bus Route South (west approach).

Feedback	Response



Given the low existing turn volumes, the geometry of this four-way intersection will be determined by the swept path assessments by two simultaneous 26 m long B-double trucks between Barneys Reef Road (north) and Birriwa Bus Route South (east) and hard stand required by the incoming OSOM vehicles. Given the dominant traffic movement will be between the north and east approaches, giveway signs and at its associated TB line marking will be installed at the south and west approaches of this intersection. This means site vehicles to/from Castlereagh Highway will obtain the priority at this intersection (refer to Appendix A).

This intersection will be designed to the satisfaction of Mid-Western Regional Council.

Feedback	Response
2. Swept paths:	
g) The dimensions of the nominated pull over locations are required to be provided to ensure that the prescribed vehicle is able to be safely accommodated within the pull over locations	Refer to response 3, below.
h) Provided swept path diagrams are not sufficient. The swept path diagram demonstrates a conflict with the opposing lane. It is not clear if the largest required vehicle has been used for all diagrams demonstrating the complete turning arc and overhang of vehicles and cargo. Swept paths are required to be revised to identify that the largest heavy vehicle can complete the turning arc while permitting concurrent turning of the largest	The swept path diagrams provided in the Addendum TIA (EMM 2023) included swept paths for an OSOM vehicle, equating to approximately 71 m in length. The swept path diagram has been updated (included as Appendix A) to include swept paths for the largest required heavy vehicle, approximately 26 m in length for the two intersections at Castlereagh Highway/Barneys Reef Road and Birriwa Bus Route South/Barneys Reef Road. The turn paths have been assumed to occur simultaneously. Based on the swept paths, the strategic concept design has been updated (included as Appendix A). It should be noted that heavy vehicles travelling to/from the south along Castlereagh Highway will be restricted to 19 m long semi-trailer. Longer trucks (up to 26 m long B-double) will access to/from the north along Castlereagh Highway. As such, the swept path assessments have been conducted for semi-trailers to/from the south and B-double trucks to/from the north at Castlereagh Highway/Barneys Reef Road intersection (Appendix A). For the Barneys Reef Road/Birriwa Bus Route South intersection, the swept path assessment has been conducted for two opposing 26 m long B-double trucks which is the largest vehicle accessing this intersection (apart from OSOM vehicles). The heavy vehicle travel restriction at the Castlereagh Highway/Barneys Reef Road intersection can be conditioned as part of the approval of this development. The minimum vehicular speed for the swept path assessments is 15 km/h and 500 m clearances which are provided with no overlap, as required by TfNSW.

Feedback	Response
heavy vehicle, in all directions proposed from the Barneys Reef Road/Castlereagh Highway intersection and the Birriwa Bus Route/Castlereagh Highway intersection.	
3. The following issues with the Route Assessment:	
i) Pullover location 1 – Hunter expressway, no evidence OSOM vehicle will fit (width and length), likely to impinge on traffic lane. Please update the Route Assessment to demonstrate that the traffic lane will not be impinged.	Further investigations have been undertaken into potential pullover locations, which have found that OSOM vehicles will not fit at locations 1, 2, 3 and 4. Pullover lane 6 will be used only when no other vehicle is using it. The usage of this pullover bay can be coordinated as per the NHVR approval. Alternative OSOM pullover locations have been identified and are described below.
j) Pullover location 2 – Mt Thorley, OSOM unlikely to fit length and width wise and also inappropriate surface. Update Route Assessment to demonstrate ability to safely fit and	

Feedback	Response
appropriate surface material pavement.	
k) Pullover location 3 – Denman, Concern about length of bay and also proximity to level rail crossing and potential risk if it impinges on this. Update Route Assessment required to demonstrate ability to safely fit.	
l) Pullover location 4 – Holydeen inadequate width for OSOM vehicle. Would impinge on through lane. Vegetation will also limit area as will existing surface. Need to demonstrate ability to safely fit.	
m) Pullover lane 6 - Urbury, OSOM vehicle potentially will fit but only if no other vehicles are using (hence obstructing) the rest bay. If other users likely OSOM will not fit lengthwise. How is this	

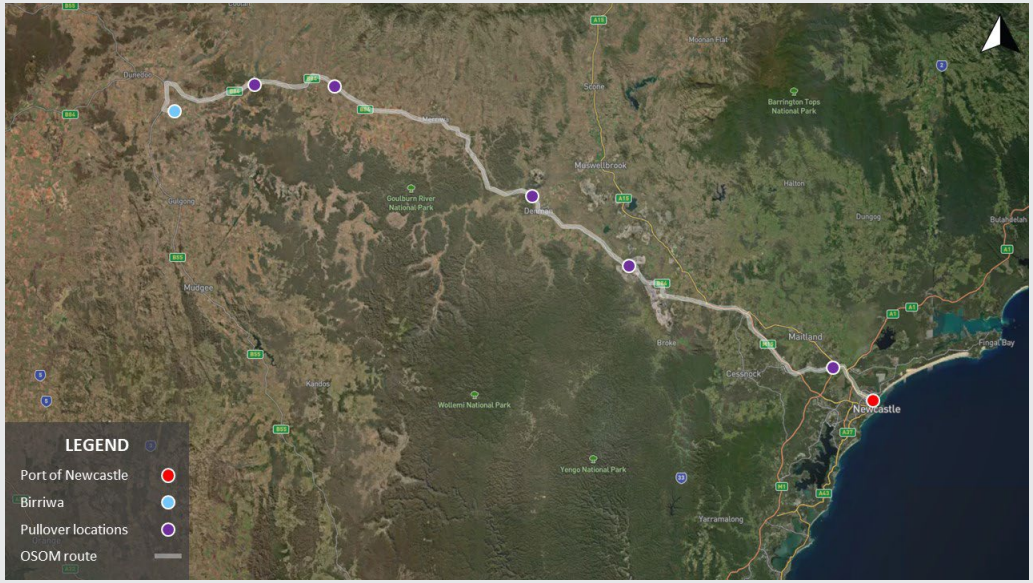


Table 1 Suggested OSOM pullover locations

Chainage	Location	Description	Length of pullover location	Width of pullover location
19 km	John Renshaw Drive, Beresfield	Roadside parking area on the same side of the road in the direction of travel, only to be used when no other vehicle is parked in this pullover bay.	127 m	Up to 7.2 m

<table>
<tr><th>Feedback</th><th>Response</th></tr>
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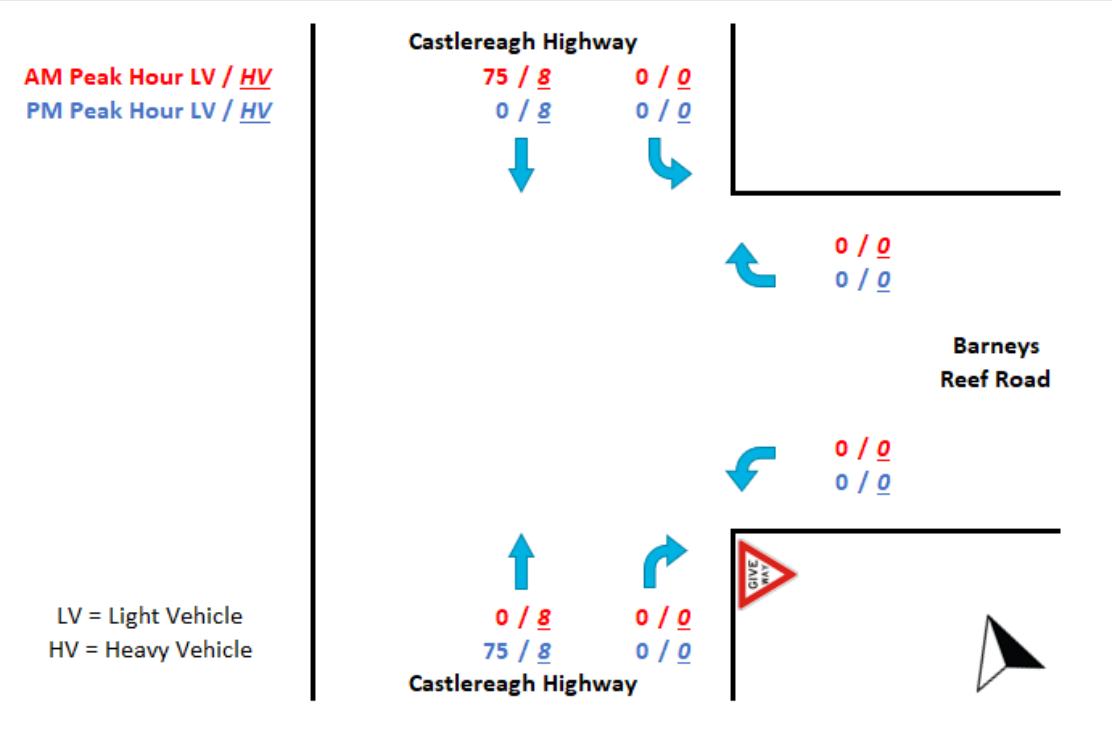
<table>
<tr><td>to be managed without affecting safety for other rest bay and road users. Need to demonstrate ability to safely fit</td><td>100 km</td><td>Jerrys Plains Road (Golden Highway), Warkworth</td><td>Roadside pullover bay on the same side of the road in the direction of travel, only to be used when no other vehicle is in this pullover bay.</td><td>188 m</td><td>7.2 m</td></tr>
<tr><td></td><td>148 km</td><td>Golden Highway, Hollydeen</td><td>Roadside pullover bay on the same side of the road in the direction of travel, only to be used when no other vehicle is in this pullover bay.</td><td>127 m</td><td>7.2 m</td></tr>
<tr><td></td><td>221 km</td><td>Golden Highway, Cassilis</td><td>Off-road parking area on the same side of the road in the direction of travel, approximately 1 km west of Golden Highway/Willy Wally Road T-Intersection, only to be used when no other vehicle is in this pullover bay.</td><td>140 m</td><td>7.2 m</td></tr>
<tr><td></td><td>256 km</td><td>Golden Highway, Uarbry</td><td>Off-road pullover bay on the same side of the road in the direction of travel, approximately 1.2 km west of Golden Highway/Turee Street Road T-Intersection, only to be used when no other vehicle is in this pullover bay.</td><td>162 m</td><td>Up to 6.8 m</td></tr>
<tr><td></td><td colspan="5">All the pullover locations listed above are suggestions only. For all pullover locations, including the pullover bay in Uarbry, the driver will seek to use an alternative pullover location if the location is already occupied. Alternatively, discussion can be held with NHVR regarding how to secure any particular pullover location prior to OSOM travel.</td></tr>
</table>
</td></tr>
<tr><td>n) The route assessment identifies the requirements to modify the median for Bettington Street/Vennacher Street refugee islands, this intersection forms part of the state classified road network. Strategic designs will be required for the modifications to the</td><td>As discussed with TfNSW at a meeting on 7 March 2024, a concept plan overlaid over an aerial image has been developed for the temporary removal of the refuge islands at Bettington Street/Vennacher Street in Merriwa.
The concept plan is provided in Appendix B.</td></tr>
</table>

Feedback	Response
refugee island as a part of the revised TIA.	
Points of Clarification	
a) Clarification on the extent of the use of Birriwa Bus Route to access the development. Strategic Design drawings are to be provided for any works proposed on the Birriwa Bus Route.	Birriwa Bus Route South will be to access the development between Barneys Reef Road and the site access. The total length of Barneys Reef Road to be used by the project is approximately 2.5 km. The total length of Birriwa Bus Route South is approximately 828 m. The strategic concept design drawings have been provided in Appendix A.
b) Cumulative impacts of surrounding developments to be clarified. Section 4.7.2 of the application provides that an assumption of 25% of the cumulative traffic generation would access Castlereagh Highway in Birriwa however the reasoning behind this assumption has not been clarified. Seasonal numbers from the nearby GrainCorp development must be included.	The justification for the cumulative assessment approach is presented in Section 4.7.2 of the Addendum TIA (EMM 2023). As described, the greatest potential for cumulative impacts of future projects and the Birriwa project in relation to traffic are associated with construction of the Tallawang Solar Farm (SSD-23700028) and Central West Orana Transmission Line (SSI-48323210). The peak hourly traffic volumes generated on Castlereagh Highway from the proposed Tallawang Solar Farm are identified in Table 4.2 of the Samsa Consulting July 2022 TIA (Samsa 2022). In order to provide a reasonable assessment of cumulative traffic impacts during the construction period for the project, assumptions were made regarding the potential for overlap in the construction periods of the Tallawang and EnergyCo CWO REZ Transmission Project. The approach adopted takes into account the uncertainties of the projects both proceeding concurrently (or at all). As described in Section 4.7.2 of the Addendum TIA, due to the level of uncertainty regarding when projects may be approved and subsequently constructed, it was assumed that 50% of the peak hourly traffic from the Tallawang project occurs at the same time as the construction of the Birriwa Solar and Battery project. A detailed breakdown of the cumulative assumptions was presented in Table 5.3 of the TIA for Tallawang Solar Farm (Samsa 2022), which identified that construction staff trip distribution would be split equally between the south (Gulgong-Mudgee area), west (Dubbo area), north (Dunedoo area) and east (Merriwa area) resulting in approximately 300 construction staff vehicle trip movements per day, with 150 vehicles in the peak hour along Castlereagh Highway.

Feedback	Response
	On this basis, it was assumed that 25% of the traffic peak hour workforce traffic generation could occur from the north (Dunedoo area) – a total of 38 vehicles – passing the Barneys Reef Road to reach Tallawang Solar Farm. Further, as the Tallawang Solar Farm TIA noted, that the peak traffic generation would apply for only some four months (less than 12%) out of the total 34-month construction period. This peak 4-month period would coincide with the installation of the solar panels, BESS, sub-stations and ancillary infrastructure. For the remaining 30 months (the majority of the construction phase), reduced traffic generation would occur. On this basis, a further reduction of 50% was applied to the assumptions – to come to a total of 19 movements from the north in the peak hour – on the basis that the peak construction periods of the two projects are unlikely to overlap. Furthermore, the latest publicly available project information of Tallawang Solar Farm states that a temporary workers accommodation is now being considered as part of this project. This means potential delay and significantly reduced light vehicle generation as a result of this project. Notwithstanding the above, further assessment was undertaken on the proposed intersection upgrade, to demonstrate it can operate efficiently assuming 100% of the predicted Tallawang solar farm traffic volumes coincide with the Birriwa proejct . The estimated Tallawang solar farm traffic is provided below:

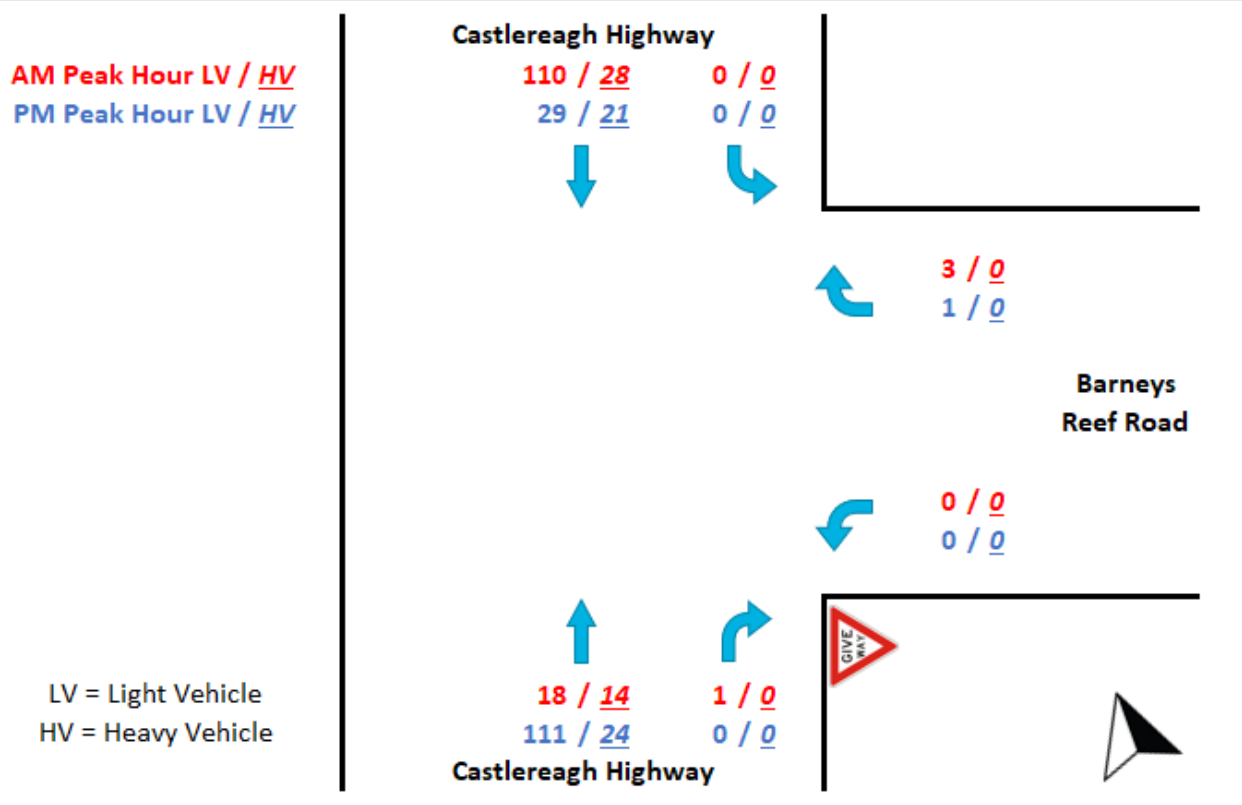
Feedback	Response



Tallawang Solar Farm traffic passing Barneys Reef Road intersection

The 2026 Baseline + Development + Tallawang + CWO REZ Transmission Line project cumulative traffic volumes at the Castlereagh Highway/Barneys Reef Road intersection is provided below.

