



lightsource bp

**GOULBURN RIVER SOLAR FARM**

Amendment Report

**FINAL**

December 2023



## GOULBURN RIVER SOLAR FARM

Amendment Report

### FINAL

Prepared by  
Umwelt (Australia) Pty Limited  
on behalf of  
Lightsource bp

Project Director: Malinda Facey  
Project Manager: Jessica Henderson-Wilson  
Report No. 23485/RO3  
Date: December 2023



QMS Certification Services

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### **Document Status**

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# Executive Summary

Goulburn River Solar Farm is a large-scale renewable energy project proposed by Lightsource bp Development Services Australia Pty Ltd to generate solar renewable energy to supply New South Wales. The Project is located within the Upper Hunter Local Government Area of NSW, approximately 28 kilometres southwest of the township of Merriwa.

The Project is located on an agricultural property which is surrounded by the Goulburn River National Park. The Project Area comprises of two freehold properties that span across multiple lots, covering an area of approximately 2,000 ha, with the Development Footprint occupying 792.19 ha.

An Environmental Impact Statement was prepared for the Project and placed on public exhibition by the Department of Planning and Environment from Tuesday 13 June to Monday 10 July 2023. During the public exhibition period 56 unique submissions made by the public as well as submissions from two local councils and 11 government agencies were received. A detailed response to the issues raised during the public exhibition period is provided in the Response to Submissions Report (December 2023).

Since submission of the Environmental Impact Statement, Lightsource bp Development Services Australia Pty Ltd has conducted a thorough review of the layout and optimized the Project design to enhance its efficiency while minimizing associated environmental and social impacts. This Amendment Report proposes project changes to address government agency and community submissions and to encompass the findings of the layout review and design optimisation process. This amended project design is hereafter referred to as the Amended Project.

The Amended Project modifies the Environmental Impact Statement Project to refine transport routes and include public road upgrades, increase Battery Energy Storage System capacity and provide the option for a decentralised Battery Energy Storage System, incorporate construction of an additional transmission tower and reflect minor changes to the Development Footprint. The Amended Project also proposes a more detailed approach for workforce accommodation.

Revised technical assessments have been undertaken to address the potential impacts associated with the Amended Project, including clarification on how these differ from the Environmental Impact Statement Project. Assessments have been undertaken for potential impacts associated with Traffic and Transport, Biodiversity, Aquatic Ecology, Social (Accommodation and Employment), Noise and Vibration, Hazards, Water, Visual, and Aboriginal Heritage.

This Amendment Report is provided in two parts. Part A comprises all the assessments except for Biodiversity. Part B of this Amendment Report will include the Assessment of Impacts for Biodiversity, and must be read in conjunction with this part of the Amendment Report, Part A. Both parts of the Amendment Report should also be read in conjunction with the Response to Submissions Report.

The Amended Project represents a Project that will form an essential part of the energy transition, with a fully optimised constructible design. This Amendment Report confirms that, while there are some unavoidable impacts from the Amended Project, the extent of such impacts have been minimised through the design process and will be minimised through implementation of management measures to the extent practicable.

The proposed amendments to the Environmental Impact Statement Project outlined in this Amendment Report are consistent with the relevant objectives of the *Environmental Planning and Assessment Act 1979* and the principles of ecologically sustainable development and do not significantly change the nature of the Project originally proposed. The potential impacts can be avoided or managed and mitigated appropriately. Further management and mitigation measures as a result of the Amended Project are discussed in further detail within this report.

# Abbreviations

Term/Abbreviation	Definition
<b>ACHAR</b>	Aboriginal Cultural Heritage Assessment Report
<b>AEMO</b>	Australian Energy Market Operator
<b>AES</b>	Accommodation and Employment Strategy
<b>BDAR</b>	Biodiversity Development Assessment Report
<b>BESS</b>	Battery Energy Storage System
<b>CTMP</b>	Construction Traffic Management Plan
<b>EIS</b>	Environmental Impact Statement
<b>km</b>	kilometres
<b>kV</b>	kilovolt
<b>LGA</b>	Local Government Area
<b>Lightsource bp/LSbp</b>	Lightsource Development Services Australia Pty Ltd
<b>m</b>	metres
<b>NEM</b>	National Electricity Market
<b>OSOM</b>	Oversize Overmass
<b>PHA</b>	Preliminary hazard analysis
<b>PV</b>	Photovoltaic
<b>REZ</b>	Renewable Energy Zone
<b>RtS</b>	Response to submissions
<b>SAIL</b>	Serious and Irreversible Impacts
<b>SEARs</b>	Secretary's Environmental Assessment Requirements
<b>SISD</b>	Safe Intersection Sight Distance
<b>TfNSW</b>	Transport for NSW
<b>TSR</b>	Travelling Stock Reserve
<b>TTIA</b>	Traffic and Transport Impact Assessment
<b>UHSC</b>	Upper Hunter Shire Council
<b>VPA</b>	Voluntary Planning Agreement

