

Appendix 22 – Cumulative Impact Assessment

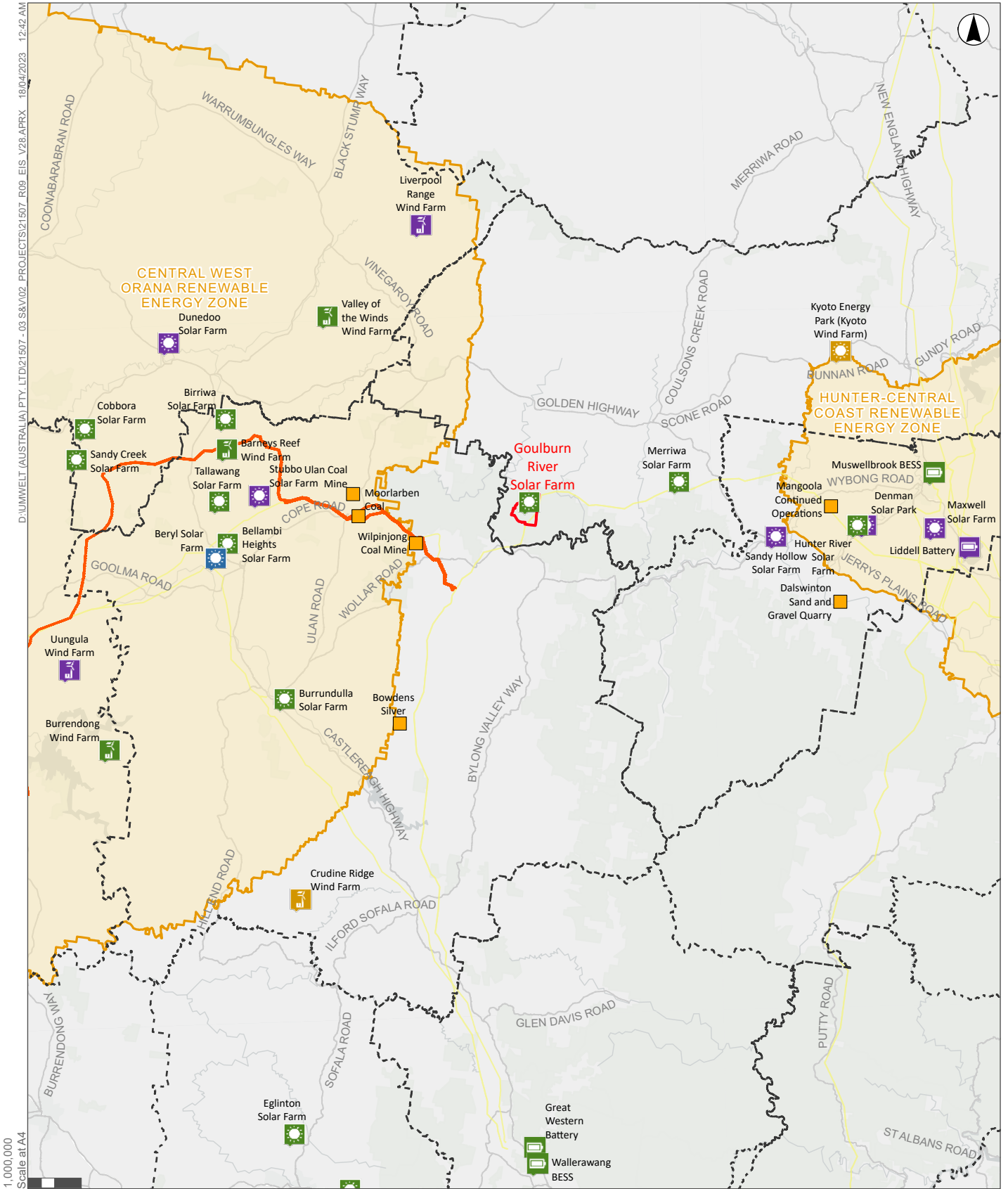
1.1 Introduction

When considered in isolation, the environmental, social and economic impacts associated with a project may be considered minor. However, these minor impacts may be more substantial when the impacts of multiple projects on the same receivers, communities and environments are considered.