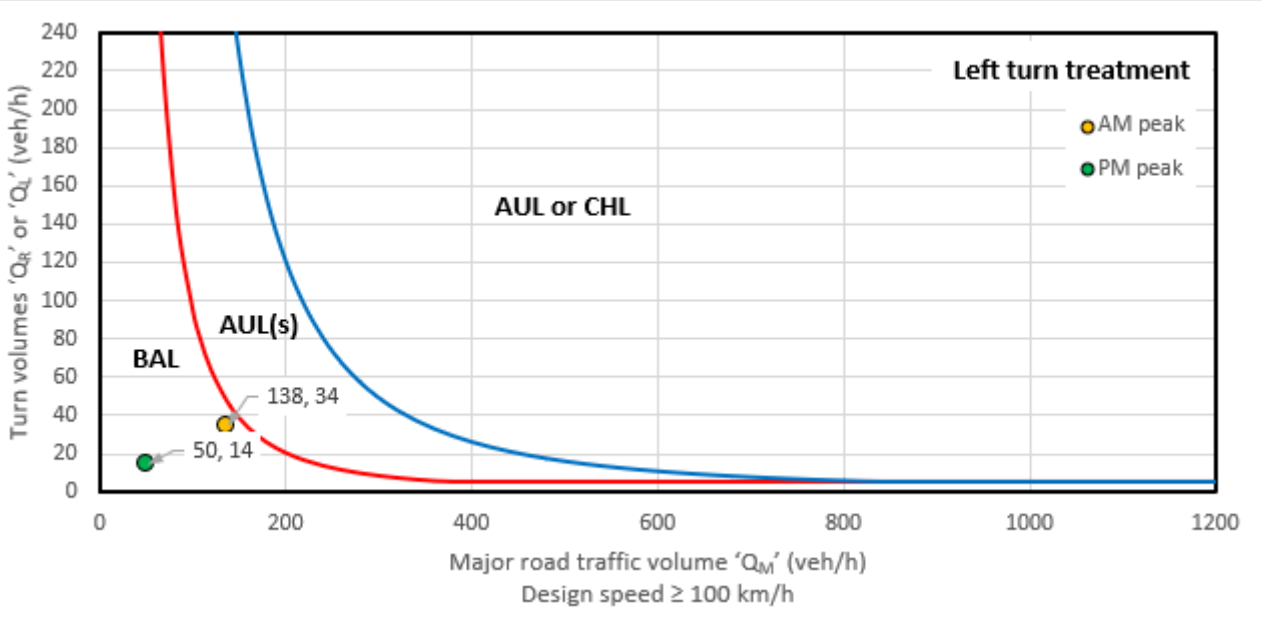
Feedback	Response



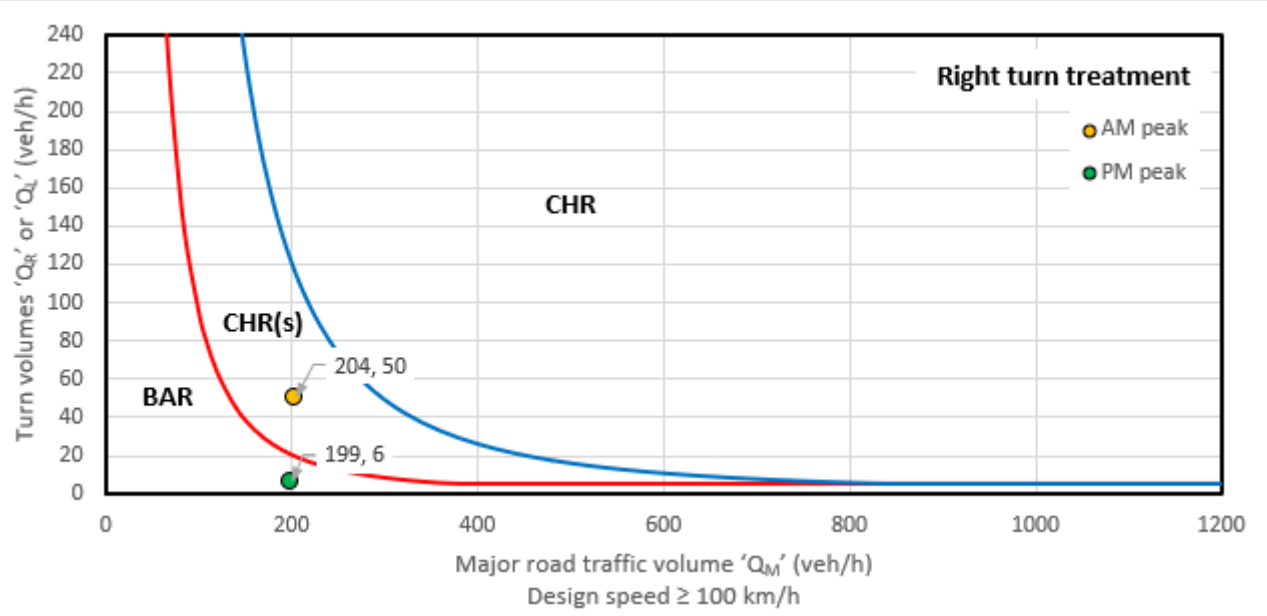
2026 Cumulative traffic volumes

Based on the above volumes, the required left and right turn treatment at Castlereagh Highway/Barneys Reef Road intersection is provided below.

Feedback	Response



Left turn treatment

Feedback	Response
	 ***Right turn treatment*** The above figures show that for the worst case scenario a BAL and CHR (S) treatments will be required at the Castlereagh Highway/Barneys Reef Road intersection. As the project is already proposing a higher order treatment, the analysis show that the intersection will accommodate 100% of the Tallawang solar farm traffic, should concurrent development occur in the area. Further, TfNSW referred to the GrainCorp silos in the township of Birriwa on the Castlereagh Highway, and whether seasonal traffic movements have been accounted for. In this regard, traffic counts were undertaken for the project in November 2023, during the harvest season (which is typically between October to June). This was discussed with TfNSW at a meeting on 7 March 2024, who accepted that seasonal traffic movements associated with the GrainCorp soils were therefore captured in the traffic counts, and as such have been considered in the cumulative assessment.
c) Effects of the development on adjoining property	The property boundaries are shown in the strategic concept design (Appendix A). The plans show that works associated with the road upgrade on the eastern side of the Castlereagh Highway will encroach on Lot 7300 DP1149875 (Crown Land). Landowner's consent has been obtained for this Lot from Crown Lands.

	Feedback	Response
	boundaries surrounding the intersection must be included to highlight potential boundary issues.	
d)	Property boundaries in relation to extents of development are to be demonstrated in detailed design.	The property boundaries are shown in the strategic concept design (Appendix A).
e)	As discussed in the body of the letter; Regarding the intersection at Castlereagh and Barneys Reef Road (and will likely be required for Birriwa Bus Route Road/Castlereagh Highway), a 1m centre line and 2.5m shoulders are required to be provided in the revised strategic design for vehicle breakdown, or adequate width verge verified on design with 2.0m shoulder to allow a stationary vehicle to park clear. Provision of	TfNSW confirmed at a meeting on 7 March 2024 that 3.5 m lanes, 2 m sealed shoulders with 1 m verge, totalling 13 m carriageway width will be required with consideration of 6:1 batter within the road reserve. The strategic concept design (Appendix A) complies with the above requirements on the Castlereagh Highway. As per TfNSW requirements, SISD assessment was undertaken based on Figure 3.2 Austroads Part 4a: Unsignalised and Signalised Intersections at a driver's eye height of 1.25 m from the road level.

	Feedback	Response
	sight lines for SISD from driver eye height to target is also to be included in the strategic design.	
f)	Strategic plans provided will need to verify the need for protection of culverts nearby to the intersection. The plans provided do not show all culverts surrounding the intersection.	The strategic concept design shows the locations of culverts in close proximity to the Castlereagh Highway/Barneys Reef Road intersection. Following the meeting with TfNSW on 7 March 2024, TfNSW confirmed that an assessment of culverts/bridges as part of the OSOM assessment is not required at this stage.

2.3 Warrumbungle Shire Council

Table 3: WSC

Agency	Feedback	Response
Warrumbungle Shire Council (WSC) Roger Bailey General manager 19 January 2024	**1.Introduction** The council maintains its objection for the following reasons: a) Concern that the applicable section of Barneys Reef Road between the Castlereagh Highway and the Mid Western LGA boundary may not appropriately conditioned to safeguard the value of the road asset now and into the future. b) CWO REZ-related environmental, social and economic cumulative impacts have not been adequately addressed. The latest documentation contains generally vague and ill-defined information regarding how such wide-ranging impacts will be managed. WSC requests that the infrastructure related Conditions of Consent listed in Attachment 1 be adopted to mitigate and manage impacts of the development.	a) Safeguarding the value of the road asset – As described in Section 4.9.1 of the Amendment Submissions Report, a pre- and post-construction dilapidation report will be prepared in consultation with Council and submitted for the applicable section of Barney's Reef Road between the Castlereagh Highway and the Mid Western LGA boundary. A road maintenance strategy will be developed in consultation with the relevant authorities (Council/TfNSW). ACEN understand it will be liable to fix road infrastructure damage directly caused by construction traffic on Barneys Reef Road and Birriwa Bus Route South. b) Environmental, social and economic cumulative impacts of the project have been addressed in detail in Section 5.2 of the Amendment Submissions Report and are further discussed in the next response below. The recommended conditions of consent listed in Attachment 1 of WSC have been noted.
	2. Cumulative impacts The developer's latest documentation identifies that as the infrastructure planner for the CWO REZ, EnergyCo is responsible for co-ordinating private sector investment from solar, wind and storage projects as well as planning new transmission infrastructure in the REZ. Including addressing the cumulative impacts of the REZ infrastructure as a whole.	Combined impacts of the project from other renewable developments within the REZ as of December 2023 has most recently been addressed in Section 5.2.1 of the Amendment Submissions Report (EMM 2023b). A cumulative impact assessment has been undertaken for the project with reference to the *Cumulative Impact Assessment Guidelines for State Significant Projects* (DPE 2022) and assessed and included within the EIS (Section 6.14), the Submissions Report (Section 5.14) and the Amendment Report (Section 4.10.2).

Agency	Feedback	Response
	However, the Project's Amendment Report seems to suggest that on this topic the extent of the efforts to date has been limited to 'investigations' or 'studies' on such matter as: a) Traffic and road upgrades and maintenance across the life of the project b) Housing and accommodation c) Community services – including healthcare, emergency services, education and recreational services d) Industry education and training e) Water, sand and gravel supply f) Waste and circular economy g) Telecommunications h) Bushfire management. This confirms the view of WSC and is the primary reason why it has objected to some of the SSD Projects.	As described in these assessments, the key areas for which the potential for cumulative impacts could arise relate to the aspects of traffic movements and the influx of construction workers. It has been demonstrated that the cumulative impacts associated with both of these aspects can be appropriately managed: • A construction accommodation facility has been included in the project to provide worker accommodation and avoid pressure on the local tourist and rental market. This facility will include a full kitchen and dining room, licensed social area, gymnasium, recreation area, medical centre and laundry. The provision of this communal infrastructure will also avoid the potential for additional pressure on local facilities in the region by construction workers. • In relation to traffic, ACEN has conservatively committed to a higher order intersection treatment at the Castlereagh highway/Barneys Reef Road, to ensure the efficient operation of this intersection when cumulative traffic movements are accounted for. As described in the Amendment Submissions report, this intersection design will be confirmed prior to construction to take into account up to date cumulative traffic projections at the time. The provision of the onsite accommodation facility also avoids the additional light vehicle movements on the local road network that would occur if workers were to be accommodated elsewhere in the region. It is also acknowledged that EnergyCo are undertaking ongoing assessments as part of the wider CWO REZ and have most recently submitted the CWO REZ Transmission Project EIS (EnergyCo 2023), which assessed cumulative impacts of the Transmission project and other renewable developments within the REZ.
	3. Planning Agreement WSC is pleased to note that the Developer has agreed in principle to a Planning Agreement with Mid-Western Regional Council, commencing at	Noted.

Agency	Feedback	Response
	construction of the project through the end of the project life. The monetary payments will be equivalent to 1.5% of the project's capital investment value for the purpose of delivering and facilitating community projects and infrastructure.	
	4. Water Supply It is understood from the Amendment Report that: a) some 218 ML of water will be required over the 28-month construction phase. Approximately 15 water trucks with a capacity of 20,000 L would be required to deliver this water per day b) some 225 ML of water is required over a 30-year operational life c) some 45.6 ML of water per year is required for the accommodation facility (assuming full capacity, i.e. 500 people). It is most concerning that at this point in time it is unclear where this water is to be sourced. WSC considers this to be unacceptable and urges DPHI to require the Developer to provide clear definition as to how and where water is to be sourced.	The issue of water supply for the project has been responded to - refer to the response to recommendation 1.1 from DCCEEWW – Water Group above.
	5. Gravel/Sand Supply The Amendment Report states that 'the source of construction material (including gravel) will be confirmed during detailed design'. WSC considers it unacceptable from a project description and impact assessment perspective for the Developer to simply defer such a critical matter to the detailed design stage. How can the impacts of an SSD project be adequately assessed and conditioned if it is unknown where the material is being sourced?	The source of construction material (including gravel) will be confirmed during detailed design, with relevant agreements in place. While the exact source is not known, the project's primary vehicle access route as described and assessed in the EIS (EMM 2022) and the TIA Addendum Report (refer to Appendix D of the Amendment Submissions Report) will be used to transport this gravel (i.e. via the Castlereagh Highway, Barney's Reef Road and Birriwa Bus Route South).

Agency	Feedback	Response
	And how can the heavy vehicle impacts be confidently assessed when the roads to be used, the distances hauled, etc are left unknown? WSC urges DPH I to require the Developer to provide clear definition as to how and where gravel, aggregate and cement is to be sourced	As outlined in Section 4.9.2 of the Amendment Submissions Report, all heavy vehicle movements have been accounted for and assessed within the TIA, with the heavy vehicle number estimates including the sourcing of gravel. Heavy vehicle estimates are further explained in Section 4.8.1 of the Amendment Submissions Report, Section 6.2.3 of the Amendment Report and in the Addendum TIA (Appendix D).
	6. Temporary Worker Accommodation It is noted the peak capacity of the accommodation facility will be 500 construction workers and that some 10% or around 50 workers will be locals who travel to the site daily by car (with no car-pooling or use of shuttle buses). WSC considers that assuming 10% of workers will be locals is overly optimistic and that 2% might be a more reasonable expectation. This in turn will have an impact on other areas of consideration e.g. roads	The assumptions relating to local workers were based on the outcomes of consultation with Mid-Western Regional Council (consultation 19 January 2023), who requested that the number of beds required at the accommodation facility should be calculated using a realistic local workforce estimate of 10%. This 10% local workforce assumption represents a conservative assessment. Assuming only 2% as suggested by WSC would mean there would be even less local traffic on the local roads during construction, as 98% of workers would be onsite, and would travel to and from the construction site via the internal access road within the project area.
	7. Conclusion WSC looks forward to continuing to engage with the Proponent and DPHI to address the matters articulated herein. WSC is seeking clear, definitive and explicit actions which will be committed to prior to and during construction and operation, refurbishment, and decommissioning. **The lack of adequate attention by the NSW Government to assessing and mitigating adverse cumulative impacts, especially social ones, remains a key concern.** To conclude, if, despite WSC's objection to the project for the reasons outlined, the DPHI/IPC is of a mind to grant consent then WSC requests that robust and transparent consent conditions be adopted that comprehensively address the issues raised. WSC has	WSCs recommendations for consent conditions are noted.

Agency	Feedback	Response
	included herein draft infrastructure consent conditions that, if adopted, would go some way to alleviating its concerns relating to roads and traffic.	

2.4 Mid-Western Regional Council

Table 4: MWRC

Agency	Feedback	Response
Mid-Western Regional Council Simon Jones Acting General Manager 16 January 2024	**Sewage Management** Council notes the disposal of sewage is not defined in the amendment submissions report. Council requests ACEN to identify suitable sewage disposal methods prior to consent.	Proposed sewage management is described in Section 4.8.3 of the Amendment Submissions Report. As described, it is estimated that the accommodation facility will produce approximately 250 L of sewage per person per day and 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 would 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 approximately 500 people. This processing capacity is below the threshold specified in Section 36 of Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act), and therefore an environment protection licence (EPL) would not be required if an on-site sewage treatment facility was to be installed.

Agency	Feedback	Response
		ACEN notes MWRC's advice that the Gulgong Sewage Treatment Plant (STP) does not have the facilities to receive tankered sewage from the accommodation facility. ACEN also notes MWRC's advice relating to the capacity of the Mudgee STP, and if available, will need to be upgraded. ACEN will continue to consult with the councils in the region, including 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. Dubbo Regional Council (DRC), Water Supply and Sewerage division were contacted on 27 February 2024 to determine the capacity and acceptance of the project sewage. DDRC advised that the project is located within the MWRC LGA and DRC's current policy and trade waste approval does not allow septic or septage waste collection outside of their LGA to be discharged at DRC's septage receival stations. However, at a meeting on 6 March, DRC confirmed they would be open to revising their policy to enable receiving sewage waste from outside their LGA if a contribution was made to upgrading their STP.
	Water Management Council notes water sources are not defined in the amendment submissions report. Council requests the ACEN to identify suitable water sources of both potable and construction water prior to consent.	The issue of water supply for the project has been responded to above - refer to the response to recommendation 1.1 from DCCEEWW – Water Group above.
	Traffic Management Council notes there are inconsistency in the traffic reports. Appendix D Addendum TIA Section 2.4.2 Workforce suggest peak workforce of 500 with 10% (50) which may be driving to site daily. i.e. additional MDT of 100 The report seems to assume that the 500 workers will never leave the accommodation camp working in shifts 24/7 and only additional traffic generated by the	I/II. The traffic assessment has been undertaken during the AM and PM peak hour to identify the road network impacts for the worst case scenario, as is required of a traffic impact assessment. Further, it is likely that workers will arrive at the accommodation facility before the commencement of the shift and leave the facility after their shifts. These trips are unlikely to occur during the peak traffic hours. In addition, significant numbers of accommodation facility residents (i.e. construction workforce) will not travel into town for social, routine medical, or purchasing reasons during the AM/PM

Agency	Feedback	Response
	project will be a total 100 traffic movements to/from the site by workers not living at the camp. This is unlikely the case. It could well be the case that peak traffic generation will be from workers travelling to/from the camp outside of their shift work hours. Council requests resubmission of all reports amended to be consistent in impacts of workforce and workforce numbers. A full review and resubmission of the TIA including: I. Assessment of peak hour traffic volumes through intersections for peak hours outside II. Assessment of ADT traffic loadings on Castlereagh Hwy, Barneys Reef Rd, Birriwa Road outside of work hours. This must include existing traffic volumes and cumulative impacts from other nearby energy developments/accommodation facilities. III. Reassessment of road upgrades required in accordance with Austroads Guide to Road Design part 3 Geometric Design rural roads. IV. Reassessment of intersection upgrades / turn treatments in accordance with Austroads Guide to Road design Part 4A unsignalised and signalised intersections.	peak hour as shift changeover will not occur during AM/PM peak hours. This measure will be described in the construction traffic management plan. While some trips may be necessary for individuals either in peak times or at other times, e.g. for medical reasons, it is expected that these would be ad hoc and one off/minimal, and therefore would not significantly contribute to traffic flows. III. The upgrade of Barneys Reef Road and Birriwa Bus Route South will be in accordance with relevant Austroads guide or as agreed with council prior to construction (see above TfNSW response). IV. In relation to intersection upgrades, Section 5.2 of the Addendum TIA describes that with the anticipated cumulative traffic volumes accounted for, a Basic Left Turn (BAL) and a Channelised Short Right Turn (CHR (s)) bay would be required on the Castlereagh Highway at Barneys Reef Road intersection. Notwithstanding, ACEN is committing to a higher order treatment of an AUL/CHR (pending further confirmation of the intersection upgrade requirements post-approval, based on updated cumulative traffic movement projections at the time), and a strategic concept design of this intersection has been appended to this response. In relation to the Barneys Reef Road/Birriwa Bus Route South intersection, the traffic count data has shown minimal traffic generation at this intersection. Due to the proposed development, the dominant movement would be between Barneys Reef Road (north) to Birriwa Bus Route South (east). As there is minimal through movement, Austroads warrant assessment is not applicable to this intersection. However, as per the request of TfNSW, an assessment has been carried out (refer to the response to TfNSW above (1(F)). This intersection will be designed based on the swept path assessments by the longest vehicle accessing this intersection e.g. 26 m long B-double truck and OSOM vehicle (refer to Appendix A).