# Key Terms

Project-Specific Term	Description
<b>Amended Project</b>	The Amended Project includes the elements of the Project as described in the EIS as well as changes which have been made in response to submissions on the EIS. These include: Project site access/egress amendments, upgrades to additional sections of Wollara Road and Ringwood Road, increased BESS capacity and an option of a decentralised BESS, minor Project layout modifications, construction of an additional transmission tower and a revised approach for workforce accommodation.
<b>Amendment Report</b>	The purpose of an amendment report is to assess the economic, environmental, and social impacts of the amended project and to help the community, councils, government agencies and the consent authority to get a better understanding of the proposed amendments and their impacts so they can make informed submissions (if the report is exhibited) or decisions on the merits of the amended project (DPE, 2022).
<b>Access route</b>	The proposed route for transporting material and equipment via Ringwood and Wollara Road off the Golden Highway to the Project Area during construction. Note: the Amended Project includes a revised access route for egress with a left turn at the Ringwood Road/Golden Highway intersection and use of a turnaround facility at Barnett Street, Merriwa.
<b>Battery Energy Storage System (BESS)</b>	The entire battery system comprising of a power conversion system (battery storage units and inverters), either centralised or distributed (i.e. decentralised) throughout the solar farm site. The BESS is housed in a series of outdoor containers. Note: the Amended Project details the amendments to the proposed BESS arrangements, including increasing the capacity of the centralised BESS to 450 MWp, and the addition of a decentralised 580 MWp BESS, plus the option for both BESS configurations.
<b>Development Footprint</b>	The maximum extent of ground disturbance associated with construction and operation of the Goulburn River Solar Farm as presented in the EIS and subsequently the Amendment Report. Note: the Amended Project has an amended Development Footprint.
<b>Emergency access points</b>	Proposed at two locations along Wollara Road to facilitate emergency access and National Parks and Wildlife Services vehicle access, these access points would not be utilised for the construction of the Project.
<b>Involved dwelling</b>	Dwelling located on land owned by landholders involved in the Project.
<b>Primary access point</b>	The Project's main access from Wollara Road, located on the southern portion of the Project Area.
<b>Project Area</b>	The total area investigated during various specialist studies and the broader property the Development Footprint will be located on. The Project Area covers approximately 2,000 ha and includes the Solar Farm Site, the BESS development area and ancillary infrastructure. This includes a 10 m set back (i.e., APZ) from the perimeter of the Site boundary. This does not include road upgrades and repairs on Wollara Road and Ringwood Road. It also comprises the proposed Biodiversity Stewardship Site.
<b>Proponent</b>	Lightsource Development Services Australia Pty Ltd (Lightsource bp).

Project-Specific Term	Description
<b>The EIS Project</b>	The proposed Goulburn River Solar Farm. The Project includes the construction, operation and decommissioning of a solar farm with capacity of up to 550 MW, BESS and associated infrastructure. Including the various road repairs and upgrades to Ringwood Road.
<b>Road Repairs and Upgrades</b>	Road repairs including resealing, regrading and re-sheeting various sections along Ringwood Road, upgrade of the intersection of the Golden Highway and Ringwood Road as well as upgrades to parts of Wollara Road and Ringwood Road. Note: the Amended Project includes additional road repairs and upgrades.
<b>Road Repairs and Upgrades Area</b>	The total area which forms the road repairs proposed in the EIS and subsequently the Amendment Report.
<b>Sensitive receiver</b>	Non-host landholders' dwellings in proximity to the Project Area that may be sensitive to noise, vibration, visual, traffic and other impacts. Potential impacts to sensitive receivers were investigated in the EIS and the Amendment Report.
<b>Site</b>	The property(ies) in which the Project Area is located.
<b>Transmission line</b>	The existing 500 kV overhead transmission line located in the south-eastern corner of the Project Area that would connect the solar farm to the grid connection point into the National Energy Market network. Note: the Amended Project includes an additional Transmission Tower within the easement to accommodate the connection to the transmission network.