The Project is located near the boundaries of the Central West Orana REZ and the Hunter-Central Coast REZ. As discussed in Section 2.4 of the EIS, there are currently a large number of approved and proposed renewable energy projects and several coal mines and quarries within the region. Nearby projects are identified in **Figure 1.1** below.

The SEARs require the EIS to include an assessment of the likely impacts of all stages of a project, including any cumulative impacts of the site and existing proposed projects in the region, taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice.

This section presents an assessment of the potential cumulative impacts associated with the construction, operation and decommissioning of the Project when considered in combination with other projects and activities occurring near the Project. It also presents an approach for the management of any cumulative impacts. This assessment was conducted in accordance with the requirements of the SEARs, the *Large-scale Solar Energy Guidelines* (NSW Government, 2022) and the *Cumulative Impact Assessment Guidelines for State Significant Projects* (CIA Guidelines) (DPIE, 2022).



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Scale at A4

0 5 10 Kilometres

Legend

- Major Road
- Site Boundary
- Local Government Boundary
- Electricity Transmission Line
- Central-West Orana REZ Transmission Corridor
- Renewable Energy Zones
- Nearby Developments**
- Mining and Extractives - Operational
- Battery Storage - Approved
- Battery Storage - In planning
- Solar - Approved
- Solar - In planning
- Solar - Operational
- Solar - Under construction
- Wind - Approved
- Wind - In planning
- Wind - Under construction

GDA 1994 MGA Zone 56

FIGURE 1.1

Nearby Projects for Cumulative Impact Assessment

1.2 Assessment Methodology

In accordance with the CIA guidelines, a scoping summary was prepared to identify the potential for cumulative impacts to occur as a result of the Project. The scoping summary determined that given the distances between other projects in proximity of the Project and the relatively minor impacts associated with the operations phase of the Project, the majority of the potential cumulative impacts are associated with the construction and decommissioning phases (particularly with respect to traffic and social/economic impacts). Through the EIS process specialist assessment has informed the potential cumulative impacts associated with each environmental and social aspect of the Project. This process allows for the EIS to capture the standalone and cumulative impacts that may be perceived by the surrounding area and community.

Nearby projects with the potential to result in cumulative impacts with, or as a result of, the Project were identified using the following sources (April 2023):

- NSW DPE Major Projects website including renewable and other projects in the area.
- Transport for NSW current projects register (relative to transport routes).
- DCCEEW Protected Matters Search Tool.
- Mid-Western Regional and Upper Hunter Shire Council development application registers.
- Google maps.

Generally, cumulative impacts have been qualitatively assessed, based on the perceived likelihood of impact and scale of interaction between the Project and nearby developments. In some cases, a detailed assessment (traffic, visual, noise, economic and social) was carried out to identify and assess the cumulative impacts of the project.

1.3 Identified Developments

As outlined in the cumulative scoping summary provided in **Appendix 1**, impacts associated with the operations phase of the Project and other renewable energy developments within the area will be limited, with the majority of the potential impacts associated with the construction and decommissioning phases. Therefore, renewables projects that are already operational or currently under construction are considered unlikely to result in cumulative impacts with the Project as there would be limited or no overlap of construction or decommissioning activities. Developments that may contribute to the cumulative impacts of the Project are summarised in **Table 1.1** and shown on **Figure 1.1**. In some instances, sufficient detail relating to nearby projects is not currently available to inform a detailed assessment.

Table 1.1 Cumulative Impact Summary (April 2023)