3 Clarifications on matters in the revised Social Impact Assessment and draft Accommodation and Employment Strategy

Clarifications on the following points in the revised SIA and draft AES are outlined in Table 5. below.

Table 5: DPHI AES feedback

Feedback	Response
Discuss if workers on-site will be required to use the on-site medical services rather than utilising local general practitioner services.	ACEN has proposed that an on-site medical facility would be established and resourced with a qualified nurse. Activities that require a general practitioner would be serviced off-site. Additionally, ACEN has proposed the implementation of a telehealth service for workers, offering virtual access to a general practitioner. Both the above listed proposed initiatives would be available to workers for work related health matters. This information has been added to Section 6.2 (Services) of the updated AES (Appendix D).
Clarify the First Nations participation target in the AES, noting the aspirational target outlined in the First Nations Guidelines: Central-West Orana.	The regional study area comprises a substantial Indigenous population, accounting for 13.2% of the population compared to 3.5% for NSW. In line with the NSW *Government's Electricity Infrastructure Roadmap First Nations Guidelines* (OECC 2022), an aspirational target of 1.5% First Nations participation will be achieved through employment, procurement of goods and services from Indigenous businesses as well as investment in Indigenous business innovation. ACEN commits to undertaking activities that demonstrate best endeavours to meet a First Nations participation target of 1.5%*. This is aligned with other ACEN current projects in the Central West and is aligned with the NSW's Government's Long term Energy Service Agreement (LTESA) processes. **Project expenditure excludes goods and services that are not available domestically or locally.* The participation target is made up of one or a combination of: 1. At least 1.5% of the contract value to be subcontracted to Aboriginal-owned businesses 2. At least 1.5% of the contract's Australian-based workforce (FTE) that directly contributes to the contract to be Aboriginal or Torres Strait Islander peoples 3. At least 1.5% of the contract value is invested in education, training or capacity building for Aboriginal staff or businesses While ACEN commits to best endeavours to meet the target, the following risks have been identified in relation to the achievement of targets based on ACEN's knowledge base and experience:

Feedback	Response
	1. Current capacity and capability of Indigenous people to participate 2. Projected demand for First Nations to participate in a growing renewable energy industry in the Central West Orana REZ 3. Socio-economic profiles of regional communities over the duration of the project This information has been added to Section 5.2 (First Nations participation) of the updated AES (Appendix D).
Include further discussion on how disadvantaged groups will be targeted in the recruitment.	ACEN defines underrepresented groups as those that include people with characteristics defined in the *Anti-discrimination Act 1977 (NSW)*. This includes women, members of racial or ethnic minority groups, Aboriginal and Torres Strait Islander peoples, people with a disability, long-term unemployed and young people. It is noted however that ACEN's commitment to participation by underrepresented groups is not solely through recruitment and direct employment. Given the short term nature of the construction period, ACEN commits to social investments that contribute to thriving communities beyond the life of the project, and combined with its Planning Agreement in place with MWRC. It is anticipated that investments would be made that contribute to long term community outcomes, some of which have opportunity to relate to the support of underrepresented groups. That being said, below are some key activities ACEN would undertake: 1. Identify and partner with service providers to identify suitable roles, skills required and identify candidates 2. Funding via ACEN's own social investment program, and the project's Planning Agreement with MWRC for Micro-credentialling programs that offer short-course training outcomes This information has been added to Section 5.2 (Employment of under-represented groups) of the updated AES (Appendix D).
Revise the AES to make clear that no worker families will be hosted in the camp facilities.	Noted. This has been clarified in Section 6.2 (workforce accommodation approach) of the updated AES (Appendix D).
Ensure that all mitigation measures identified in the SIA addendum are captured in Appendix E – Updated Mitigation Measures and use consistent numbering/referencing of measures.	Appendix E (Mitigation Measures Summary Table) of the Amendment Submissions Report has been updated to include all mitigation measures identified in the SIA Addendum. The updated mitigation measures summary table has been included in Appendix C.

Yours sincerely

Cédric Bergé
Project Development Manager
ACEN Australia

References

Birriwa Solar and Battery Project Submissions Report, EMM 2023a

Birriwa Solar and Battery Project Amendment Report, EMM 2023b

Tallawang Solar Farm Traffic Impact Assessment, Samsa Consulting 2022

Central-West Orana Renewable Energy Zone Transmission project EIS, EnergyCo 2023

Appendix A – Strategic concept designs

NOT FOR CONSTRUCTION

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by:

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D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
C	ISSUED FOR APPROVAL	12.12.23	MDM	GC
B	ISSUED FOR APPROVAL	08.12.23	SJP	GC

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
GENERAL ARRANGMENT PLAN
SHEET 1

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Designed	Project No.		Dwg. No.	Issue
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SCALE 1:1000 @ A3
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D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
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B	ISSUED FOR APPROVAL	08.12.23	SJP	GC

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
GENERAL ARRANGMENT PLAN
SHEET 2

Drawn	Date	Scale A1	Q.A. Check	Date
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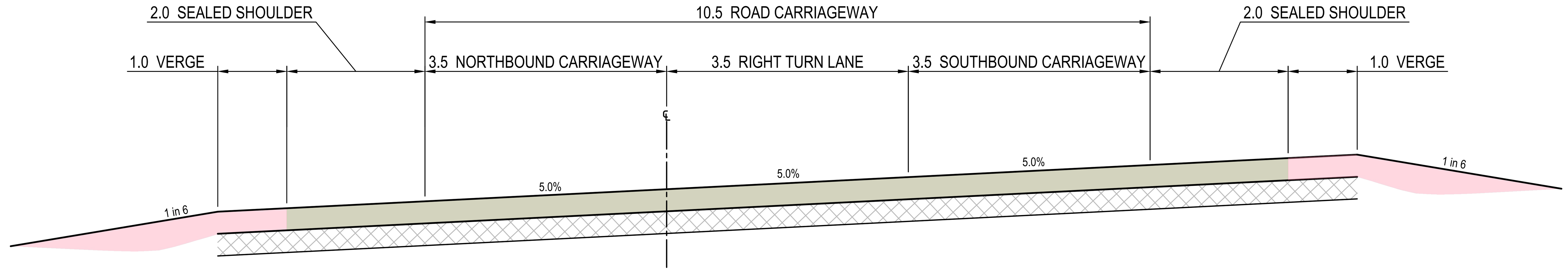
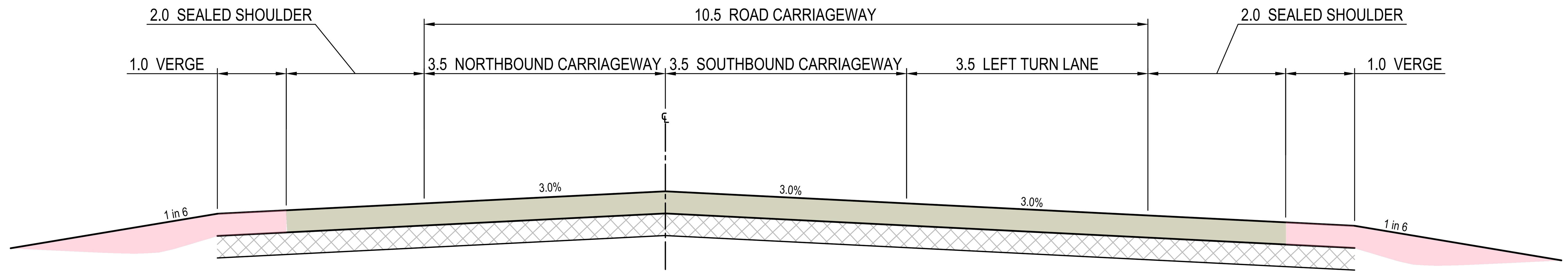


CASTLEREAGH HIGHWAY TYPICAL CROSS SECTION

SCALE 1:50

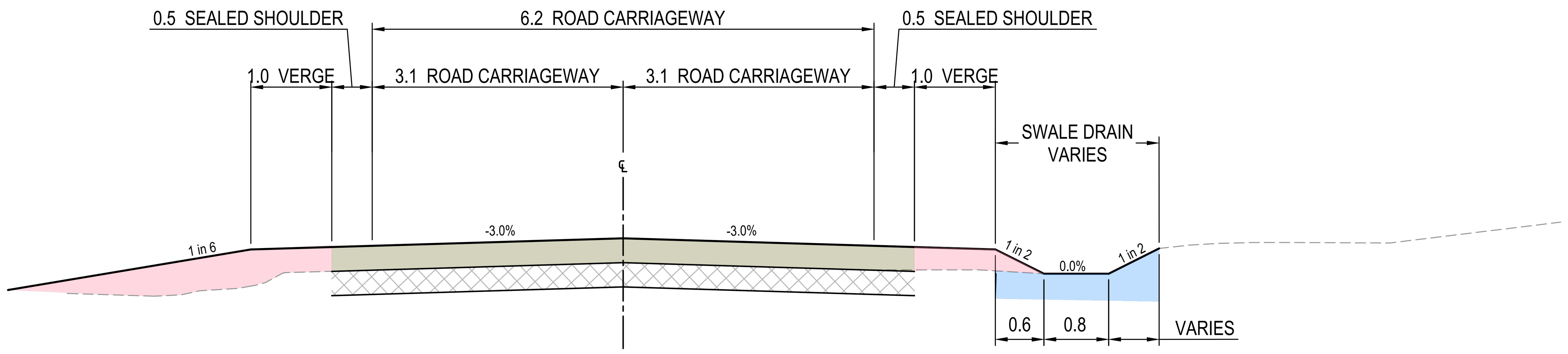
SECTION 1 / -



CASTLEREAGH HIGHWAY TYPICAL CROSS SECTION

SCALE 1:50

SECTION 2 / -



BARNEYS REEF ROAD / BUS ROUTE SOUTH
TYPICAL CROSS SECTION

SCALE 1:50

SCALE 1:50 @ A1
SCALE 1:100 @ A3
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Drawing Title
TYPICAL ROAD CROSS SECTION

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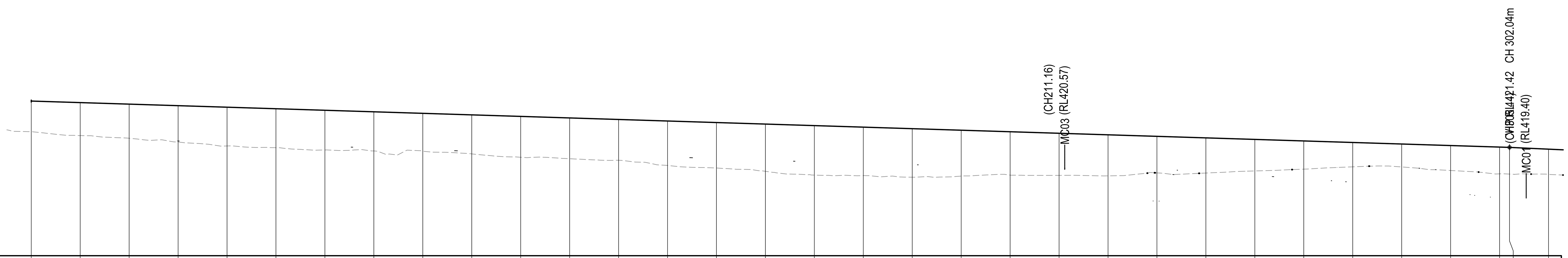

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HORIZONTAL GEOMETRY	L = 303.03 ; L = 301.75

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80	422.81	421.27
90	422.75	421.16
100	422.68	421.02
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120	422.56	420.89
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230	421.87	420.38
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280	421.56	420.62
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302.04	421.42	420.33
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CASTLEREAGH HIGHWAY (MC03) SIGHT LINE LONGITUDINAL SECTION

A1 Horizontal Scale 1 : 500
A1 Vertical scale 1 : 100

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

SCALE 1:100 @ A1
SCALE 1:200 @ A3
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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
MC03 SIGHTLINE LONGITUDINAL SECTION
SHEET 1

Drawn	Date	Scale A1	Q.A. Check	Date
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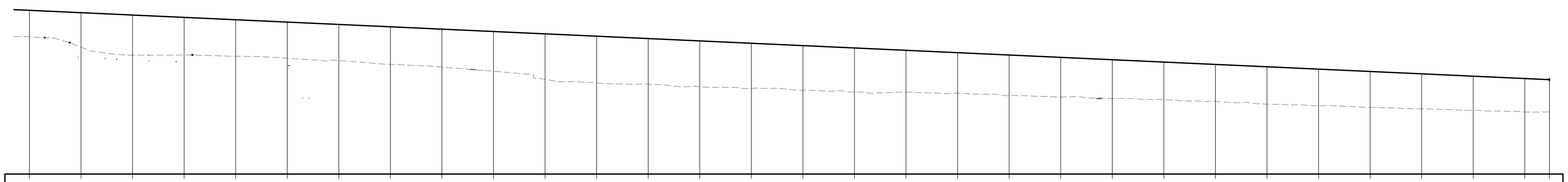

DATUM R.L 415

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HORIZONTAL GEOMETRY	L = 301.75															
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EXISTING LEVELS	420.32	419.92	419.61	419.62	419.57	419.49	419.40	419.25	419.15	418.99	418.67	418.53	418.48	418.39	418.33	418.25
SIGHTLINE CHAINAGE	310	320	330	340	350	360	370	380	390	400	410	420	430	440	450	460

SIGHT LINE LEVEL	419.89	419.80	419.71	419.62	419.52	419.43	419.34	419.25	419.16	419.07	418.98	418.89	418.80	418.70	418.66
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SIGHTLINE CHAINAGE	470	480	490	500	510	520	530	540	550	560	570	580	590	600	604.78

CASTLEREAGH HIGHWAY (MC03) SIGHT LINE LONGITUDINAL SECTION

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A1 Vertical scale 1 : 100

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

SCALE 1:100 @ A1
SCALE 1:200 @ A3
0 1 2 4 6 8 10 metres

NOT FOR CONSTRUCTION

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B	NOT ISSUED	-	-	-

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Project
BARNEYS REEF ROAD UPGRADE INTERSECTION DESIGN
BIRRIWA

Drawing Title
MC03 SIGHTLINE LONGITUDINAL SECTION SHEET 2

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	AS SHOWN		
Designed	Project No.		Dwg. No.	Issue
SJO	NSW220659		C3.102	E

Mar 21, 2024 - 11:50am

PRIME MOVER AND SEMI-TRAILER (19m)

Design Speed	15km/h
Overall Length	19.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	12.500m

NOT FOR CONSTRUCTION

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by:

Issue	Description	Date	Drawn	Approved
E	ISSUED FOR APPROVAL	21.03.24	SJP	GC
D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
C	NOT ISSUED	-	-	-
B	NOT ISSUED	-	-	-

North

Client
UPC\AC RENEWABLES AUSTRALIA
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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
VEHICLE TURNING PATHS
19m SINGLE ARTICULATED SEMI

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	AS SHOWN		

Designed	Project No.	Dwg. No.	Issue
SJO	NSW220659	C4.001	E

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

NOT FOR CONSTRUCTION

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Issue	Description	Date	Drawn	Approved
E	ISSUED FOR APPROVAL	21.03.24	SJP	GC
D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
C	NOT ISSUED	-	-	-
B	NOT ISSUED	-	-	-

North

Client: UPC\AC RENEWABLES AUSTRALIA
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Architect: ACEN Australia

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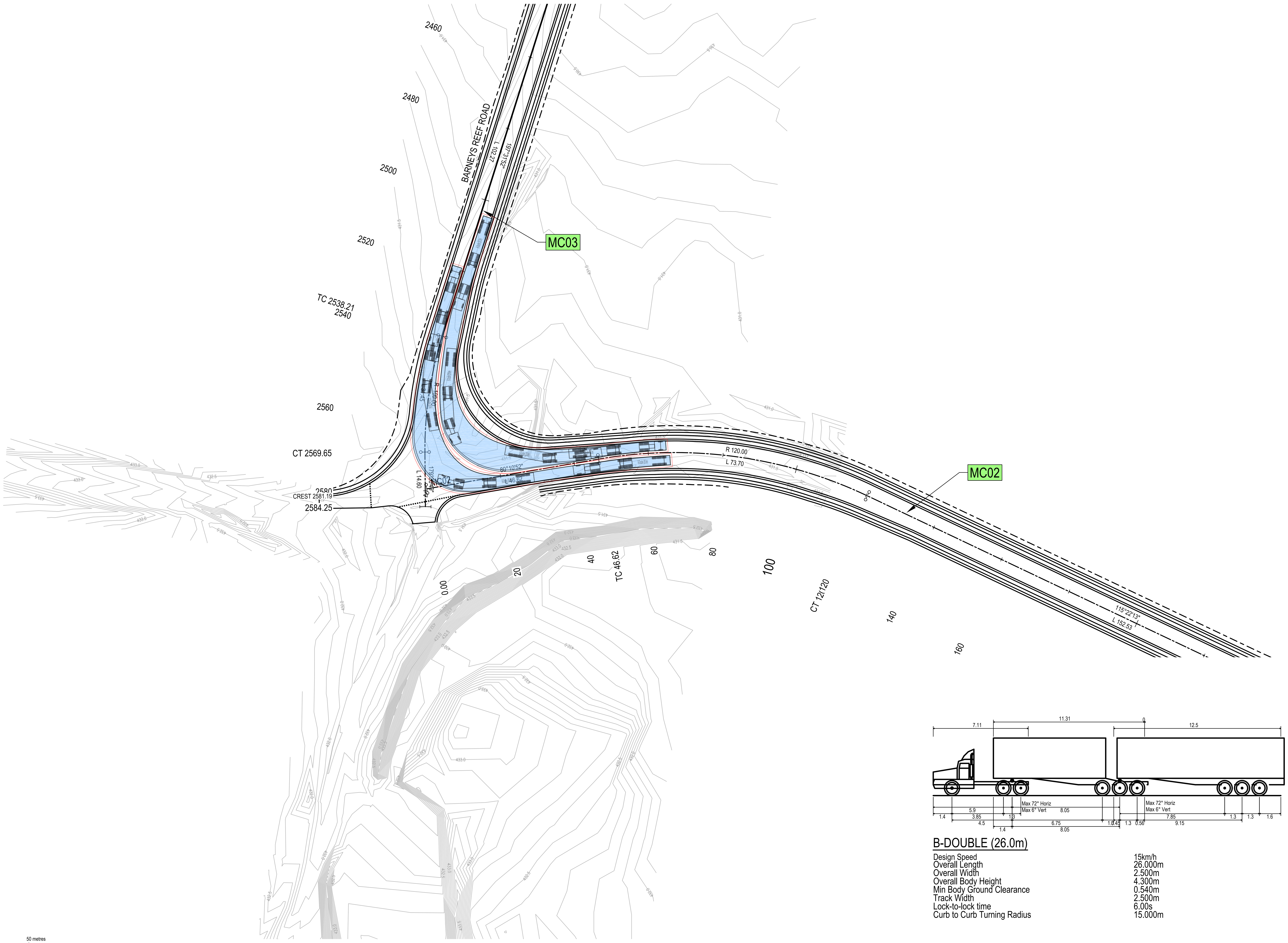
Project: BARNEYS REEF ROAD UPGRADE INTERSECTION DESIGN
BIRRIWA