# Table of Contents

<b>Executive Summary</b>	<b>i</b>
<b>Abbreviations</b>	<b>iii</b>
<b>Key Terms</b>	<b>iv</b>
<b>Table of Contents</b>	<b>vi</b>
<b>1.0 Introduction</b>	<b>1</b>
1.1 Background	1
1.2 The EIS Project	3
1.3 Proposed Amendments	4
1.4 Structure of this Report	7
1.5 Assessment Undertaken	7
<b>2.0 Strategic Context</b>	<b>10</b>
2.1 Strategic Context for Project amendments	10
2.1.1 Renewable Energy Market	10
2.1.2 Climate Change Act 2022	11
2.1.3 NSW Electricity Strategy	11
<b>3.0 Description of the Amendments</b>	<b>12</b>
3.1 Summary of Amendments	13
3.2 Transport Route Amendments	16
3.2.1 Access/Egress Movements	16
3.2.2 Golden Highway and Ringwood Road Upgrades	18
3.3 Wollara Road and Ringwood Road Upgrades	20
3.4 BESS Design Amendments	22
3.5 Development Footprint Modifications	25
3.5.1 Exclusion of Travelling Stock Reserve	25
3.5.2 Relocated Solar Panels and Access Track	25
3.5.3 Increased Internal Access Road Widths	25
3.6 Additional Transmission Tower	30
3.7 Workforce Accommodation	31
<b>4.0 Impact Avoidance and Mitigation</b>	<b>32</b>
<b>5.0 Statutory Context</b>	<b>33</b>
5.1 NSW Assessment and Approval Process	33
5.2 Commonwealth Assessment and Approval Process	33

<b>6.0</b>	<b>Stakeholder Engagement</b>	<b>34</b>
6.1	Consultation to Support the EIS Project Public Exhibition	34
6.2	Consultation During Development of the Amendments	34
6.2.1	Consultation Following Exhibition	34
6.3	Ongoing Consultation	34
6.4	Benefit Sharing	35
<b>7.0</b>	<b>Assessment of Impacts</b>	<b>36</b>
7.1	Traffic and Transport	37
7.1.1	Existing Environment	38
7.1.2	Impact Assessment	41
7.1.3	Mitigation and Management Measures	44
7.2	Aquatic Assessment	44
7.2.1	Impact Assessment	45
7.2.2	Cumulative Impacts	45
7.2.3	Management and Mitigation Measures	45
7.3	Social Impact	45
7.3.1	Accommodation and Employment Strategy	46
7.3.2	Cumulative Impacts	49
7.3.3	Management and Mitigation Measures	54
7.4	Noise and Vibration	54
7.4.1	Construction Noise Assessment	55
7.4.2	Construction Vibration Levels	56
7.4.3	Operational Noise Assessment	56
7.4.4	Road Traffic Noise	56
7.4.5	Cumulative Impacts	57
7.4.6	Management and Mitigation Measures	57
7.5	Preliminary Hazard Analysis	57
7.5.1	Impact Assessment	58
7.5.2	Cumulative Impacts	58
7.5.3	Management and Mitigation Measures	58
7.6	Water	59
7.6.1	Cumulative Impacts	60
7.7	Landscape and Visual	60
7.7.1	Landscape Character Impacts of the Amendments	61
7.7.2	Visual Impacts of the Amendments	61
7.7.3	Cumulative Impacts	63

7.7.4	Management and Mitigation Measures	63
7.8	Aboriginal Heritage	63
7.8.1	Consultation	64
7.8.2	Impact Assessment	64
7.8.3	Cumulative Impacts	64
7.8.4	Management and Mitigation Measures	64
<b>8.0</b>	<b>Justification of the Amended Project</b>	<b>66</b>
8.1	Environmental, Economic and Social Impacts	66
8.2	Strategic Context	66
8.3	Suitability of the Site	67
8.4	Ecologically Sustainable Development (ESD)	67
8.4.1	The Precautionary Principle	68
8.4.2	Intergenerational Equity	69
8.4.3	Conservation of Biological Diversity	69
8.4.4	Valuation Principle	70
8.5	Conclusion	71
<b>9.0</b>	<b>Bibliography</b>	<b>73</b>