Project	Distance (km) (approx)	Status	Detail	Potential Cumulative Impact
Ulan Coal Mine Complex, Moolarben Coal Complex and Wilpinjong Mine	28	Operational	All coal transported by rail. Potential overlap with light vehicle traffic along Wollar Road during shift changes. Conditions are in place requiring the three mines to co-ordinate shift changes to minimise the potential cumulative traffic impacts and to avoid school bus hours.	Social/Economic Transport
Liverpool Range Wind Farm	55	Approved (not constructed)	Currently seeking a modification. Progressing with the Central West Orana REZ in Q3–4 2024. Potential overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Birriwa Solar and Battery Project	60	Proposed	Exhibited Nov 2022. Currently in response to submissions stage. Progressing with the Central West Orana REZ in Q3–4 2024. Possible overlap of construction stage.	Social/Economic
Valley of the Winds Wind Farm	57	Proposed	Currently in Response to submissions phase. Progressing with the Central West Orana REZ in Q3–4 2024 with construction for 24–42 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Barneys Reef Wind Farm	50	Proposed	SEARs issued September 2021. Progressing with the Central West Orana REZ in Q3–4 2024 with construction scheduled for approximately 28 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Tallawang Solar Farm	50	Proposed	Currently in Response to submissions stage. Progressing with the Central West Orana in Q3–4 2024 with construction scheduled for 34 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Spicers Creek Wind Farm	80	Proposed	SEARs issued May 2022. Progressing with the Central West Orana REZ in Q3–4 2024 with no information on construction duration. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport

Project	Distance (km) (approx)	Status	Detail	Potential Cumulative Impact
Merriwa Solar Farm	30	Proposed	SEARs issued January 2022. No information available on anticipated construction timing. Possible overlap for heavy vehicle construction traffic along Golden Highway. Possible cumulative impacts on local biodiversity due to site proximity and similarities (both located on agricultural land adjacent to Goulburn River National Park). No cumulative visual amenity impacts expected due to height of intervening vegetation.	Biodiversity Social/Economic Transport
Bowmans Creek Wind Farm	96	Proposed	In assessment phase. Possible overlap of construction phase but no anticipated overlap of transport routes.	Social/Economic
Hills of Gold Wind Farm	101	Proposed	In assessment phase. Possible overlap of construction phase but no anticipated overlap of transport routes.	Social/Economic
Bellambi Heights Solar	54	Proposed	SEARs issued May 2022. Possible overlap of construction phase but no anticipated overlap of transport routes.	Social/Economic
Ulan Solar Farm	38	Proposed	SEARs issued September 2022. Possible overlap of construction phase but no anticipated overlap of transport routes.	Social/Economic
Sandy Creek Solar Farm	83	Proposed	SEARs issued May 2022. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Cobbora Solar Farm	82	Proposed	SEARs issued November 2021. Possible overlap for heavy vehicle construction traffic along Golden Highway.	Social/Economic Transport
Bowdens Silver Project	45	Approved (no constructed)	Approved April 2023. No information available on anticipated construction timing. Possible overlap for heavy vehicle traffic along Golden Highway.	Social/Economic Transport

1.3.1 Assessment of Cumulative Impacts

Detailed cumulative assessment has been undertaken where potential for impact has been identified through the cumulative scoping assessment (refer to **Appendix 1**) relevant to the Project. As summarised in **Table 1.1**, this assessment was focused on identified projects and relevant impacts, including the potential traffic and transport, social/economics and biodiversity cumulative impacts.

Cumulative impacts related to other environmental aspects including air quality, water quality, noise and visual amenity were also considered in the assessment, however the isolated nature of the Project site and the minor nature of such impacts did not warrant additional assessment from a cumulative perspective. Further detail is available in the relevant specialist assessments.

1.3.1.1 Traffic and Transport

Approved and proposed projects within proximity to the Project that have construction programs that overlap with construction of this Project may present cumulative impacts relating to the combined increased demand on local roads, particularly in relation to heavy vehicles utilising the Golden Highway.

Projects were assessed in the TTIA (refer to **Appendix 13**) based on their proposed vehicle routes, construction timing and anticipated traffic generation rates, where available. The Golden Highway forms part of the construction vehicle route for many of the projects, it currently has spare capacity and would likely be able to accommodate the additional vehicle movements temporarily generated by each project during their construction periods. The assessment concluded that cumulative impacts are likely to be minor as many of the identified projects are either still in the planning stages or are likely to be completed prior to the commencement of this Project.