Drawing Title: VEHICLE TURNING PATHS
26m B-DOUBLE

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	AS SHOWN		
Designed	Project No.		Dwg. No.	Issue
SJO	NSW220659		C3.102	E



B-DOUBLE (26.0m)

Design Speed	15km/h
Overall Length	26.000m
Overall Width	2.500m
Overall Body Height	4.300m
Min Body Ground Clearance	0.540m
Track Width	2.500m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	15.000m

SCALE 1:500 @ A1
SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

NOT FOR CONSTRUCTION

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C	NOT ISSUED	-	-	-
B	NOT ISSUED	-	-	-

North

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
VEHICLE TURNING PATHS
26m B-DOUBLE

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	1:500		
Designed	**Project No.**		**Dwg. No.**	**Issue**
SJO	NSW220659		C4-012	E

MC03

MC01

CASTLEREAGH HIGHWAY

CASTLEREAGH HIGHWAY

BARNEYS REEF ROAD

0.00

CREST 14.43

TC 16.29

CT 33.86

TC 51.94

SAG 85.45

CT 182.75

CT 477.337

159.645 160 180 200 220 240 260 280 301.406 300 320 340 343.370 345.565 355 358.066 360 380 384.825 400 420 428.958 440 460 480 500 520 534 540 560

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SCALE 1:1000 @ A3

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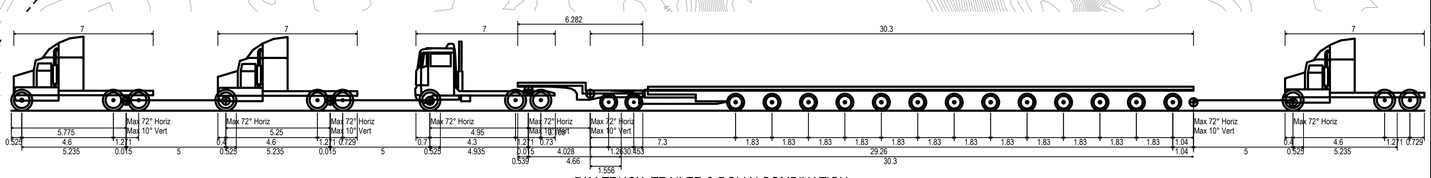

71M TRUCK, TRAILER & DOLLY COMBINATION

Design Speed	15km/h
Overall Length	70.978m
Overall Width	4.840m
Overall Body Height	3.725m
Min Body Ground Clearance	0.347m
Max Track Width	4.840m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	26.000m

NOT FOR CONSTRUCTION

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B	NOT ISSUED	-	-	-

1cm at full size 10cm 20cm

North

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
VEHICLE TURNING PATHS
OSOM VEHICLE

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	AS SHOWN		
Designed	Project No.		Dwg. No.	Issue
SJO	NSW220659		C3.102	E

Mar 21, 2024 - 11:51am
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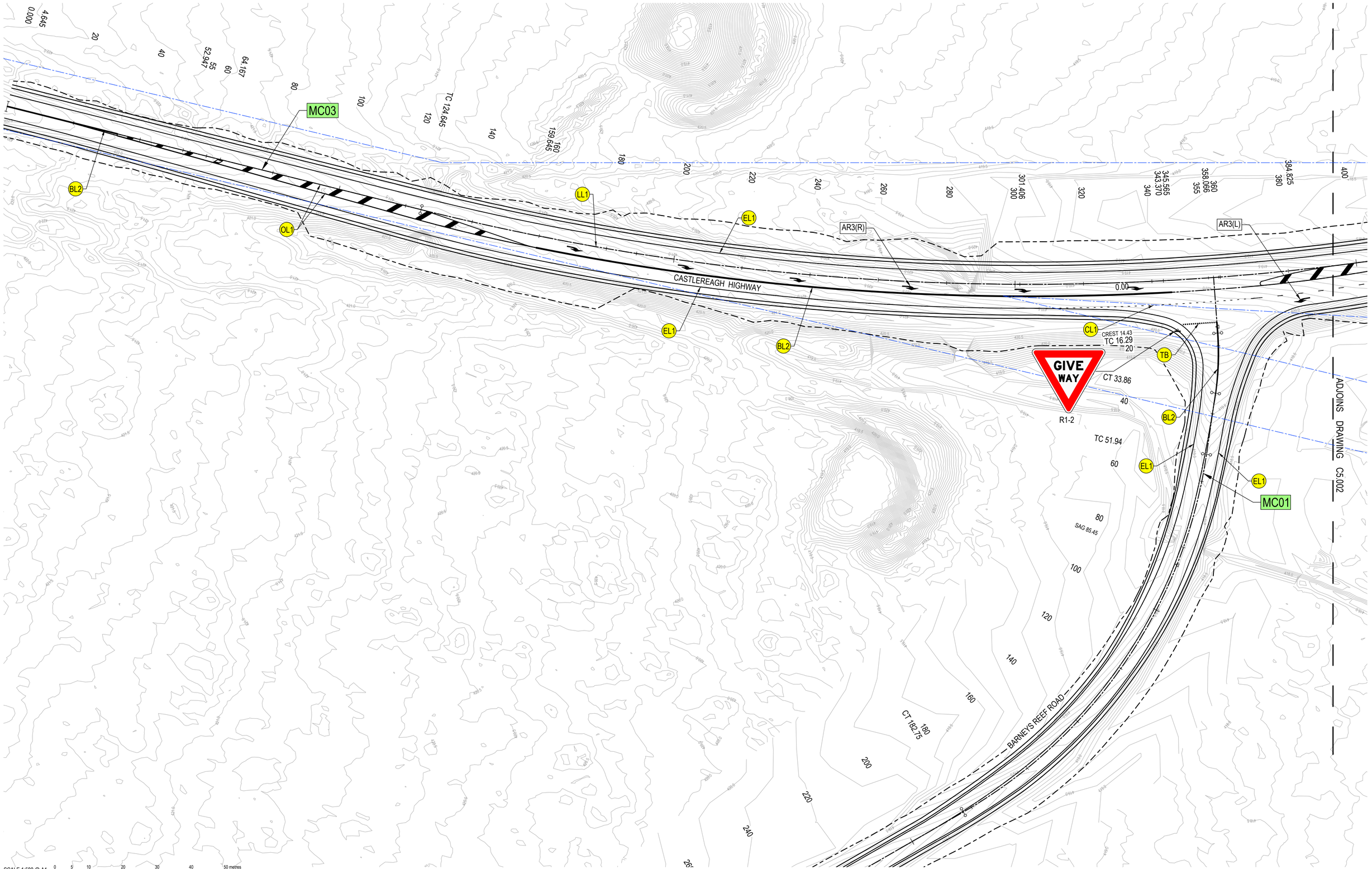

SCALE 1:500 @ A1
SCALE 1:1000 @ A3

0 5 10 20 30 40 50 metres

NOT FOR CONSTRUCTION

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D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
C	ISSUED FOR APPROVAL	12.12.23	MDM	GC
B	ISSUED FOR APPROVAL	08.12.23	SJP	GC

0 10cm at full size 20cm

North

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
SIGNAGE AND LINEMARKING PLAN
SHEET 1

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	1:500		
Designed	Project No.		Dwg. No.	Issue
SJO	NSW220659		C5.001	E

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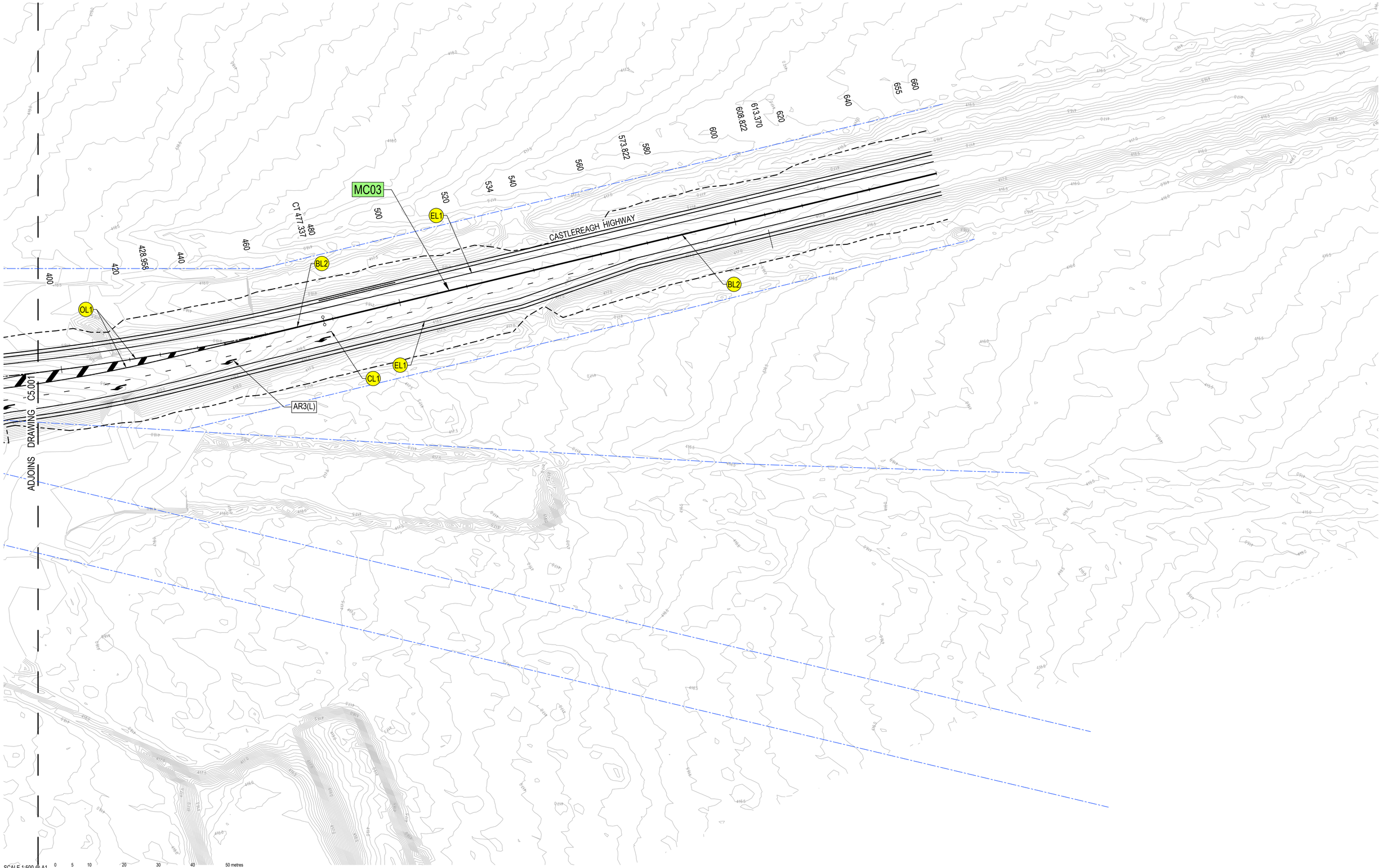

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D	ISSUED FOR APPROVAL	06.03.24	MDM	GC
C	ISSUED FOR APPROVAL	12.12.23	MDM	GC
B	ISSUED FOR APPROVAL	08.12.23	SJP	GC

0 1cm at full size 10cm 20cm

North

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
SIGNAGE AND LINEMARKING PLAN
SHEET 2

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	1:500		
Designed	Project No.		Dwg. No.	Issue
SJO	NSW220659		C5.002	E

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Mar 21, 2024 - 11:32am

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SCALE 1:1000 @ A3
0 5 10 20 30 40 50 metres

NOT FOR CONSTRUCTION

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D	-	-	-	-
C	-	-	-	-
B	-	-	-	-

North

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Project
BARNEYS REEF ROAD UPGRADE
INTERSECTION DESIGN
BIRRIWA

Drawing Title
SIGNAGE AND LINEMARKING PLAN
SHEET 3

Drawn	Date	Scale A1	Q.A. Check	Date
ADS	FEB-23	1:500		

Designed	Project No.	Dwg. No.	Issue
SJO	NSW220659	C5.011	E

Appendix B – Bettington St/Vennacher St median concept plan

A1

JOINS SHEET C01

DIRECTION OF TRAVEL

BETTINGTON STREET(B84)

PARKING (APPROX. 12 SPACES) TO BE TEMPORARILY REMOVED SUBJECT TO CONSULTATION WITH AUTHORITIES INSTALLMENT OF APPROPRIATE INTERIM SIGNAGE

TRIM TREES FOR CLEARANCE

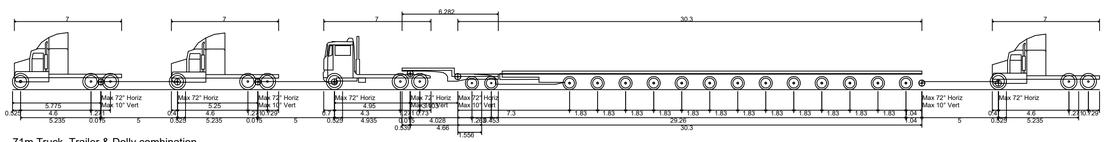
66.0

NO PARKING ZONE FROM BOUNDARY OF PIONEER MEMORIAL PARK AND GOLDEN FLEECE MOTOR INN, 119 BETTINGTON ST, MERRIWA NSW 2329

VENNACHER STREET

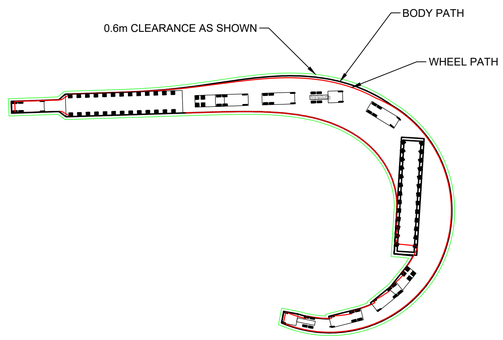
NO PARKING ZONE FROM DRIVEWAY OF FIRE AND RESCUE NSW BUILDING, 109 BETTINGTON STREET

PLAN
SCALE 1:250



71m Truck, Trailer & Dolly combination

Overall Length	70.978m
Overall Width	4.840m
Overall Body Height	3.725m
Min Body Ground Clearance	0.347m
Max Track Width	4.840m
Lock-to-lock time	6.00s
Curb to Curb Turning Radius	26.000m



SHEET INDEX

SHEET No	DESCRIPTION	REV
EMM - C00	EXTENT OF WORKS - 1 OF 2	A
EMM - C01	EXTENT OF WORKS - 2 OF 2	A
EMM - C02	SIGNAGE	A

NOT FOR CONSTRUCTION

EMM creating opportunities

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Ground Floor
20 Chandos Street,
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REV	DATE	COMMENT	DRAWN	REVIEWED
A	11/03/24	SIGNAGE	C.J.	A.U.
-	10/03/24	FOR COMMENT	C.J.	A.U.