## Figures

Figure 1.1	Regional Locality Map	1
Figure 1.2	EIS Project	2
Figure 1.3	The Amended Project	5
Figure 1.4	Summary of the Proposed Amendments to Development Footprint	6
Figure 3.1	Amended Project – Transport Route including Barnett Street Vehicle Turning Area	17
Figure 3.2	Amended Project – Golden Highway and Ringwood Road Intersection Upgrade	19
Figure 3.3	Amended Project – Wollar Road and Ringwood Road Upgrades	21
Figure 3.4	Centralised BESS	23
Figure 3.5	Decentralised BESS	24
Figure 3.6	Amended Project – Development Footprint	26
Figure 3.7	Amended Project – Revised western extent of the Project layout to avoid TSR 44841	27
Figure 3.8	Amended Project – Areas removed from Development Footprint	28
Figure 3.9	Amended Project – Expanded internal access roads	29

# Tables

Table 1.1	Proposed Amendments	4
Table 1.2	Report structure	7
Table 1.3	Summary of assessment by amendments	9
Table 3.1	Project Amendments	12
Table 3.2	Comparison of proposed amendments to the Project to that assessed in the Project EIS	13
Table 7.1	Additional Studies and Assessment Approach	36
Table 7.2	Amendments that influence the TTIA	38
Table 7.3	Intersection Treatments	39
Table 7.4	Transport Route Safe Intersection Sight Distance Assessment	39
Table 7.5	Intersection performance during construction (cumulative) – Golden Highway and Ringwood Road intersection	41
Table 7.6	Traffic volumes for turn treatments analysis (cumulative) – Golden Highway and Ringwood Road	42
Table 7.7	Amendments that influence the Aquatic Assessment	44
Table 7.8	Amendments that Influence the Social Assessment	46
Table 7.9	Accommodation Option Breakdown at Peak Workforce	47
Table 7.10	Cumulative Impact of Proximal Developments	50
Table 7.11	Amendments that influence the NVIA	55
Table 7.12	Amendments that influence the PHA	57
Table 7.13	Amendments that influence the WRIA	59
Table 7.14	Amendments assessed in the LVIA	60
Table 7.15	Matrix of Impact	60
Table 7.16	Assessment of Landscape Character Impacts	61
Table 7.17	Updated Visual Impact Assessment	62
Table 7.18	Amendments that influence the ACHAR	63

# Appendices

Appendix A	Updated Project Description
Appendix B	Landowners Consent
Appendix C	Updated Table of Mitigation Measures
Appendix D	Updated Traffic and Transport Impact Assessment
Appendix E	Aquatic Assessment
Appendix F	Accommodation and Employment Strategy
Appendix G	Noise and Vibration Impact Assessment
Appendix H	Preliminary Hazard Analysis
Appendix I	Landscape Character and Visual Impact Assessment
Appendix J	Aboriginal Cultural Heritage Assessment Report
Appendix K	Water Resource Impact Assessment

# 1.0 Introduction

Lightsource Development Services Australia Pty Ltd (LSbp) is proposing to develop the Goulburn River Solar Farm (the Project: SSD 33964533) to generate solar renewable energy to supply New South Wales (NSW). An Environmental Impact Statement (EIS) was submitted to the Department of Planning and Environment (DPE) and publicly exhibited for 28 days.

The Project, as exhibited in the EIS, included the construction, operation, maintenance and decommissioning of approximately 550 megawatt peak (MWp) of solar photovoltaic (PV) generation along with a Battery Energy Storage System (BESS) with 280 MWp and 570 megawatt hour (MWh) capacity. The Project also comprised supporting infrastructure including a substation and connection to an existing 500 kilovolt (kV) transmission line and road upgrades to parts of Ringwood Road including two culverts, one at Bow River and one at Killoe Creek.

Following public exhibition of the EIS, LSbp has continued to consult with landholders and stakeholders. Ongoing consultation and consideration of the submissions received has resulted in a number of proposed amendments to the Project. Amendments to the Project are described and assessed within this Amendment Report which should be read in conjunction with the Response to Submissions Report (RtS) prepared for the Project.

This Amendment Report is provided in two parts. Part A comprises all the assessments except for Biodiversity. Part B of this Amendment Report will include the Assessment of Impacts for Biodiversity, and must be read in conjunction with this part of the Amendment Report, Part A. Both parts of the Amendment Report should also be read in conjunction with the RtS Report.