1.3.1.2 Social/Economic

The SIA (refer to **Appendix 16** of the EIS) discussed both the positive and negative impacts of the projected population influx on the region. Local businesses and service providers have the opportunity to realise commercial benefits from accommodating and servicing the workforce while, at the same time, accessibility issues may occur for other user groups potentially affecting affordability and availability of accommodation and community services. This would particularly be the case when considering the cumulative effect of population influx between multiple projects with potential concurrent development programs, in the context of the CWO REZ and multiple development projects in planning nearby. When considered cumulatively, the potential strain on local accommodation and other township services could result in a high social impact.

Cumulative economic impacts were assessed in the EIA (refer to **Appendix 17**) and are associated with significant development of major renewable energy projects in the CWO REZ in the coming years combined with ongoing demand from the tourism, agriculture and mining sectors. The EIA also acknowledged potential impacts due to insufficient accommodation and workers to service the Project and concurrent demands. In this regard, the EIA recommended strategies to manage accommodation demand, and local procurement and employment in the region.

Lightsource bp has committed to the preparation of an Accommodation, Procurement and Employment Strategy in consultation with relevant stakeholders, and a Community Shared Benefit Strategy including a Community Fund to be available to the wider community.

1.3.1.3 Biodiversity

The Project has potential to affect habitat connectivity and Serious and Irreversible Impact entities (SII) impacts to flora and fauna species and this issue was examined further in relation to potential cumulative impacts with the nearby Merriwa Solar Farm, due to its proposed location on the opposite side of the Goulburn River National Park.

The areas of clearing for the Project primarily consist of native vegetation composed of scattered canopy trees and areas of derived native grassland currently utilised for agricultural purposes. Although throughout the EIS process there have been design refinements and various other mitigation and management measures undertaken to avoid and mitigation impacts, the Project will result in some impacts to biodiversity values, including the Box Gum Woodland critically endangered ecological community and mapped important habitat for the Regent Honeyeater, which are SII entities. The Project will implement a Biodiversity Offset Strategy to compensate for impacts to biodiversity values.

The Project includes corridors between the four distinct solar array areas to enable the persistence of habitat connectivity through the site. The solar array areas will be fenced separately to facilitate fauna movement through the Project Area and surrounding Goulburn River National Park. The BDAR (refer to **Appendix 6** of the EIS) concluded that habitat connectivity around the site is not likely to be impacted as:

- areas proposed for clearing were already substantially degraded by thinning and agricultural management, and
- species utilising these areas for connectivity are already highly mobile and disturbance tolerant.

Due to the nature and layout of the site, which is surrounded by undeveloped land, the BDAR concluded there will be no overall changes to landscape connectivity for wildlife movement.

1.3.1.4 Aboriginal Heritage

The assessment identified seven sites within the Development Footprint with low to moderate values. The loss of these features due to the Project will lead to a further loss of the distinct archaeological resources however this impact it considered to be negligible.

On a regional scale it is considered that the Project will have the potential to add to the cumulative impact on the region's Aboriginal cultural heritage as the loss ultimately leads to a further diminution of the distinct archaeological resource. The Aboriginal Cultural Heritage Assessment Report is provided as **Appendix 8** of the EIS.