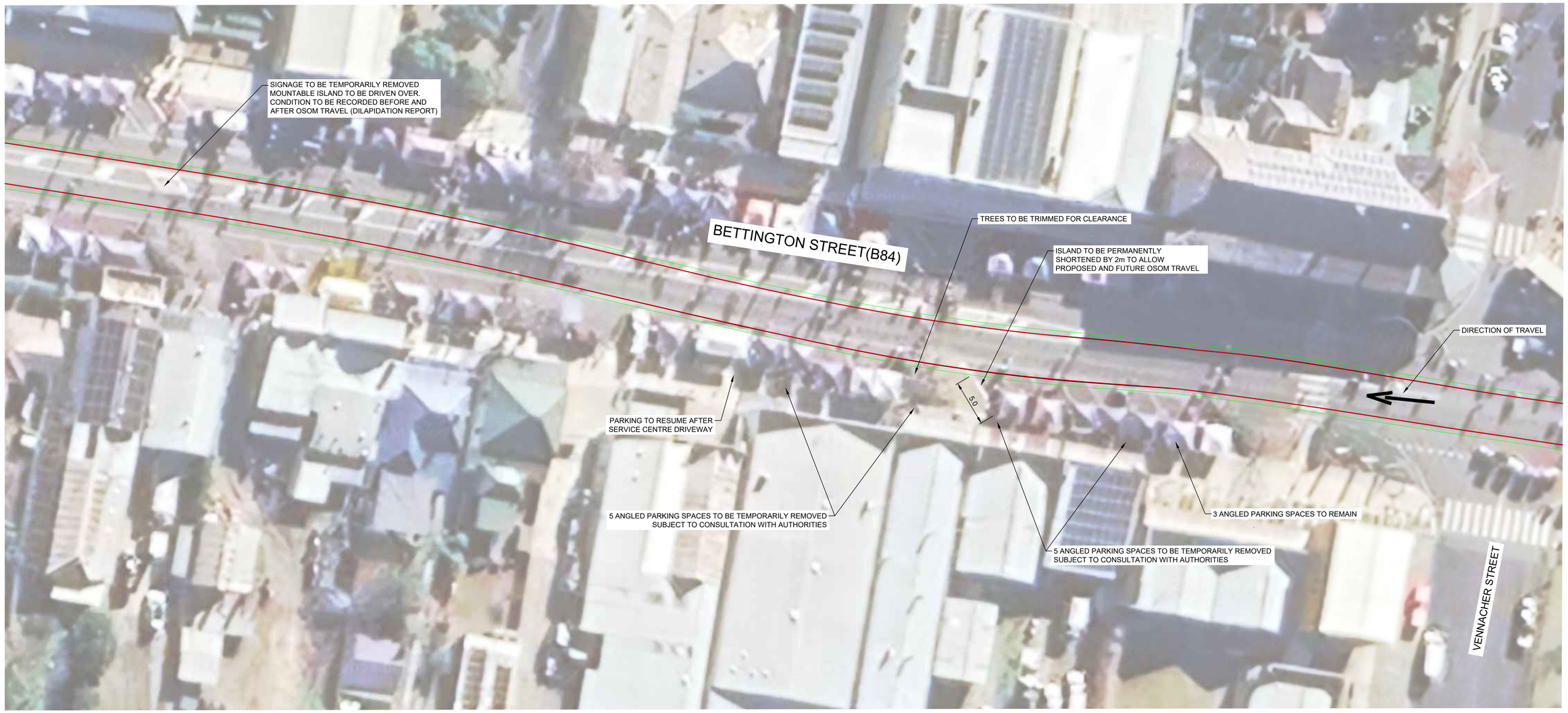
PROJECT:
BIRRIWA SOLAR FARM
OSOM VEHICLE MOVEMENT
BETTINGTON STREET, MERRIWA, NSW, 2329

DRAWING TITLE:
OSOM VEHICLE MOVEMENT
EXTENT OF WORKS (1 OF 2)

CLIENT: ACEN AUSTRALIA
DRG. #: EMM - C00
PROJECT #: J210553
SCALE: AS SHOWN

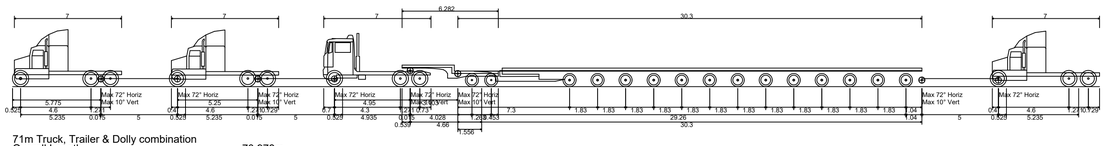
REV: A

A1



JOINS SHEET C00

PLAN
SCALE 1:250



71m Truck, Trailer & Dolly combination	
Overall Length	70.978m
Overall Width	4.840m
Overall Body Height	3.725m
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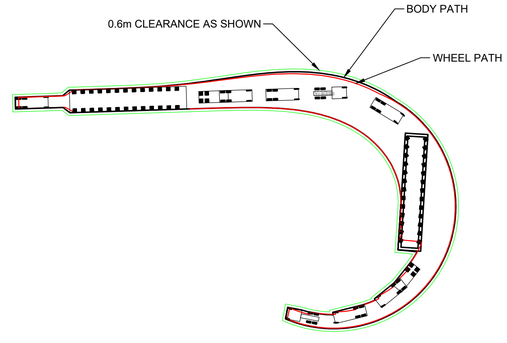

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REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
A	11/03/24	SIGNAGE	C.J.	A.U.					
-	10/03/24	FOR COMMENT	C.J.	A.U.					

PROJECT:
BIRRIWA SOLAR FARM
OSOM VEHICLE MOVEMENT
BETTINGTON STREET, MERRIWA,
NSW, 2329

DRAWING TITLE:
OSOM VEHICLE MOVEMENT
EXTENT OF WORKS (2 OF 2)

CLIENT: ACEN AUSTRALIA
DRG. #: EMM - C01
PROJECT #: J210553
SCALE: AS SHOWN

REV: A

A1

PLAN
SCALE 1:400

NOT FOR CONSTRUCTION

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Phone # 02 9493 9500

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REV	DATE	COMMENT	DRAWN	REVIEWED
A	11/03/24	SIGNAGE	C.J.	A.U.
-	10/03/24	FOR COMMENT	C.J.	A.U.

PROJECT:
BIRRIWA SOLAR FARM
OSOM VEHICLE MOVEMENT
BETTINGTON STREET, MERRIWA, NSW, 2329

DRAWING TITLE:
OSOM VEHICLE MOVEMENT SIGNAGE

CLIENT: ACEN AUSTRALIA
DRG. #: EMM - C02
PROJECT #: J210553
SCALE: AS SHOWN

REV: A

Appendix C – Updated mitigation measures table

The table below provides a summary of project mitigation measures. The summary of mitigation measures includes **bold text** which were measures added to the project as a result of the amended project (i.e. Amendment Report). The measures highlighted in green text are those which have been added to reflect measures identified in the Addendum Social Impact Assessment and Accommodation Employment Strategy and subsequently some measures have been removed or superseded as a result of the Addendum SIA.

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.
VIS6	The principles of the *Dark Sky Planning Guideline* will be implemented.
Traffic and transport	
TT1	**As a conservative approach, install a channelised right turn treatment (CHR) on the Castlereagh Highway at the Castlereagh Highway/Barneys Reef Road intersection northbound approach, and an auxiliary left turn treatment (AUL) on the southbound 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: • informing drivers about the school bus routes along Castlereagh Highway • direction to avoid compression braking near residential receptors • 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 • 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 • responding to local climate conditions that may affect road safety such as fog, dust and wet weather. The CTMP will be prepared by suitably qualified persons in accordance with the TfNSW (2022) *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. In addition to the above following measures will be implemented: • in consultation with the CWC Trail Inc a signage plan will be prepared, highlighting the CWCT within and in the vicinity of the project • within the site induction and driver's code of conduct, the CWCT will be highlighted to increase awareness of cyclists' presence in the area • any site-specific circumstance e.g. peak construction activities, a traffic controller may be required to manage the vehicular traffic and cyclists which is subject to site supervisor's safety assessment and discretion.
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.

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: • compartmentalisation • occupancy and means of egress • fire barriers • exhaust and ventilation system • sprinkler system and required water volume • 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: • type of firefighting or control medium • 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.
NV2	To achieve compliance during construction with the ICNG noise goals, the following will be implemented: • 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 • 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: • no electrical infrastructure (i.e. transformers or inverters) will be installed within 250 m of the property boundary of R3 • 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). 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: • erosion and sediment control • soil preservation • dispersive subsoils • any cut and fill activities • drainage and landform design. 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.
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	
A01	An Accommodation and Employment Strategy (AES) will be finalised prior to construction commencement.
A02	The AES will describe actions to further minimise pressure on the existing capacity of short-term accommodation in the local area.
A03	A medical centre and first aid station with an onsite nurse will be provided at the accommodation facility. ACEN will seek to further reduce pressure on community services by: • engaging in regular communication with services and health care providers across the regional area • community benefit sharing with potential investment in initiatives that support service delivery and health awareness • engaging with EnergyCo and other renewable energy proponents in the regional area in relation to a coordinated response to manage potential workforce impacts on services and facilities across the regional area.
L01	ACEN will seek to support local business by utilising established supply networks and providing sufficient opportunities and information for local businesses to tender for supply contracts. Wherever possible and practical, ACEN will work with the local businesses, and the local community to prioritise and use local goods and services.
S01	A Complaints and Grievances Procedure will be implemented.
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. 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.

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.
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. **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* • APZ will be maintained free from fuel (i.e. comprised of sand, gravel, etc). • Grass will be kept short and to a height <10 cm. • Where possible any tree canopy will be excluded from the APZ. Where tree canopy cannot be excluded then the following will be implemented: – Ensure canopy cover within the APZ is less than 15% of the total canopy area. – Ensure branches do not touch or overhang any infrastructure buildings. – Ensure lower limbs are removed up to a height of 2 m above ground. – Ensure canopies are separated by at least 2 m. – Preference should be given to smooth barked and evergreen trees. • **Shrubs are to be maintained as follows:** – **Large discontinuities or gaps in the vegetation to slow down or break the progress of fire towards buildings should be provided.** – **Shrubs should not be located under trees.** – **Shrubs should not form more than 10% groundcover.** – **Clumps of shrubs should be separated from exposed windows and doors by a distance of at least twice the height of the vegetation.**
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). **For the accommodation facility, the following BAL apply:** • **BAL 29 level of construction as per Section 3 and 7 of AS 3959-2018 and Chapter 7.5 PBP to perimeter structures.** • **BAL 19 and BAL 12.5 level of construction as per Section 3 and 5-6 of AS 3959-2018 to internal structures.**
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: • reduce waste production • recover resources • dispose of waste appropriately.
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.

Appendix D – Updated AES

ACEN | Australia

Birriwa Solar

Accommodation and Employment Strategy

ACEN Australia
Suite 2, Level 2
15 Castray Esplanade
Battery Point, TAS 7004

Table of Contents

Acronyms and Abbreviations

Acronym	Descriptions
AES	Accommodation and Employment Strategy
APP	Aboriginal Participation Plan
BESS	Battery Energy Storage System
CWO	Central-West Orana
DA	Development Application
DPE	Department of Planning and Environment (NSW)
EIS	Environmental Impact Statement
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EP&A Regulation	Environmental Planning and Assessment Regulation 2021 (NSW)
FTE	Full Time Equivalent
kV	Kilovolts
IPC	NSW Independent Planning Commission
LGA	Local Government Area
MPS	Multipurpose Service
MW	Megawatts
Planning Systems SEPP	State Environmental Planning Policy (Planning Systems) 2021 (NSW)
PV	Photovoltaic
REZ	Renewable Energy Zone
SSD	State Significant Development

1 Introduction

1.1 Background

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

This draft Accommodation and Employment Strategy (AES) supports the development of the project.

The project will have an indicative capacity of around 600 megawatts (MW) and will include a centralised battery energy storage system (BESS) of up to 600 MW for a 2-hour duration (1,200 MWh). The BESS will enable energy from solar to be stored and then released during times of demand, as well as providing grid stability services and back-up capacity to ensure security of supply.

The project will comprise the following key components:

- Installation of approximately 1 million solar PV panels and associated mounting infrastructure.
- A BESS with a capacity of up to 600 MW and a storage duration of up to 2 hours (1,200 MWh).
- An on-site substation with a connection voltage of up to 500 kilovolts (kV).
- Electrical collection and conversion systems, including inverter and transformer units, switchyard, control room and staff car park.
- Underground and aboveground cables.
- An operational infrastructure area, including demountable and permanent offices, amenities, and equipment sheds.
- Internal access roads.
- A temporary construction compound (during construction and decommissioning phases).
- An access route upgrade from Castlereagh Highway to the project site via Barneys Reef Road and Birriwa Bus Route South.
- A temporary accommodation facility to provide accommodation for up to 500 construction staff during the construction phase of the project.
- An emergency access track providing secondary access from via Merotherie Road to the accommodation facility.

An overview of the project is shown in Figure 1.

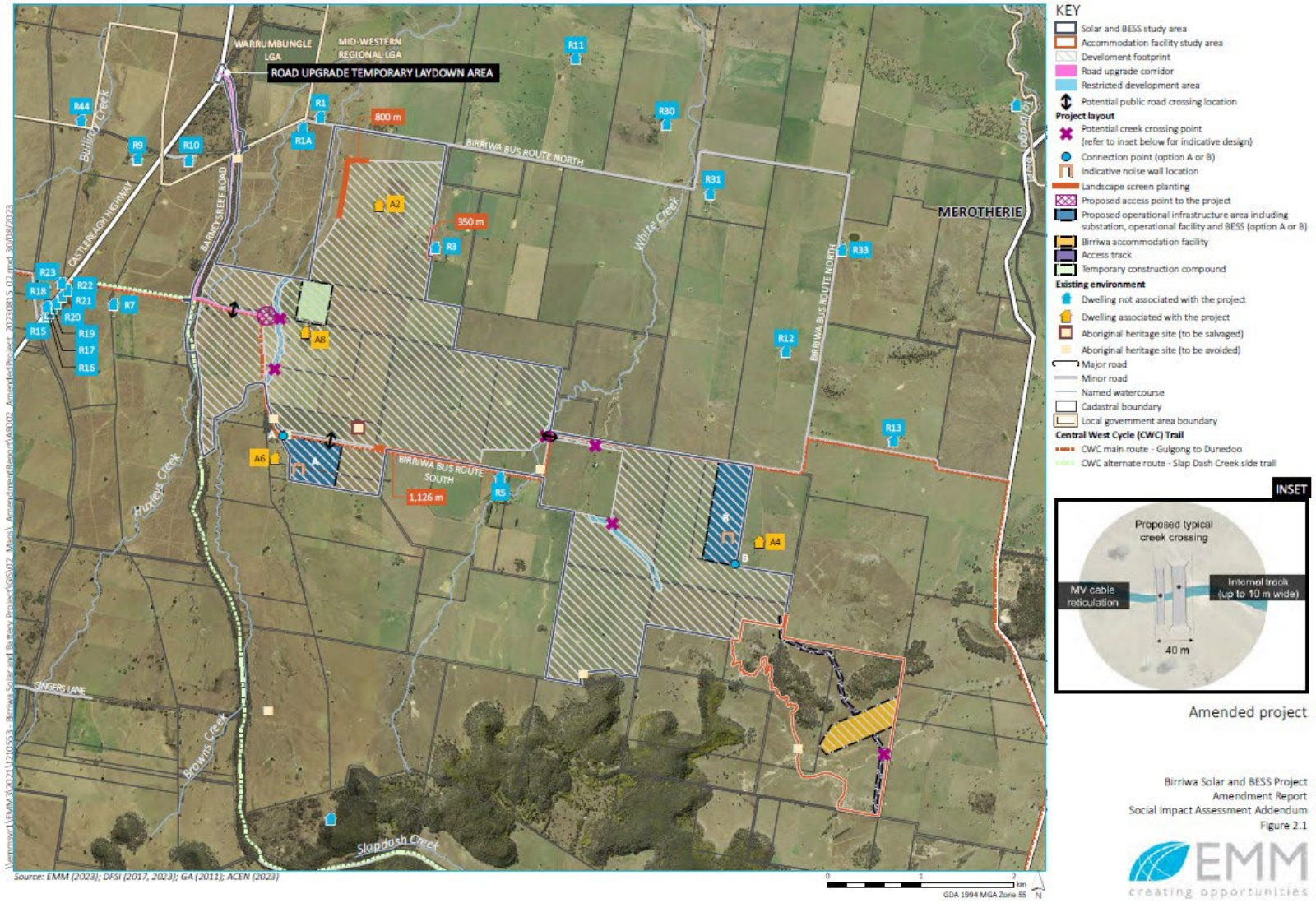


Figure 1 – Project layout

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 be upgraded to provide safe access to the development footprint during construction of the project.

The project is also within the Central-West Orana (CWO) Renewable Energy Zone (REZ), which was the first REZ to be declared in Australia. The key objective of the project is to deliver up to 600 MW of renewable energy supply to NSW. In doing so, the project will play an important part in achieving the objectives of the CWO REZ. It will also provide significant economic stimulus to the region through employment opportunities and associated social and economic benefits.

1.2 Objective and scope

This draft AES has been developed to demonstrate ACENs commitment to, and the feasibility of, delivering positive social outcomes for the community.

Preparation of this strategy has been brought forward to supplement the Social Impact Assessment Addendum in response to a request from the Department of Planning and Environment (DPE) in relation to the Birriwa Solar and Battery Project Amendment Report. This AES will be a live document that will evolve prior to construction, and throughout the different stages of the project to reflect the updated timelines and the rapidly changing context of the CWO REZ.

The objectives of this draft AES are to:

- Outline measures to ensure sufficient accommodation is available for the project workforce that cannot be sourced locally at all stages of construction.
- Limit the impact on regional housing availability and affordability as a result of temporary incoming workforce required to construct the project.
- Encourage contracting and employment opportunities for local providers during the construction of the project.
- Offer a positive health and well-being experience for workers through appropriate temporary accommodation design.
- Detail services and infrastructure to be provided in the proposed temporary accommodation facility.
- Encourage contracting and employment opportunities for local providers during the construction of the project.
- Outline targets for the employment of local workers.
- Consider the cumulative impacts associated with other State Significant Development projects in the area.
- Outline a program to monitor and review the effectiveness of the AES for each stage of the project.

The development of this draft AES was informed by the Amendment Report (EMM 2023b), the Amendment Submissions Report (EMM 2023c) and the Social Impact Assessment Addendum (EMM 2023d) prepared for the project.

This draft AES will be revised accordingly as the project progresses to incorporate additional considerations and or requirements and will be finalised prior to project construction in consultation with relevant stakeholders including Mid-Western Regional Council (MWRC), Warrumbungle Shire Council, and Dubbo Regional Council and the primary construction contractor.

The structure of this strategy is as follows:

- Section 1 provides an overview of the project and an overview of the objective and scope of this draft AES.
- Section 2 provides a brief overview of the local and regional social and economic context.
- Section 3 describes the workforce required during the construction, operation and decommissioning phases of the project.
- Section 4 addresses the potential for cumulative impacts and interaction with other local projects.
- Section 5 describes the employment strategy, including a description of local employment opportunities; the recruitment strategy; and the mechanisms to enable local employment.
- Section 6 describes the accommodation strategy, including an overview of short-term and rental accommodation, the temporary accommodation facility; and the projects' workforce accommodation approach.
- Section 7 provides details on the implementation of the AES, including proposed management measures and their monitoring and reporting; the associated record keeping; and the process of evaluation and review.

2 Socio-economic context

This section outlines the socio-economic context of the locality and surrounding communities where the project will be developed. It provides an understanding of current socio-economic conditions and trends and insights into options for workforce employment and accommodation.

The geographic area applicable to project employment and accommodation is layered and includes the following:

- The local area comprising the localities of Birriwa, Merotherie and Dunedoo.
- Key townships of Gulgong and Mudgee.
- Regional area comprising the Mid-Western Regional, Warrumbungle Shire, and Dubbo Regional LGAs.

The local area and key townships are the communities likely to experience direct social impacts from the project (i.e. impacts related to local social infrastructure and services, road infrastructure, amenity and workforce accommodation).

The regional study area includes the geographic areas likely to experience fewer direct and more indirect social impacts of the project. Indirect impacts are associated with use of infrastructure, employment, supply chains, roads, transportation of goods, materials and equipment and cumulative impacts arising from other projects in the area.

Table 1 provides a summary of key socio-economic characteristics across the local and regional areas.