## 1.1 Background

The Project Area is located between Merriwa (to the north-east) and Coggan (to the south-east) NSW, surrounded by the Goulburn River National Park as shown in **Figure 1.1**. The Project Area comprises two freehold properties that span across multiple lots, covering an area of approximately 2,000 ha with the amended Development Footprint occupying approximately 792.19 ha, refer to **Figure 1.2**. The Project Area is located on freehold land.

The Project is a State Significant Development (SSD) under the State Environmental Planning Policy (Planning Systems) 2021, being a development for the purposes of electricity generating works and with a capital investment value of over \$30 million. The EIS for the Project was submitted to DPE in May 2023.

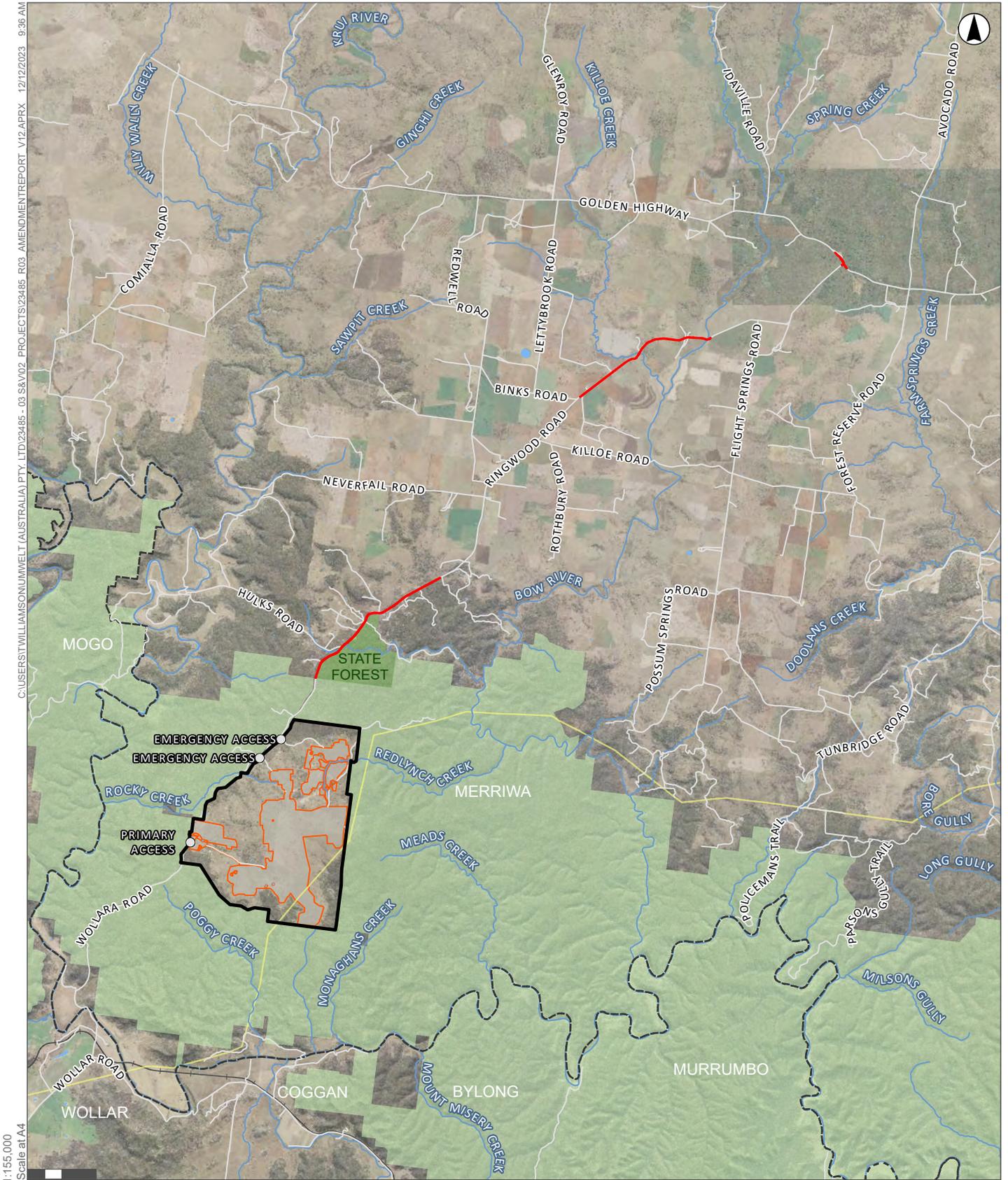
Public exhibition of the EIS took place between 13 June 2023 and 10 July 2023 with 56 unique submissions made by the public as well as submissions from two local councils and 11 government agencies. A summary of the comments received during public exhibition of the EIS and a detailed response to these are provided in the RtS Report.