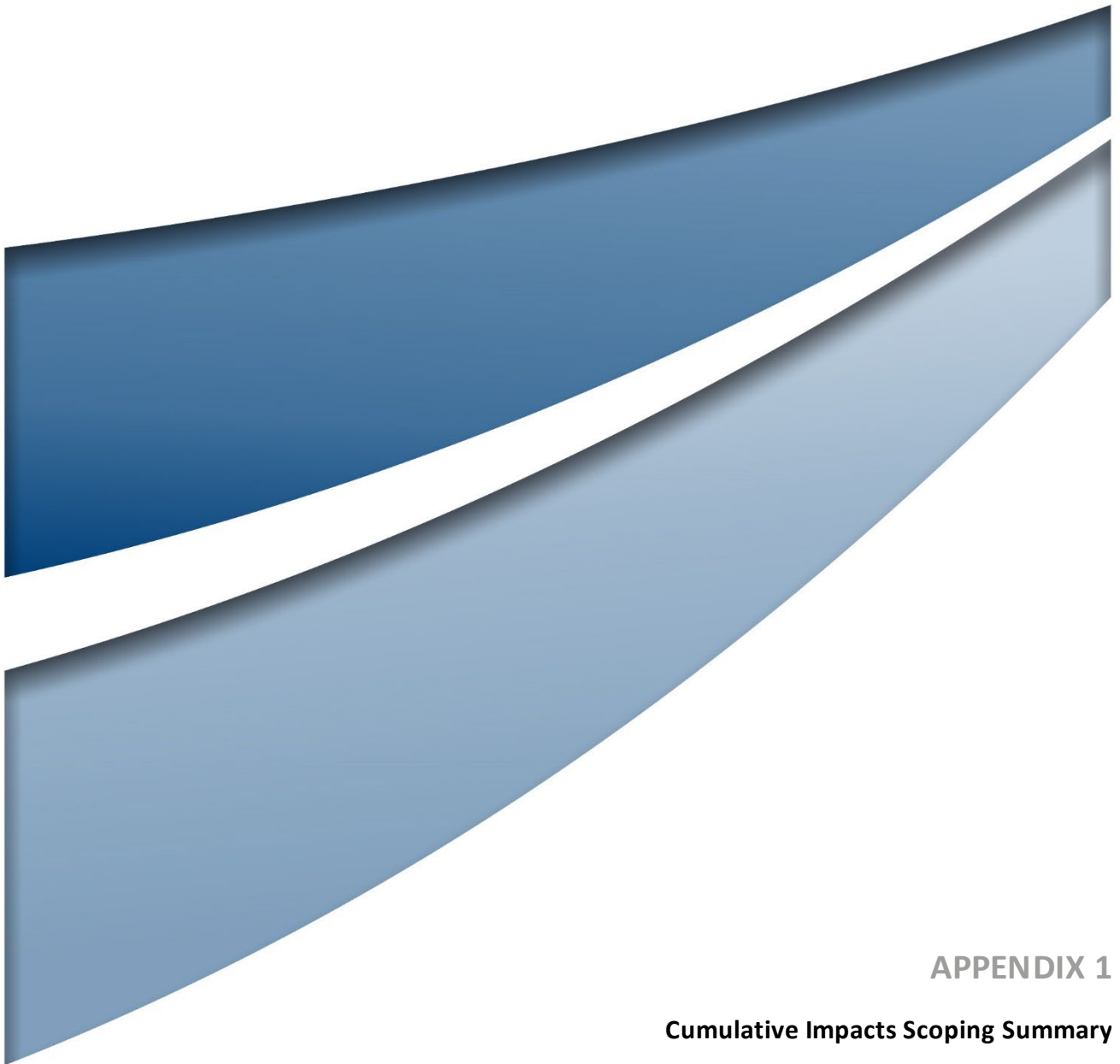
1.3.1.5 Waste

Several renewable projects are proposed within the region, it is anticipated that these projects will generate similar waste quantities and streams. During construction and operation, Lightsource bp will contact relevant facility managers and ensure waste is transported to a facility which has adequate capacity to process the waste.

1.3.2 Management and Mitigation Measures

The environmental management measures for key issues outlined throughout **Section 6.0** and summarised in **Section 8.0** of the EIS will be implemented to minimise the cumulative impacts of the Project. These measures are considered adequate to address both the individual Project impacts and any cumulative impacts.

Due to the proximity of the Project to the Central-West Orana Renewable Energy Zone and various other ongoing developments in the region Lightsource bp will monitor closely any developments and changes to assess for future cumulative impacts. If there is a risk of cumulative impacts during Project construction phase (or decommissioning) that is identified, Lightsource bp will engage with relevant stakeholders to consider mitigation and management measures to reduce the impact on the community.



APPENDIX 1

Cumulative Impacts Scoping Summary

Cumulative Impacts Scoping Summary

Key	No potential overlap – no further consideration of cumulative impacts undertaken.
	Potential for overlap however unlikely to result in substantial cumulative impacts – qualitative assessment of cumulative impacts undertaken.
	Overlap is certain and there is potential for substantial cumulative impacts – qualitative assessment of the cumulative impacts undertaken.