Table 1 – Summary of baseline conditions across the relevant geographic study area

Thematic area	Summary
Demographic and socio-cultural characteristics	• Local area – Total population of 1,166 people in 2021 with the majority residing in Dunedoo. – Typically, an older population with a higher median aged and proportion of people aged 65 years or older compared to NSW. – Low levels of population mobility and high rates of volunteering. – Higher proportion of people who identify as Indigenous (particularly in Dunedoo) compared to NSW. • Key townships – Higher proportion of people aged 0-14 years (21.1%) compared to NSW (18.2%). – A substantial proportion of the population are susceptible to relative disadvantage. – The 2021 Socio Economic Indexes For Areas (SEIFA) rankings showed people in Gulgong were disadvantaged with low access to economic resources and a low level of education and skills relative to other areas. • Regional area – Total population of 89,860 people in 2021 which was a 7.6% growth compared to five-years prior. – Generally higher proportions of people who identify as Indigenous compared to NSW. – The 2021 SEIFA rankings showed people in the Warrumbungle LGA were relatively disadvantaged while Dubbo Regional LGA showed the least level of disadvantage.
Community culture, values and aspirations	• Aspiration for job and economic growth as well as fostering activities and employment for young people. • The regional area exhibits a strong sense of community care, spirit and safety. The community value the rural lifestyle, landscape, environment, sustainability, access to services, public infrastructure and community activities. • Dunedoo, Gulgong, Mudgee and surrounding area are situated on the traditional land of the Wiradjuri peoples.
Social infrastructure	• There are five primary schools, four secondary schools, two combined schools, in the local area. Residents of the local area can access schooling in the regional area with minimal travel required. • Tertiary education institutions are in Mudgee and Dunedoo as well as in Coonabarabran and Gilgandra in Warrumbungle LGA. • The local area is situated in the northern network of the Western NSW Local Health District with Mudgee Hospital and Health Service the closest hospital to the project. Other smaller hospitals nearby include Gulgong Multipurpose Service (MPS) and Dunedoo MPS with Dubbo Hospital the main referral hospital for the northern network. • There are three police stations, three ambulance stations, and three fire and rescue stations in the local area, with additional emergency services located in the broader regional area. • A greater range of social infrastructure is concentrated in the three centres of Dunedoo, Gulgong and Mudgee.

Thematic area	Summary
Workforce and income	• Lower labour force participation rate in the local area which can be attributed to the higher proportions of people aged 65 years and over. • Mudgee had one of the lowest unemployment rates of the study areas at 3.6%, consistent with its high labour force participation rate. • Top regional industries of employment in 2021 were mining (12.7%), agriculture, forestry and fishing (11.8%), and health care and social assistance (11.5%). • Warrumbungle Shire has a higher proportion of youth unemployment compared to the other study areas and NSW more broadly. • Labour force trends suggest labour market conditions in the Mid-Western Regional LGA are influenced by different factors Warrumbungle and Dubbo Regional LGAs. • With the exception of individual income in Dubbo LGA, all study area recorded median weekly income levels below that of NSW.
Housing and accommodation	• Higher proportion of rented dwellings within key townships potentially attributed to presence of a large health and education sector workforce and attractiveness of towns as base locations for other regional major projects construction workforces. • Tight rental market across the region with vacancy rates consistently below the 3.0% benchmark. • A greater range of short-term accommodation are concentrated in the larger communities of Dunedoo, Gulgong and Mudgee including hotels, motels, bed and breakfast accommodation, farm-stay, holiday home rentals (Airbnb) and caravan parks. • The most abundant form of short-term accommodation in the local area and key townships area is private holiday rentals through platforms such as Airbnb and booking.com.
Local business and industry	• In 2021, the top industries of employment across the local area and key townships include mining (17.2%), health care and social assistance (11.5%), and retail trade (10.1%). Top industries of employment for the regional area include health care and social assistance (16.1%), retail trade (9.2%), education and training (9.2%), and agriculture, forestry and fishing (7.3%). • In 2022, the agriculture, forestry, and fishing industry sectors accounted for the largest share of registered businesses in the Mid-Western Regional LGA (33.9%) and the Warrumbungle LGA (56.0%). The construction industry had the second largest share of registered businesses across the regional area.

Thematic area	Summary
Health and community wellbeing	• The provision of health-related infrastructure and services is less comprehensive in comparison to more urban regions of NSW, necessitating travel outside of the regional area to access specialist health and community services (e.g., at Dubbo Hospital). • Vulnerabilities identified within the Western NSW local health district (LHD) include concerning alcohol consumption and obesity, which were both trending higher compared to NSW. • Between 2017 and 2021, the number of non-casualty road incidents increased in Warrumbungle LGA and Dubbo LGA, while the number of fatal road incidents increased in Mid-Western Regional LGA. • Since 2018, the rate of total offences (per 100,000 people) across the LGAs of the regional area has generally been higher than the NSW average. Dubbo LGA consistently recorded a significantly higher rate of total offences, with total offence rate recorded in 2022 more than double of what was recorded for NSW as a whole.

3 Workforce estimates

3.1 Overview

Construction of the project is expected to take up to 28 months from the commencement of site establishment works. Project construction 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, bushfire asset protection zones and construction of the temporary accommodation facility.
- Construction of the solar and BESS development, including construction of temporary ancillary facilities.
- Commissioning and testing.

Construction activities will be undertaken during standard hours Monday to Friday (7.00 am to 6.00 pm) and on Saturdays from 8.00 am to 6.00 pm. No construction works will occur on Sundays or public holidays. However, ACEN proposes the following construction activities may be undertaken outside these hours:

- 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.

Subject to planning approval, labour and equipment availability, construction of the project is expected to commence in early 2026.

A summary of workforce estimates by project stage is provided in Table 2.

Table 2 - Workforce estimates by project stage

Project stage	Estimated duration	Estimated Commencement date	Indicative worker numbers required	Worker accommodation	Construction notes
Site preparation and pre-construction	3 to 7 months within the 28-month construction period	Quarter (Q)1 2026	25 to 30 people	Non-local workers: short-term accommodation within Gulgong, Dunedoo, or Mudgee.	Accommodation facility construction may be staged.
Construction	28 months	Q4 2026 to early 2028. Peak construction in quarter one (Q1) 2027. An estimated construction workforce histogram is provided in Figure 2.	Peak of up to 500 full time equivalent (FTE) workers	Non-local workforce: temporary project accommodation facility. Local workforce: accommodated in their existing accommodation and commute to the project site on a daily basis,	Assuming that peak construction activities of solar and BESS infrastructure will not occur at the same time.
Operation	Solar: 30 - 50 years BESS: 20 years	Early 2028	Up to 20 people	Non-local workforce: short-term accommodation or accommodation facility Local workforce: accommodated in their existing accommodation and commute to the project site on a daily basis	Some specialist subcontractors or equipment manufacturers will be non-local. Local workforce for routine activities such as fencing maintenance and vegetation management, wherever available
Decommissioning	Up to 28 months	Scope to be confirmed. Once the solar and BESS 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			

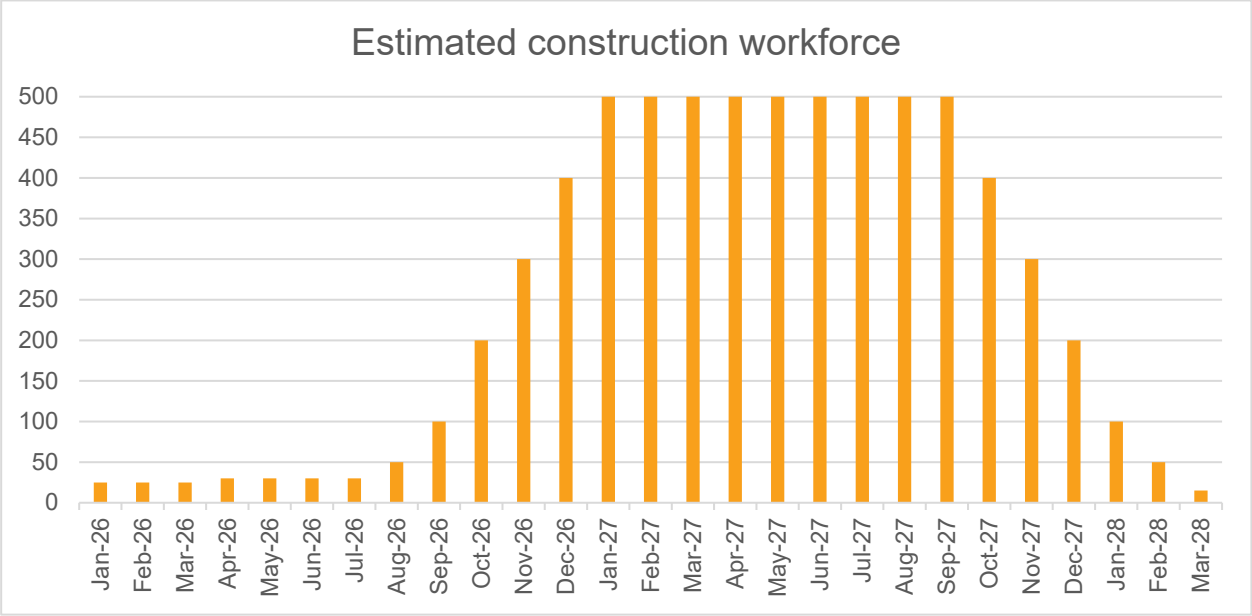


Figure 2 - Estimated construction workforce

4 Cumulative employment and accommodation demand

4.1 Overview

In acknowledgment of the number of energy projects being advanced in the CWO REZ, there is a focus on understanding and planning for cumulative impacts across a number of key impact areas. Cumulative impacts are a key concern raised by communities and stakeholders. This section provides consideration of the project's potential to generate cumulative impacts and/or benefits in the region.

The project is located within the Mid-Western Regional LGA, with cumulative impacts potentially extending to the Warrumbungle Shire LGA and Dubbo LGA.

Future projects within the CWO REZ and the regional area identified in the Social Impact Assessment (SIA) Addendum for the project (listed on the DPE Major Projects Planning Portal and EnergyCo's interactive map of CWO REZ projects (EnergyCo 2023)) are summarised in Table A.1 in Appendix A. Projects that may result in cumulative impacts with the Birriwa Solar and Battery Project include those which have notable workforce and accommodation requirements, and which may proceed around the same time.

Construction workforce related considerations included population change and resulting demand for services, traffic, employment and economic growth, and workforce accommodation provision. The SIA (EMM 2022b) also considered operational effects, such as visual and land use outcomes.

An indicative construction timing of 2026 to early 2028 (approximately 28 months) for the project has been assumed. Figure 3 indicates the peak workforces of major projects with potentially overlapping construction schedules. A detailed summary of projects considered in addressing cumulative impacts is provided in Appendix A.

Assessment for the purpose of addressing social impacts identified there were 27 projects in the intersection of the Central-West Orana REZ and the regional area. Of these, 8 were in the Mid-Western Regional LGA, 2 were in Warrumbungle Shire LGA and 10 were in Dubbo Regional LGA. The remainder crossed multiple LGAs.

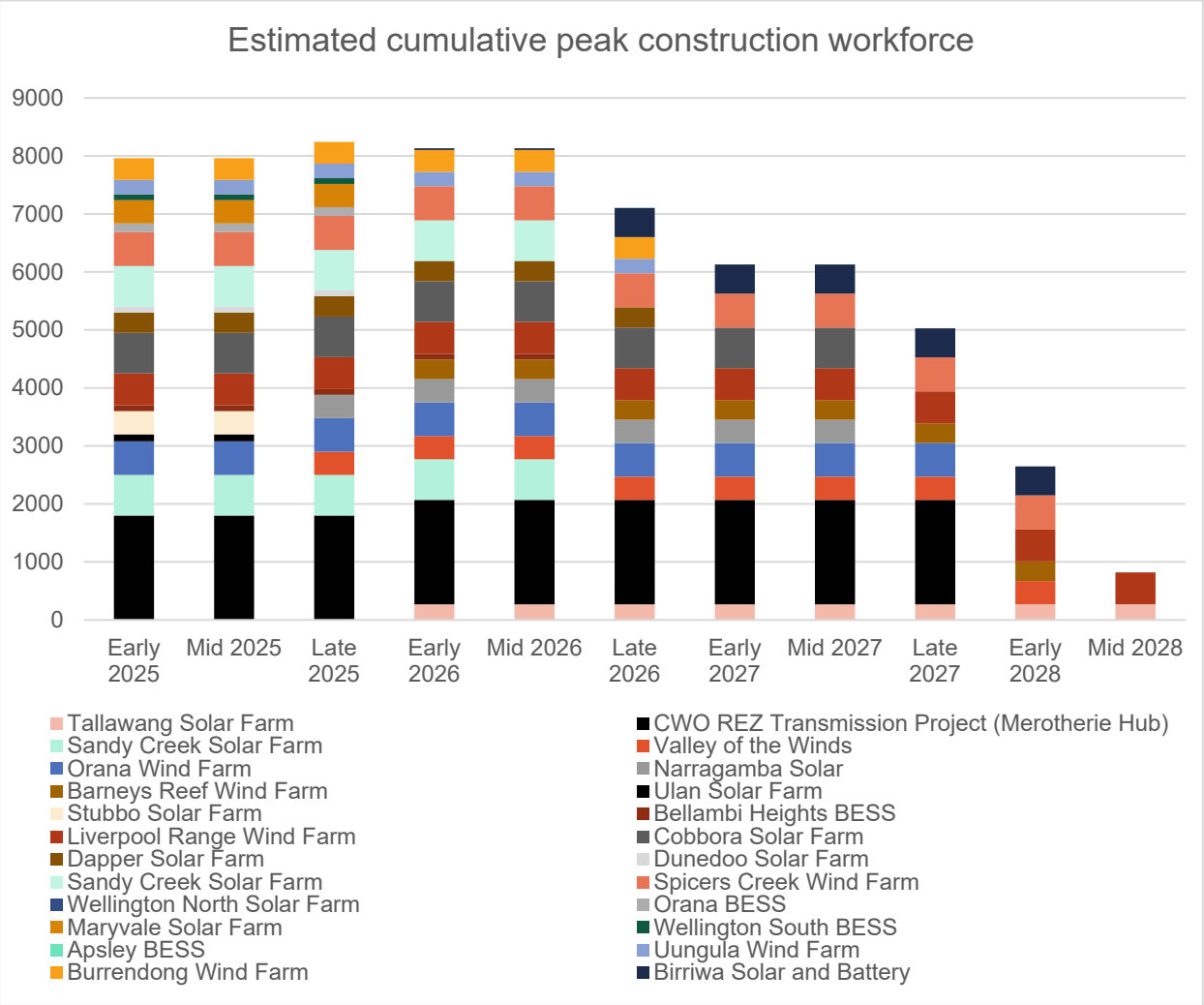


Figure 3 – Estimated cumulative peak construction workforce

4.2 Workforce

The project will require a peak construction workforce of up to 500 people. Due to low unemployment, it is anticipated that up to 90% of this workforce will be non-local, in alignment with discussions with MWRC. Approval is sought for the accommodation facility to cater for the full peak project construction workforce (500 people).

The potential construction workforce associated with the project and the expected workforce associated with possible concurrent projects (identified in Table A.1) is 9,622 full-time, direct employees over the four-year period between 2024 to 2028. This value is the absolute highest possible demand for the purpose of assessment, with the more likely scenario being a peak of 8,242 workers in late 2025. Whilst it is also unlikely that all of these employees will be sourced from outside the regional area, the total has been used as it is not possible to predict the level of in migration resulting from other projects. It is assumed that the estimated 10% local workforce for this project will be relevant to other project's, meaning that a minimum of 962 positions will be taken up cumulatively by projects seeking to hire locally within the region.

It is assumed that demand for workers will be centred on the following sectors, which employ the below proportions of existing workers in the region according to industry of employment data (ABS 2021):

- Manufacturing, 4.7%, or 1,878 workers.
- Electricity gas, water and waste 1.2%, or 497 workers.
- Construction, 8.5% or 3,433 workers.
- Transport, postal and warehousing, 3.3%, or 1,326 workers.
- Professional scientific and technical services 3.6%, or 1,449 workers.
- Administrative and support services, 2.8%. or 1,109 workers.

This equates to 9,692 existing workers employed within relevant sectors, which is 24.1% of the total regional workforce of 40,213 workers. Of the workers in relevant industries, it is assumed that 969 (10%) may either take up a job on the renewable projects or be contracted as part of local procurement. This assumption is based on the premise that renewable projects are likely to be able to offer higher wages or more regular work hours than other employers in the region, and thereby attract local and regional underemployed workers.

In addition, as of the 2021 census there were 1,637 unemployed people of working age (15 years and above) in the regional area, which equates to 3.9% of the total labour force. This compares to the NSW rate of 4.9%. Due to the lower rate of unemployment in the local region, it will be difficult to source the project's labour requirements from the local labour market and there is a need to source labour from outside the region.

As such, of the total number of unemployed persons within the region, it is assumed 50% (818 people) are unlikely to be able to take up positions with the projects due to a range of prohibitive factors. This leaves 818 workers who may be available for employment with renewable projects in the region.

This means up to 969 workers would be employed from relevant sectors in the existing regional workforce and 818 from existing unemployed persons which equates to 19% (1,787 workers) of the cumulative workforce demand for projects. Factoring in the anticipated numbers to service worst-case cumulative demand, up to 7,835 workers would be employed from outside the region.

4.3 Workforce accommodation

Studies have indicated that skills and labour shortages are a considerable barrier in the region alongside the ability to attract and retain staff. As such, a large portion of the construction workforce would need to be sourced from outside the region. This will significantly increase the demand for accommodation and housing. This is also evidenced by engagement feedback received from stakeholders during the preparation of the SIA (EMM 2022b) for the project. The SIA explained that “the local area has limited capacity to absorb the housing demand generated by the construction phase of the project given the multiple SSD projects in the area” (EMM, 2022b). As such, cumulative impacts on both rental housing and short-term accommodation were identified as critical issues.

Additionally, key stakeholder feedback indicates that the use of short-stay accommodation would negatively impact on the region’s thriving tourism industry.

With the establishment of a temporary workforce accommodation facility as part of the project, the impact from this project is expected to decrease substantially. However, in engagement completed in 2023, concerns were raised that the establishment of several facilities in the area “could mean an influx of 5,000 cumulative workers to local towns”.

This could have a flow-on effect to areas such as services, where health services noted that the cumulative workforce could create compounded pressure on medical services, resulting in an increased workload without extra assistance.

Post project approval, ACEN will seek opportunities to discuss sharing of accommodation facilities with other developers and EnergyCo, if it benefits the projects and community.

4.4 Employment and economic growth

Having multiple projects in the area could exacerbate existing skill shortages in the region. However, it could also provide more procurement opportunities for local businesses, expanding economic growth.

In the SIA (EMM 2022b), engagement with the local community identified renewable projects as a potential primary source of employment, both now and in the future. As such, some service providers recognised significant employment benefits associated with a large number of ongoing projects and developments. During in-depth interviews, stakeholders also identified potential indirect flow-on benefits arising from use of local goods and services by employees and contractors, such as spending in local retail shops and use of local services (public and private).

Engagement conducted in 2023 found continuing concerns regarding the influx of workers to the towns and how it could impact competition with casual labourers and shearers that usually come to the area. Further, there was concern for the ongoing sustainability of employment opportunities, with one stakeholder stating, “once the projects leave, everyone’s gone”.

Table A.1 presents a conservative estimate of the proportion of required labour able to be sourced from the region, equating to 1,787 workers. This demand for employees may cause potential impacts on the availability of skilled labour across the region, should construction periods overlap substantially. To reduce the effect of this outcome, projects can offer training to young local workers to assist the region in building capacity, and to support generation of skills which can be applied to other industry types. Approaches to enhance opportunities for older workers and to target upskilling of younger workers, women and indigenous people would serve to further reduce project contributions to strain on the existing labour force and create opportunities for vulnerable community members. Upskilling opportunities also enables existing workers to transition from non-growth industries and into growth industries in the region, which include the renewables sector.