Since submission of the EIS, LSbp has conducted a thorough review of the layout and optimized the Project design to enhance its efficiency while minimizing associated environmental and social impacts. This Amendment Report proposes project changes to address government agency and community submissions as well as the findings of the layout review and design optimisation process. This amended project design is hereafter referred to as the Amended Project.

The proposed amendments further enhance the alignment of the Project with the renewable energy strategies of both the State and Federal governments. It is widely acknowledged that the National Electricity Market (NEM) needs to rapidly transition to renewable energy to support Government commitments to net zero including the NSW Climate Change Policy Framework, and the Commonwealth Government's commitments under the Paris Agreement. At present, additional renewable energy capacity is being added to the NEM at a lower rate than what the Australian Energy Market Operator (AEMO) has identified as required to achieve the transition to renewable energy (Parkinson, Renew Economy, 2023).

The Project will materially assist in addressing this shortfall by delivering approximately 550 MWp of renewable energy capacity to the NEM to help replace the generation capacity which will be lost when NSW's largest power station, Eraring, closes in 2025.

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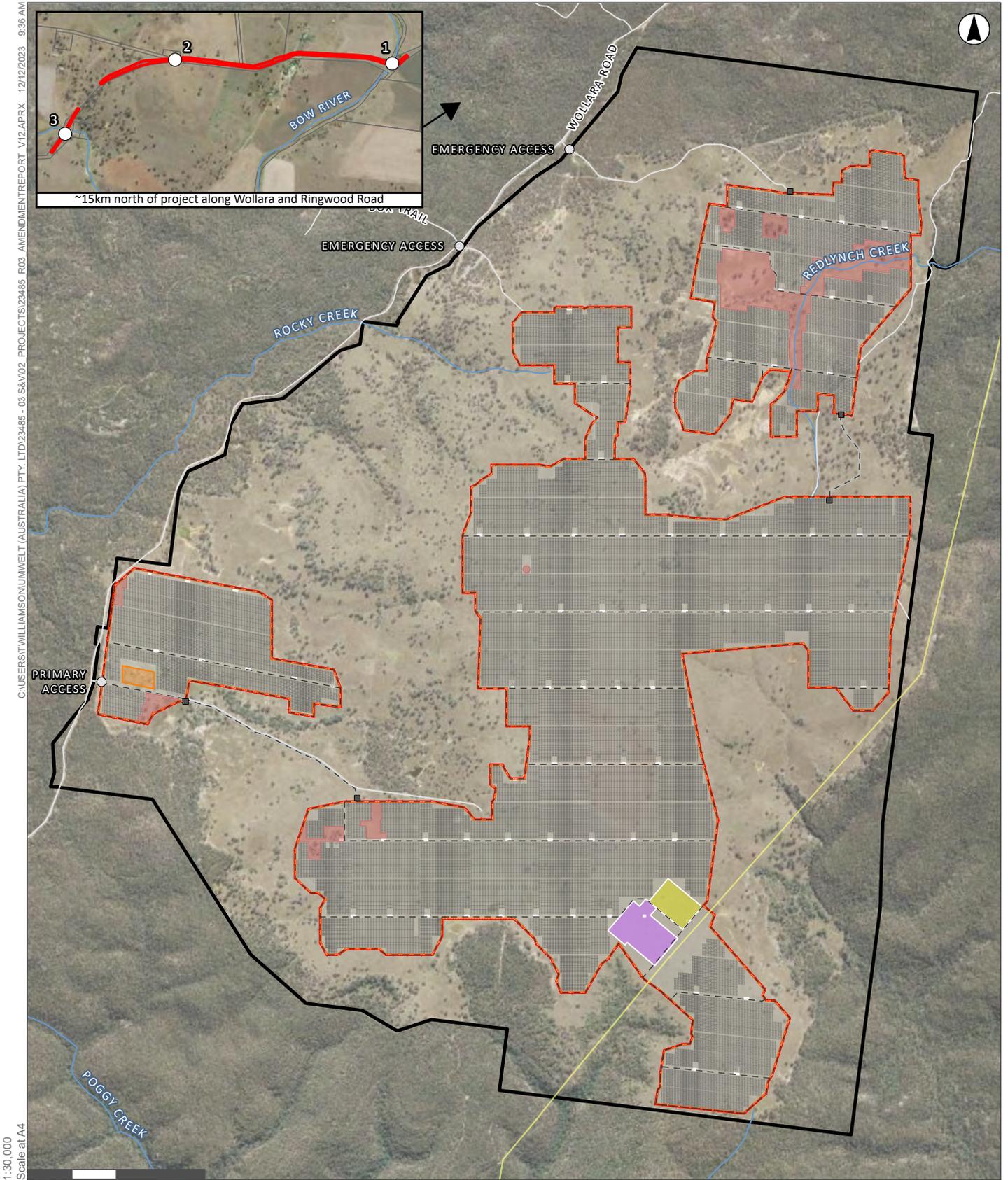
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GDA 1994 MGA Zone 56