Noise and vibration cumulative impacts have not been addressed within this Cumulative Impact Assessment. A detailed technical study has been undertaken for noise and vibration impacts associated with the Project by Umwelt (2022). This study considered noise and vibration impacts from the Project to be negligible, particularly due to the isolated nature of the Project (being surrounded by the Goulburn River National Park). Further details on this are provided in **Appendix 12** and summarised in **Section 6.7** of the EIS.

Project	Proximity	Details/Timing/Overlap	Key Issue				
			Biodiversity	Waste	Social	Heritage	Transport
Operational							
Beryl Solar Farm	56 km	No overlap as operational impacts of the solar farm are minor.					
Ulan Coal Complex, Moolarben Coal Complex and Wilpinjong Mine	29 km	All coal transported by rail. Potential overlap with light vehicle traffic along Wollar Road during shift changes. Conditions are in place requiring the three mines to co-ordinate shift changes to minimise the potential cumulative traffic impacts and to avoid school bus hours.					
Kyoto Wind Farm	62 km	No overlap as potential for cumulative operational impacts is minor.					
Approved – construction to commence, underway or completed							
Liverpool Range Wind Farm	55 km	Approved but construction timing unknown; currently seeking a modification. Potential overlap for heavy vehicle construction traffic along Golden Highway.					

Project	Proximity	Details/Timing/Overlap	Key Issue				
			Biodiversity	Waste	Social	Heritage	Transport
Stubbo Solar Farm	48 km	Construction commenced in 2022. Assumed no overlap in construction phase.					
Wollar Solar Farm	22 km	Construction commenced in July 2022. Assumed no overlap in construction phase					
Dunedoo Solar Farm	70 km	Construction is expected to commence late 2022. Assumed no overlap in construction phase.					
Proposed – under assessment or in planning and design phase							
Birriwa Solar and Battery Project	60 km	On exhibition Oct–Nov 2022. Possible overlap of construction phase but no anticipated overlap of transport routes.					
Central West Orana Transmission Project	25 km	SEARs issued October 2022. Assumed no overlap in construction phase.					
Valley of the Winds Wind Farm	57 km	In submissions phase. Construction expected to commence in Q1 2023 for 24 to 42 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.					
Barneys Reef Wind Farm	50 km	SEARs issued September 2021. Construction anticipated to commence in Q4 2023 for approximately 28 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.					
Tallawang Solar Farm	50 km	On exhibition Oct–Nov 2022. Construction expected to commence in mid-2024 for 34 months. Possible overlap for heavy vehicle construction traffic along Golden Highway.					

Project	Proximity	Details/Timing/Overlap	Key Issue				
			Biodiversity	Waste	Social	Heritage	Transport
Spicers Creek Wind Farm	80 km	SEARs issued May 2022. No information available on anticipated construction timing. Possible overlap for heavy vehicle construction traffic along Golden Highway.					
Merriwa Solar Farm	30 km	SEARs issued January 2022. No information available on anticipated construction timing. Possible overlap for heavy vehicle construction traffic along Golden Highway. Possible cumulative impacts on local biodiversity due to site proximity and similarities (both located on agricultural land adjacent to Goulburn River National Park).					
Bowmans Creek Wind Farm	96 km	In assessment phase. Possible overlap of construction phase but no anticipated overlap of transport routes.					
Hills of Gold Wind Farm	101 km	In assessment phase. Possible overlap of construction phase but no anticipated overlap of transport routes.					
Bellambi Heights Renewables Project	54 km	SEARs issued May 2022. Possible overlap of construction phase but no anticipated overlap of transport routes.					
Ulan Solar Farm	38 km	SEARs issued September 2022. Possible overlap of construction phase but no anticipated overlap of transport routes.					
Sandy Creek Solar Farm	83 km	SEARs issued May 2022. Possible overlap for heavy vehicle construction traffic along Golden Highway.					

Project	Proximity	Details/Timing/Overlap	Key Issue				
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Cobbora Solar Farm	82 km	SEARs issued November 2021. Possible overlap for heavy vehicle construction traffic along Golden Highway.					
Bowdens Silver Project	45 km	In assessment phase. Possible overlap for heavy vehicle traffic along Golden Highway.					