5 Employment strategy

5.1 Employment summary

Construction of the project is expected to commence in 2026, subject to timing of construction of the CWO REZ, planning approvals, labour and equipment availability. The anticipated period of construction for the project is approximately 28 months. Construction of the project is estimated to require a peak workforce of approximately 500 workers.

The types of labour and skills required for the construction phase of the project include:

- Project managers
- Construction managers
- Civil engineers, supervisors, leading hands, and construction workers
- Mechanical engineers, superintendent, supervisors, leading hands, and construction workers
- Electrical engineers, superintendent, supervisors, leading hands, and construction workers
- Labourers
- Quality engineers and supervisors
- Health Safety Environment manager, supervisors, and advisors
- Commissioning managers and engineers
- Apprentices/trainees
- Administration staff
- Security staff
- Medical staff
- Cleaning staff.

5.2 Employment targets

This section outlines aspirational workforce targets that will be adopted for the project based on an assessment of existing socio-economic conditions, outcomes from stakeholder engagement, and recognition of potential cumulative demand from other projects within the CWO REZ.

Aspirational targets have been assigned based on feasibility, analysis completed as part of the SIA Addendum (EMM 2023d), and commitments made by ACEN for nearby projects, such as the Stubbo Solar Project. Employment targets are indicative and will be reviewed when the AES is finalised to ensure they continue to align with the regional employment context.

Local employment

During construction, there will be a preference for the employment of local workers with relevant skills and experience. The project has conservatively estimated that the peak construction workforce will comprise of up to 90% non-locals (i.e. 450 non-local workers) and 10% locals (i.e. 50 local workers).

Local workers are considered to be those with their own accommodation and within a safe driving distance of the project, which is assumed to be approximately one hour. This catchment includes the nearby towns of Mudgee and Dubbo.

As outlined in Section 4.2, it is estimated that there would be approximately 1,787 local workers available to take up employment with the project. ACEN is committed to prioritising hiring or upskilling of workers residing within the local area and will work with employment, apprenticeship and training agencies to enhance the potential of hiring local and regional workers.

Employment of under-represented groups

Underrepresented groups include people with characteristics defined in the *Anti-discrimination Act 1977 (NSW).* This includes women, members of racial or ethnic minority groups, Aboriginal and Torres Strait Islander peoples, people with a disability, long-term unemployed and young people.

Engagement with employment service providers indicated a lack of appropriate opportunities in entry-level positions like labouring, traffic control and cleaning. These roles are required for younger workers and workers with lower literacy. It was also indicated that it can be difficult for workers over the age of 65 to gain employment, particularly where they have worked in one industry for many years. Other barriers to workforce participation include access to transportation, and a lack of support needs in the form of workplace etiquette and processes. Women are often also deterred from joining remote projects by concerns around poor safety, low amenity for female workers, and social isolation (Bailey-Kriger 2012).

It is assumed that the provision of onsite accommodation and training opportunities would enhance opportunities for employment of people that may otherwise experience difficulty in accessing employment (i.e. youth, people with disabilities, Indigenous people, people over 65 years and people with limited to no skills). ACEN's preference will be hiring and upskilling of these workers in unskilled facility service positions, as well as where there are opportunities to offer technical traineeships, where competition would not otherwise reduce access for other local businesses and where it is suitable to do so.

It is noted however that ACEN's commitment to participation by underrepresented groups is not solely through recruitment and direct employment. Given the short term nature of the construction period, ACEN commits to social investments that contribute to thriving communities beyond the life of the project, and combined with its Planning Agreement in place with Mid-Western Regional Council. It is anticipated that investments would be made that contribute to long term community outcomes, some of which have opportunity to relate to the support of underrepresented groups.

That being said, below are some key activities ACEN would undertake:

1. Identify and partner with service providers to identify suitable roles, skills required and identify candidates
2. Funding via ACEN's own social investment program, and the project's Planning Agreement with MWRC for Micro-credentialling programs that offer short-course training outcomes

Learning workers

In alignment with targets adopted by ACEN for other projects, up to 20% of the project workforce will be learning workers (non-trades positions) and up to 20% of trades positions being apprentices where practicable.

First Nations participation

The regional study area comprises a substantial Indigenous population, accounting for 13.2% of the population compared to 3.5% for NSW. In line with NSW Government's *Electricity Infrastructure Roadmap First Nations Guidelines* (Office of Energy and Climate Change 2022), an aspirational target of 1.5% First Nations participation will be achieved through employment,

procurement of goods and services from Indigenous businesses as well as investment in Indigenous business innovation.

ACEN commits to undertaking activities that demonstrate best endeavours to meet a First Nations participation target of 1.5%*. This is aligned with other ACEN A current projects in the Central West and is aligned with the NSW's Government's Long term Energy Service Agreement (LTESA) processes.

**Project expenditure excludes goods and services that are not available domestically or locally.*

The participation target is made up of one or a combination of:

1. At least 1.5% of the contract value to be subcontracted to Aboriginal-owned businesses
2. At least 1.5% of the contract's Australian-based workforce (FTE) that directly contributes to the contract to be Aboriginal or Torres Strait Islander peoples
3. At least 1.5% of the contract value is invested in education, training or capacity building for Aboriginal staff or businesses

While ACEN commits to best endeavours to meet the target, the following risks have been identified in relation to the achievement of targets based on ACEN's knowledge base and experience:

1. Current capacity and capability of Indigenous people to participate
2. Projected demand for First Nations to participate in a growing renewable energy industry in the Central West Orana REZ
3. Socio-economic profiles of regional communities over the duration of the project

5.3 Recruitment strategy

ACEN's approach to maximising opportunities for local and regional participation through the project is centred on the following priorities:

1. Prioritise workforce participation opportunities for regional, Indigenous and other minority groups through employment.
2. Prioritise opportunities for 'learning workers' with a focus on regional, Indigenous and other minority groups to participate in the project.
3. Prioritise the procurement of goods and services from regional and Indigenous businesses, and social enterprises.

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

ACEN is committed to prioritising hiring or upskilling of workers residing within the local area and will work with local employment, apprenticeship and training agencies to enhance the potential of hiring local and regional workers.

Provision of onsite accommodation, along with medical support and training opportunities would make this project an attractive offering for lower-income local workers and affords the project an opportunity to provide employment for people from identified under-represented groups of women, youth, people with disabilities and Indigenous people, as well as people over 65 that may otherwise find it difficult to access employment.

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 construction and operation of the accommodation facility will have procurement mechanisms to engage local and Indigenous

businesses in services such as installation and decommissioning, maintenance, laundry, cleaning, catering, security, shuttle bus transport, and waste management.

A Workforce Code of Conduct for the project will be developed and implemented by ACEN to manage workforce behaviour. Positive behavioural outcomes and prohibited negative behaviours will be clearly outlined in the code of conduct including matters relating to:

- Expected standards of behaviour in public places.
- Prohibition of all forms of sexual harassment and assault.
- Prohibition of all forms of racism and discrimination.
- Safe and courteous driving.
- Ramifications for non-conformance.

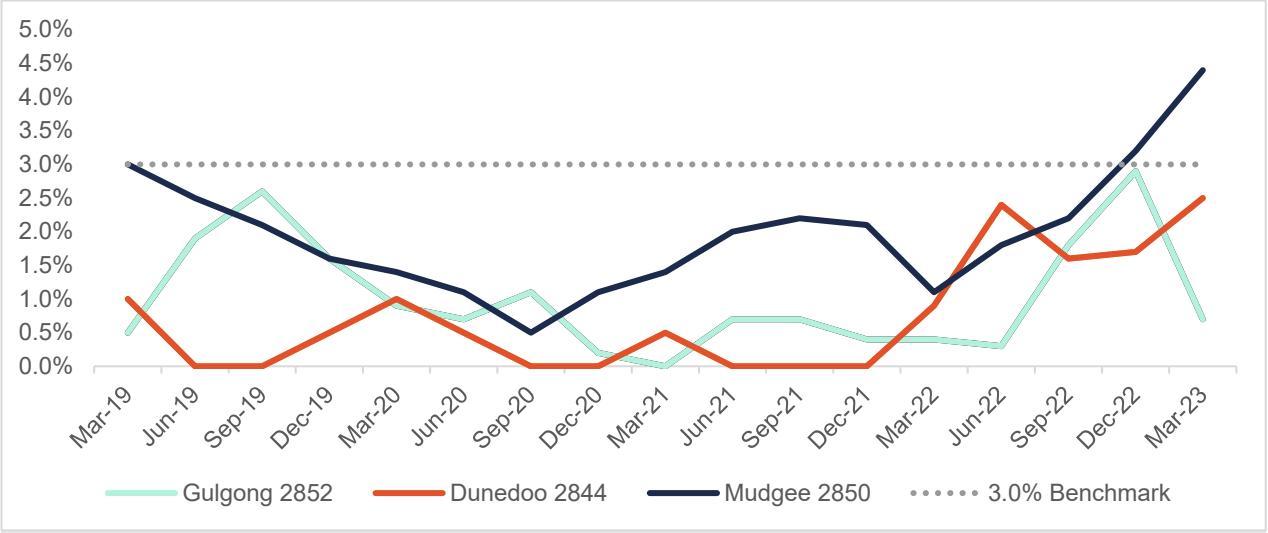
The code of conduct will apply to all project personnel (including contractors and subcontractors) when they are at work, travelling to and from work, in public places or within the accommodation facility. Compliance with the Code of Conduct will be required for all project workers and non-compliance would risk termination of employment.

6 Accommodation strategy

6.1 Context

Rental accommodation

The residential vacancy rate trends for postcode 2844 (Dunedoo), 2852 (Gulgong) and 2850 (Mudgee) is presented in Figure 4 for the period March 2019 to March 2023. Except for Mudgee, from December 2022 to March 2023 the vacancy rate in the local area during this period was consistently below the 3.0% benchmark, indicating a tight rental market with an undersupply of rental housing.



Source: SQM Research 2021, Residential Vacancy Rates.

Figure 4 – Residential vacancy rate trends, 2018–2021

The data shows some fluctuation in rental vacancy rates across the three communities. The Gulgong rental vacancy rates spiked from 0.3% in June 2022 to 2.9% in December 2022 before decreasing again to 0.7% in March 2023, indicating an erratic market.

Affordable housing is a key dimension of economic wellbeing. Housing stress is considered to occur when households in the lower 40.0% of income distribution spend more than 30.0% of their income in housing costs (rents or mortgage repayments) (AHURI 2019). This can mean that local people who are not employed in high-paying jobs may be unable to afford local rents which can be pushed up by higher salaries.

In 2021, Gulgong (37.0%), Mid-Western Regional LGA (33.4%), and Mudgee (33.1%) had similar or greater proportions of households experiencing rental stress than NSW (33.1%). Households in the study area with higher levels of mortgage stress included the same localities of Mudgee (6.0%), Mid-Western Regional LGA (5.9%), and Gulgong (5.2%). Conversely, mortgage stress in the study area is lower than the NSW proportion of 7.4%.

Over the ten years leading to 2021, median rent increased by 100.0% in Dunedoo, 50.0% in Gulgong and 50.0% in Mudgee. Factors driving the increase in median rent include a combination of population growth and housing demand fuelled by the expansion of the surrounding mining industry sector.

Some of the key housing feedback and issues raised by stakeholders during project engagement activities include:

- The housing situation is very tight in Gulgong, Dunedoo and Mudgee and an increasing issue with internal migration from Sydney to the region.
- Concerns that rent and housing prices are unaffordable for low-income earners and pushing them out of the region.
- Concerns that housing will continue to become less affordable in 'trendy' areas like Mudgee and Gulgong, where high incomes from Airbnb present an alternative to renting properties out.
- Rents in communities have increased due to economic and population rise associated with solar farms in the region. This has affected locals as the community relies on cheap rentals, particularly for non-local contractors such as shearers.
- Accommodation and housing are in high demand, and stakeholders expect that without an appropriate strategy, REZ projects will contribute to existing challenges that locals are experiencing to gain affordable and stable housing.
- Accommodation and housing availability and affordability is crucial in supporting rental access, social housing, emergency and temporary accommodation needs in the Mid-Western Regional LGA.

Short-term accommodation availability

Short-term accommodation providers in the local and regional area service a number of different industry sectors including tourism, mining, renewable energy and agricultural industry sectors. The MWRC estimates there are currently 3,200 rooms of short-stay accommodation in the Mid-Western Regional LGA, with an average occupancy rate of over 80% (EMM 2022b).

Within the local area, short-term accommodation is concentrated in the larger communities of Dunedoo, Gulgong and Mudgee and consists of a combination of hotels, motels, bed and breakfast accommodation, farm-stay, holiday home rentals (Airbnb) and caravan parks. The majority of short stay accommodation in the Mid-Western LGA is concentrated in and nearby the town of Mudgee. Short-term accommodation in the local area is summarised in Table 3.

Table 3 – Tourist accommodation, 2022

Suburb	Hotel/motel	Caravan park	Bed & breakfast	Farm-stay/homestay	Holiday homes/Airbnb
Local area					
Birriwa	×	×	×	×	✓
Merotherie	×	×	×	×	×
Gulgong	✓	✓	✓	✓	✓
Dunedoo	✓	✓	✓	×	✓
Mudgee	✓	✓	✓	✓	✓
Regional area					
Mid-Western LGA	✓	✓	✓	✓	✓
Warrumbungle LGA	✓	✓	✓	✓	✓
Dubbo Regional LGA	✓	✓	✓	✓	✓

The most abundant form of short-term accommodation across the study areas is private holiday rentals through platforms such as Airbnb and booking.com. Analysis of short-term accommodation data suggests that in 2023 there are more than 600 active Airbnb rentals in the Mid-Western LGA including an estimated 270 properties in Mudgee and 11 properties in Gulgong. There were an estimated 50 Airbnb properties in the Warrumbungle LGA including 4 properties in Dunedoo.

Some of the key short-term accommodation feedback and issues raised by stakeholders during project engagement activities include:

- Concerns that project demand for housing could significantly impact other sectors, such as health or tourism given the competition for accommodation by workers and tourists to the area.
- Accommodation availability supports the visitor economy in the regional area, and it is usually full during peak periods (i.e. school holidays).
- Regional events create great demand for tourist accommodation in the area with concerns that reduced accommodation availability by the project's construction workforce may impact viability of regional events. Examples of regional events includes small farm field days (July); Food and Wine month (September); NSW Touch Football Country Championship (October); and Mudgee Cup (November).

6.2 Accommodation facility

Workforce accommodation approach

Given the limited availability of rental and short-term accommodation in the local and regional area as described in Section 6.1, and in response to matters raised in submissions on the project and outcomes of ongoing engagement with the local community, government agencies, project landholders, and other stakeholders, the project has adopted the strategy of including a temporary accommodation facility into the project design. This facility will be established on an adjacent property south-east of solar and BESS project area, to provide temporary accommodation for non-local workers during the construction phase of the project. Note, no worker families will be hosted in the accommodation facility.

The objective of the accommodation facility is to:

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

The facility was included in the Amendment Report in response to feedback from the Mid-Western Regional Council, who have provided a letter of endorsement attached as Appendix B.

As outlined in Section 3, some use of short-term accommodation in the region will be required to accommodate non-local workers involved in site preparation and pre-construction activities associated with the accommodation facility. Feedback received from MWRC notes an average occupancy rate of over 80% for short-term accommodations in Mid-Western LGA. Assuming a higher occupancy of 90%, this would equate to a vacancy of 10% or approximately 320 vacant rooms.

Based on this scenario, the project's maximum demand for 30 rooms would likely be negligible as it accounts for less than 10% of total vacant rooms available in the LGA. ACEN will continue to engage with relevant stakeholders on any potential temporary project demand for short-term accommodation.

Design

The accommodation facility will comprise prefabricated demountable units that will be delivered to site. The accommodation facility will likely consist of 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 up to 500 people. A small number of two-person executive style modules may also be installed.

The demountable units may be constructed in stages up to the 500-person capacity as construction of the project progresses.

Communal facilities to be provided at the accommodation facility include:

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

The facility will include adequate water, electricity, sewage and waste services to facilitate the per diem requirements of the 500-worker capacity, with potential approaches to providing this including rental of diesel generator/s, potable water storage and chlorination and a sewage treatment system. There is no existing water, sewerage or electricity infrastructure at the proposed site. ACEN will continue to consult with MWRC 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. 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.

The final design and layout of the accommodation facility will be confirmed as part of future detail design; however, all components will sit within the development footprint identified for the accommodation facility.

Management

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

Services

The worker camp will be fully serviced to ensure workers' living needs can be met onsite. This will reduce the need for workers to travel to town for basic commodities, recreation, or health and human services.

Services provided onsite may include:

- Catering
- Housekeeping
- Provision of alcohol (in a dedicated wet mess)
- Security (via security officer/s that control camp access and conduct patrols)
- Medical (through an onsite nurse based in the first aid room)
- Ground maintenance
- Janitorial services
- Delivery and removal of water, waste and fuel
- Skilled tradesman services.

Catering may include the provision of meals for breakfast, lunch and dinner every day. These meals would meet the relevant nutrition standards and can be amended to adhere to individual dietary requirements. Alcohol may be sold onsite in a dedicated wet mess. This would provide local suppliers with the opportunity to sell alcohol without workers using their hospitality venues.

Serving of alcohol will include the requirement for training of service staff in the Responsible Service of Alcohol. All workers 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 camp and the site perimeter, crowd control for wet mess areas, incident control and emergency response. Officers will have a relevant security license and will be first aid certified.

First aid will be supplied onsite. ACEN has proposed that an on-site medical facility would be established and resourced with a qualified registered nurse. 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). Activities that require a general practitioner would be serviced off-site. Additionally, ACEN has proposed the implementation of a Telehealth service for workers, offering virtual access to a general practitioner. Both the above listed proposed initiatives would be available to workers for work related health matters.

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

ACEN Australia will continue to engage with local councils to explore these options so they can benefit local businesses without adversely impacting the local communities.

Accommodation facility access

The project's primary vehicle access route to the site (for both the solar and BESS development, and the accommodation facility) will be via the Castlereagh Highway, Barneys Reef Road and Birriwa Bus Route South. The accommodation facility will be accessed from the primary vehicle access route of the project through to a new internal access track between the solar and BESS project area and the accommodation facility.

A second internal emergency access track will also be constructed south of the accommodation facility infrastructure area suitable for emergency vehicle use, from Merotherie Road. This access track will enable alternative emergency access to the public road network and is not intended for general access purposes.

During operation of the accommodation facility, construction staff will travel to and from the accommodation facility for their shifts via shuttle buses and the internal access track. The current assumption is that there will be approximately 13 shuttle bus trips per day (26 movements). It is anticipated that travel between the accommodation facility and the project site via the internal access track would 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. Project workers will not travel via the public road network between the accommodation facility and the construction site while on shift.

7 Strategy implementation

7.1 Action plans

Table 4 and Table 5 outline the proposed management measures for implementation to enhance local employment and minimise project associated impacts on housing and short-term accommodation in the region. Note that the management measures proposed are not listed in order of priority and will need to be finalised in consultation with key stakeholders as part of the final AES.

Table 4 –Workforce and employment measures

Manage measure	Timing of implementation
Host information sessions to engage with the community and local businesses on project employment and supply opportunities.	Prior to and during construction and operation
Engage with the local employment agencies to identify access pathways for local workers. Assess the candidate pool to determine suitable labour, trade or other employment on the project.	Prior to and during construction and operation
Establish dedicated project employment opportunity platform on the project's website in consultation and coordination with the construction contractor. Relevant worker details will then be shared with the main subcontractor(s) for direct engagement through their own employment processes.	Prior to and during construction and operation
Ongoing engagement with relevant key stakeholders to provide key project information including anticipated project activities and timing, workforce estimates and potential accommodation requirements.	Prior to and during construction and operation
Targeted recruitment with project employment opportunities to be advertised via local and regional channels in the first instance.	Prior to and during construction and operation
Prioritise project employment opportunities for unskilled workers through provision training and skills development initiatives.	During construction and operation
Ensure accessible and inclusive recruitment processes to maximise employment opportunities for identified under-represented groups in the labour force including women, Indigenous peoples, young and old people, and unskilled persons.	Prior to and during construction and operation
Encourage subcontractors to employ local workers wherever possible and reasonable including use of local content criteria when awarding contracts to subcontractors.	Prior to and during construction
Maintain a workforce register including information around proportion of workers that are local, non-local, Indigenous, apprentices/trainees, and from under-represented groups.	During construction and operation
Develop a detailed Local Participation Plan and an Industry and Aboriginal Participation Plan (IAPP), in alignment with first nations guidelines for the CWO REZ (Office of Energy and Climate Change , 2022) as part of the final AES that commits to employment and investment in job readiness by ACEN and its contracting partners. The IAPP will be supported by the Construction Phase Stakeholder Engagement Plan.	Prior to construction

Manage measure	Timing of implementation
Implementation of ACEN company policies, procedures, and Codes of Conduct that all project workers (including subcontractors) accommodated at the accommodation facility must comply with.	During construction and operation

Table 5 –Workforce accommodation measures

Manage measure	Timing of implementation
Ongoing engagement with council and accommodation providers in the region to provide update of key project information including anticipated project activities and timing, workforce estimates and potential accommodation requirements.	Prior to and during construction and operation
Maintain a register of accommodation options in the region and contact details to provide to contractors and subcontractors.	Prior to and during construction and operation
Review current and anticipated workforce numbers every six months during construction to ensure project accommodation requirements are met and identify any potential future impacts.	During construction
Accommodate the non-local construction workforce in a high-quality and well provisioned accommodation facility in the project area.	During construction
Where there is limited availability of short-term accommodation in the region, provide any ad-hoc contractors and consultants engaged on the project accommodation at the accommodation facility.	During construction
Participate in industry engagement (i.e. with EnergyCo) in relation to the management of cumulative workforce accommodation issues.	Prior to and during construction and operation
Implementation of safety measures at the accommodation facility, including security patrols and adequate fencing and workforce training, as well as a complaint reporting mechanism for nearby landholders.	During construction

7.2 Monitoring and review

Review is a critical element of environmental management systems and involves a formal evaluation of the adequacy of the environmental management plans and documents – taking into account any new environmental issues, legislation, changing circumstances and continual improvement.

The monitoring and review of this AES will be an ongoing process throughout the project's lifecycle.

Review

The final AES will be prepared prior to pre-construction activities commencing on site.

The AES will be reviewed and updated regularly during project construction to confirm the effectiveness of proposed measures. Any updates to this AES will be informed by consultation with stakeholders to ensure stakeholder feedback and concerns are considered and incorporated where relevant. Preparation of a detailed outline of timing for regular reviews will also be aligned

with stakeholder advice and other reporting requirements for the project, which are yet to be confirmed.

Some key project milestones which may necessitate review of this AES include:

- Selection of the EPC contractor and pre-construction activities, including preparation of post approval documents in line with the Development Consent.
- Timelines of the CWO REZ and coordination with EnergyCo, the Network Operator and other generation projects connecting to the REZ.
- Outcome of consultation, including with local councils.
- Timing of operation, construction and decommissioning.

Monitoring

As part of the final AES, a detailed monitoring program will be developed to track and assess the effectiveness of proposed measures.

The monitoring program will include details such as:

- desired outcomes for each management measures
- indicator(s) that will be used to monitor change
- target against which performance of a management measure will be assessed
- frequency of monitoring
- roles and responsibilities for monitoring
- how corrective actions will be identified and implemented based on outcomes of monitoring.

ACEN will have a comprehensive data management system established for the project that will outline policies and procedures to be implemented for consistent, efficient and effective management of all project related data. All monitoring data and project reports/information relevant to this AES will be managed through this system.

References

ABS. 2021. Census of Population and Housing: General Community Profiles. Data set. Australian Bureau of Statistics.

AHURI. (2019). Understanding the 30:40 indicator of housing affordability stress, Australian Housing and Urban Research Institute. Retrieved from https://www.ahuri.edu.au/policy/ahuri-briefs/3040-indicator

Bailey-Kriger, A. 2012. The psuchological wellbeing of women operating mining machinery in a fly-in fly-out capacity. Edith Cowan University.

Burdge, R. 2015. A Community Guide to Social Impact Assessment: . Fourth Edition, Colorado: University Press of Colorado, p.87.

Department of State Development. 2015. An independent review of existing, predominantly fly-in-fly-out resource projects in Queensland. Queensland Government.

DPE. 2022d. "Central West and Orana Regional Plan 2041." NSW Department of Planning and Environment. https://www.planning.nsw.gov.au/-/media/Files/DPE/Plans-and-policies/Plans-for-your-area/Regional-plans/Central-West-and-Orana-Regional-Plan-2041.pdf?la=en.

DPE. 2022a. Cumulative Impact Assessment Guidelines for State Significant Projects. NSW Government.

EMM Consulting 2022, Birriwa Solar and Battery Project – Environmental Impact Statement

EMM Consulting 2022b, Birriwa Solar and Battery Project – Social Impact Assessment

EMM Consulting 2023a, Birriwa Solar and Battery – Submissions Report

EMM Consulting 2023b, Birriwa Solar and Battery Project – Amendment Report

EMM Consulting 2023c, Birriwa Solar and Battery Project – Amendment Submissions Report

EMM Consulting 2023d, Birriwa Solar and Battery Project – Social Impact Assessment Addendum

EnergyCo. 2023. Central-West Orana Renewable Energy Zone. Sydney: NSW Government.

Mid-Western Regional Council. 2022. Delivery Program 2017/18 - 2012/22 Operational Plan 2021/22. Mid-Western Regional Council.

Office of Energy and Climate Change . 2022. First Nations Guidelines: Increasing income and employment opportunities from electricity infrastructure projects. Sydney: Office of Energy and Climate Change .

Umwelt. 2023. Appendix 21.0: Social Impact Assessment. Umwelt.

Appendix A – Projects contributing to cumulative demand

Table A.1 Projects contributing to cumulative worker & accommodation demand (as of December 2023)

Project	Approximate straight-line distance from project	Project status	Indicative construction timing	Indicative operational timing	Indicative construction workforce (average & peak)	Indicative operational workforce (average & peak)	LGA	Accommodation strategy	Nearby communities with short-term accommodation
Merotherie Energy Hub Site (EnergyCo) – development of 330 kV and 500kV switchyards [Central-West Orana REZ Transmission]	5 km east	Response to submissions	4-years from second half of 2024.	Second half of 2027	Up to 1,800 workers (peak)	NA	Mid-Western Regional	On-site temporary accommodation facility during construction (approx. 1,200 personnel capacity)	Gulgong Mudgee Dunedoo
Narragamba Solar (ACEN Australia) – development of a 320 MW (AC) solar project including associated infrastructure	6 km west	Prepare EIS	20-to-24-months from Q4 2025. (Concurrent)	25-year operational life	Up to 400 workers (peak)	Up to 10 FTE workers	Mid-Western Regional	Investigating potential for a centralised accommodation strategy that would service its renewable projects in the area (i.e., Birriwa)	Dunedoo Gulgong
Barneys Reef Wind Farm (RES) – development of a 441 MW wind farm with 63 turbines, battery storage, and associated infrastrcuture	6 km south	Prepare EIS	28 months	NA	Approx. 340 workers	10 FTE workers	Mid-Western Regional	NA	Gulgong
Ulan Solar Farm (Edify Energy Pty Ltd) – development of a 50MW solar farm with battery storage facility and associated infrastrcuture	23 km south-east	Prepare EIS	8-to-12-months	30-year operational life	Approx 120 workers (peak)	4 FTE workers	Mid-Western Regional	Large majority of workers would already be residing locally. Non-local workers would be accommodated in Mudgee, Gulgong or other towns within a 100 km radius.	Gulgong Mudgee Dunedoo
Tallawang Solar Farm (RES) – development of a 500MW solar farm with 200MW BESS and assocaited infrastrcuture	23 km south-west	Response to Submissions and Prepare Amendment Report	34-months	35-year operational life	Approx. 270 direct and 430 indirect FTE jobs	Approx. 7 FTE workers	Mid-Western Regional	Accommodation, Employment and Procurement Strategy to be developed in consultation with local providers and other stakeholders ahead of the construction phase commencing.	Dunedoo Gulgong Mudgee Wellington Dubbo
Stubbo Solar Farm (ACEN Australia) – development of a 400 MW solar farm with energy storage and associated infrastructure	15 km south-east	In construction	36-months from 2023.	25-year operational life	Approx. 400 workers (peak)	Up to 10 FTE workers	Mid-Western Regional	Workforce accommodation strategy with Mid-Western Regional Council	Gulgong

Table A.1 **Projects contributing to cumulative worker & accommodation demand (as of December 2023)**

Project	Approximate straight-line distance from project	Project status	Indicative construction timing	Indicative operational timing	Indicative construction workforce (average & peak)	Indicative operational workforce (average & peak)	LGA	Accommodation strategy	Nearby communities with short-term accommodation
Bellambi Heights BESS (Vena Energy Services) – development of a 408MW BESS and associated infrastructure	23 km south	Response to Submissions	First Quarter 2025 Single stage construction: 13-20 months Two stage construction: 13-18 months (stage 1) and 12-15 months (stage 2) with 6-12 month break in between the two stages.	25-year operational life	Approx. 100 workers (single stage) Approx. 80 workers (two staged approach)	No permanent on-site workforce. 6-10 FTE workers for routine operations and maintenance activities	Mid-Western Regional	Implement the commitments in the Accommodation Strategy developed by VEA, including the Accommodation Plan. Maximise local employment opportunities and to accommodate the visiting workforce as close to Gulgong as possible.	Gulgong Mudgee Wellington Dubbo
Beryl Solar Farm (Banpu Australia) – development of a 87MW soalr farm and assocaited infarstructure	26 km south	Operational	NA	NA	NA	NA	Mid-Western Regional	NA	NA
Liverpool Range Wind Farm (Tilt Renewables) – development of 962MW wind farm with up to 267 turbines	52 km north-east	In development (SSD Modification process underway – more information required stage)	4-years	NA	Approx. 550 workers (peak)	Approx. 40 FTE workers	Warrumbungle Shire Upper Hunter Shire	Construct and operate a temporary workforce accommodation facility approximately 3 km east of Coolah.	Coolah
Valley of the Winds (ACEN Australia) – development of wind farm with up to 131 turbines, energy storage and associated infrastructure	27 km north-east	EIS – More Information Required	24-to-42-month from first quarter 2024	30-year operational life	Approx. 400 FTE workers (peak)	Approx. 50 FTE workers	Warrumbungle Shire	Two options being considered. First option is a regional distribution of the peak workforce with accommodation sourced from surrounding towns. Second option is to accommodate the entire workforce in purpose-built workforce accommodation	Coolah Dunedoo Coonabarabran Gulgong Mudgee
Orana Wind Farm (Acciona Energia) – development of 700MW wind farm with up to 92 turbines, battery sotrage and assocaited infrastructure	1.7 km west	Prepare EIS	36-months from 2025	30-year operational life from 2027	Approx. 580 FTE workers (peak)	Approx. 12 FTE workers	Warrumbungle Shire Mid-Western Shire	Centralised and regional distribution accommodation options being investigated as part of EIS.	Dunedoo Gulgong

Table A.1 **Projects contributing to cumulative worker & accommodation demand (as of December 2023)**

Project	Approximate straight-line distance from project	Project status	Indicative construction timing	Indicative operational timing	Indicative construction workforce (average & peak)	Indicative operational workforce (average & peak)	LGA	Accommodation strategy	Nearby communities with short-term accommodation
Cobbora Solar Farm (Marble Energy) – development of a 700MW solar farm with energy storage and associated infrastructure	26 km west	Prepare EIS	36-months from late 2023	30-year operational life from 2026	Approx. 700 FTE workers (peak)	Up to 15 FTE workers	Warrumbungle Shire Dubbo Regional	Accommodation required for non-local workers anticipated to be sourced through use of available rental and short-stay accommodation in surrounding townships and in the regional centres.	Dunedoo Gulgong Mudgee Dubbo
Dapper Solar Farm (Origin Energy) – development of a 300MW solar farm and associated infrastructure	35 km west	Prepare EIS	18-to-24 months from 2025	30-year operational life from 2026/2027	Approx. 350 FTE workers (peak)	Up to 20 FTE workers	Warrumbungle Shire Dubbo Regional	Non-local construction workers anticipated to stay at temporary accommodation options in surrounding townships.	Dunedoo Dubbo Wellington Gulgong Mudgee
Dunedoo Solar Farm (Ib vogt) – development of a 55MW solar farm with energy storage and associated infrastructure	18 km north-west				Approx. 100 FTE works (peak)	Up to 3 FTE workers	Warrumbungle Shire		Dunedoo Dubbo
Spicers Creek Wind Farm (CWP Renewables) – development of 730MW wind farm with up to 117 wind turbines, eergy storage and associated infrastructure	25 km south-west	Responses to submissions	40 months	30-year operational life	Approx. 587 workers (peak) Approx. 323 workers (average)	Up to 12 FTE workers	Dubbo Regional Warrumbungle Shire	Committed to preparing an Employment and Accommodation Strategy prior to construction	Dubbo Wellington Dunedoo Mudgee Gulgong
Sandy Creek Solar Farm (Lightsource BP) – development of a 750MW solar farm and associated infrastructure	30 km south-west	Prepare EIS	2.5-years	35-year operational life	Up to 700 workers (peak) 50-200 workers (generally)	Approx. 15 FTE workers	Dubbo Regional Warrumbungle Shire	Being investigated as part of EIS	Dunedoo Gulgong Dubbo
Wellington Town BESS (RWE Renewables Australia) – development of 180MW/720MWh BESS and transmission line	60 km south-west	Prepare EIS	NA	NA	NA	NA	Dubbo Regional	NA	NA

Table A.1 Projects contributing to cumulative worker & accommodation demand (as of December 2023)

Project	Approximate straight-line distance from project	Project status	Indicative construction timing	Indicative operational timing	Indicative construction workforce (average & peak)	Indicative operational workforce (average & peak)	LGA	Accommodation strategy	Nearby communities with short-term accommodation
Bodangora Wind Farm (Infigen Energy) – 113.2MW wind farm with 33 turbines	51 km south-west	Operational since 2019	NA	NA	NA	NA	Dubbo Regional	NA	NA
Wellington Solar Farm (Lighsource bp) – development of a 174MW solar farm and associated infrastrcuture	66 km south-west	Operational since 2022	NA	NA	NA	NA	Dubbo Regional	NA	NA
Wellington North Solar Farm (Lighsource bp) – development of a 300MW solar farm and associated infrastrcuture	75 km south-west	In construction	24 months from 2023	2024/2025	Approx. 400 workers (peak)	NA	Dubbo Regional	NA	NA
Orana BESS (Akaysha Energy Pty Ltd) – development of a 400 MW/1600 MWh BESS associated infrastructure	75 km south-west	EIS – more information required	18 months from Q4 2023	40-year operational life from 2025	Up to 150 workers (peak) Approx. 100 workers (average)	1 FTE worker	Dubbo Regional	Workers would be accommodated in Wellington, Dubbo or nearby surrounding areas.	Wellington Dubbo
Maryvale Solar Farm (Photon Energy) – development of a 125MW solar farm and associated infrastructure	66 km south-west	Pending construction	Late 2023	2025	Approx. 400 workers (peak)	Up to 10 FTE workers	Dubbo Regional	Non-local workers would be accommodated in Wellington and Dubbo	Dubbo Wellington
Wellington South BESS (AMPYR Australia Pty Ltd) – development of a 500MW/1000MW BESS facility with associated infrastrcuture	67 km south-west	EIS – prepare amendment report	Up to 18 months	20-year operational life from 2024	Approx. 100 workers (peak)	Up to 2 FTE workers	Dubbo Regional	NA	Wellington Dubbo
Suntop Solar Farm (Photon Energy/ Canadian Solar) - development of a 170 MW solar farm and associated infrastructure	81 km south-west	Operational since 2021	18 months from 2020	30 year-operational life from 2021	NA	NA	Dubbo Regional	NA	NA
Apsley BESS (ACEnergy) – development of a 120MW/240MW BESS facility with associated infrastrcuture	77 km south-west	Pending construction	2024	2024	Approx. 50 workers (peak)	Approx. 5 FTE workers	Dubbo Regional	NA	Wellington Dubbo

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Project	Approximate straight-line distance from project	Project status	Indicative construction timing	Indicative operational timing	Indicative construction workforce (average & peak)	Indicative operational workforce (average & peak)	LGA	Accommodation strategy	Nearby communities with short-term accommodation
Uungula Wind Farm (CWP Renewables) – development of a wind farm with up to 97 turbines, energy storage and associated infrastructure	55 km south-west	Pending construction	30 months from late 2023	30-year operational life	Up to 250 workers (peak)	Up to 12 workers	Dubbo Regional	Accommodate workers in Dubbo and Wellington	Wellington Dubbo
Burrendong Wind Farm (Epuron) – development of a wind farm with up to 70 wind turbines and associated infrastrcuture	66 km south-west	EIS exhibition	Up to 30 months	30-year operational life	Approx. 375 FTE workers (peak) Approx. 250 FTE workers (average)	Approx. 12 FTE workers	Dubbo Regional Mid-Western Regional	Develop a construction Workforce Housing and Accommodation Strategy	Wellington