- Legend**
- Access Points
  - Electricity Transmission Line
  - Watercourse
  - Roads and Tracks
  - Railway
  - Local Government Boundary
  - ▭ Road Upgrades Area
  - ▭ Project Area
  - ▭ Development Footprint (Amended Project)
  - ▭ NSW National Parks
  - ▭ NSW State Forests
  - ▭ Waterbodies

**FIGURE 1.1**  
Regional Locality Map

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- Legend
- Gate
  - Access Points
  - Electricity Transmission Line
  - - - Proposed Access Tracks
  - Watercourse
  - Roads and Tracks
  - Security Fence
  - ▭ Project Area
  - ▭ Road Upgrades Area
  - ▭ Fire Break
  - ▭ Battery Energy Storage System
  - ▭ Substation
  - ▭ Inverters
  - ▭ Compound Area
  - ▭ Exclusion Zones - Environmentally Sensitive Areas
  - ▭ Development Footprint
  - ▭ Solar Panel Footprint

GDA 1994 MGA Zone 56

**FIGURE 1.2**  
**EIS Project - Development Footprint and Internal Layout**

## 1.2 The EIS Project

The Project as proposed in the EIS (hereafter referred to as the "EIS Project") included the construction, operation, maintenance, and decommissioning of a PV solar farm with a capacity of approximately 550 MWp, which will supply electricity to the national electricity grid. The Project also included a BESS with a proposed capacity of 570 MWh and an electrical substation to connect the solar farm to the existing 500 kV transmission line that runs through the Project Area and Development Footprint. In addition to this the Project will include road repair and upgrades along Ringwood Road.

The key components of the EIS Project are shown in **Figure 1.2** and include:

- Approximately 1 million bifacial solar PV modules in an east-west single-axis tracking arrangement with an approximate height of 3 metres (m) with a maximum of 4 m to accommodate undulating topography above ground level.
- A BESS with an approximate 280 MWp and 570 MWh capacity, housed in a series of outdoor containers, aggregated in one central location adjacent to the substation and switchyard.
- Onsite 550 kV switchyard and substation, with underground electrical conduits and cabling leading into the yard and overhead lines reaching above to the existing transmission line.
- Telecommunications tower, up to 30 m high, providing communications, radio and cellular services to the site and the wider region.
- Internal and perimeter gravel access roads allowing for site maintenance.
- Temporary construction facilities.
- Permanent site office and operations and maintenance building with parking for the operations team.
- Primary access point from the existing driveway off Wollara Road, with two additional emergency access points proposed along the north-western boundary of the Project Area.
- Upgrades to culverts at Bow River and Killoe Creek located on Ringwood Road.
- Widening and resealing of 1.8 kilometres (km) of Ringwood Road between Bow River and Killoe Creek including 8 m bitumen-sealed formation with a minimum of 500 mm unsealed shoulders.
- Drainage line crossings (two within the part of Redlynch Creek that is in the Project Area), if and where required, to manage existing surface water flows.
- Project Area perimeter security fencing as well as across the Development Footprint.
- The Project is expected to operate for 40 years or more. After the initial 40-year operating period, the solar farm would either be decommissioned, removing all above ground infrastructure, and returning the site to its existing land capability, or repurposed with new PV equipment subject to technical feasibility and planning consents.

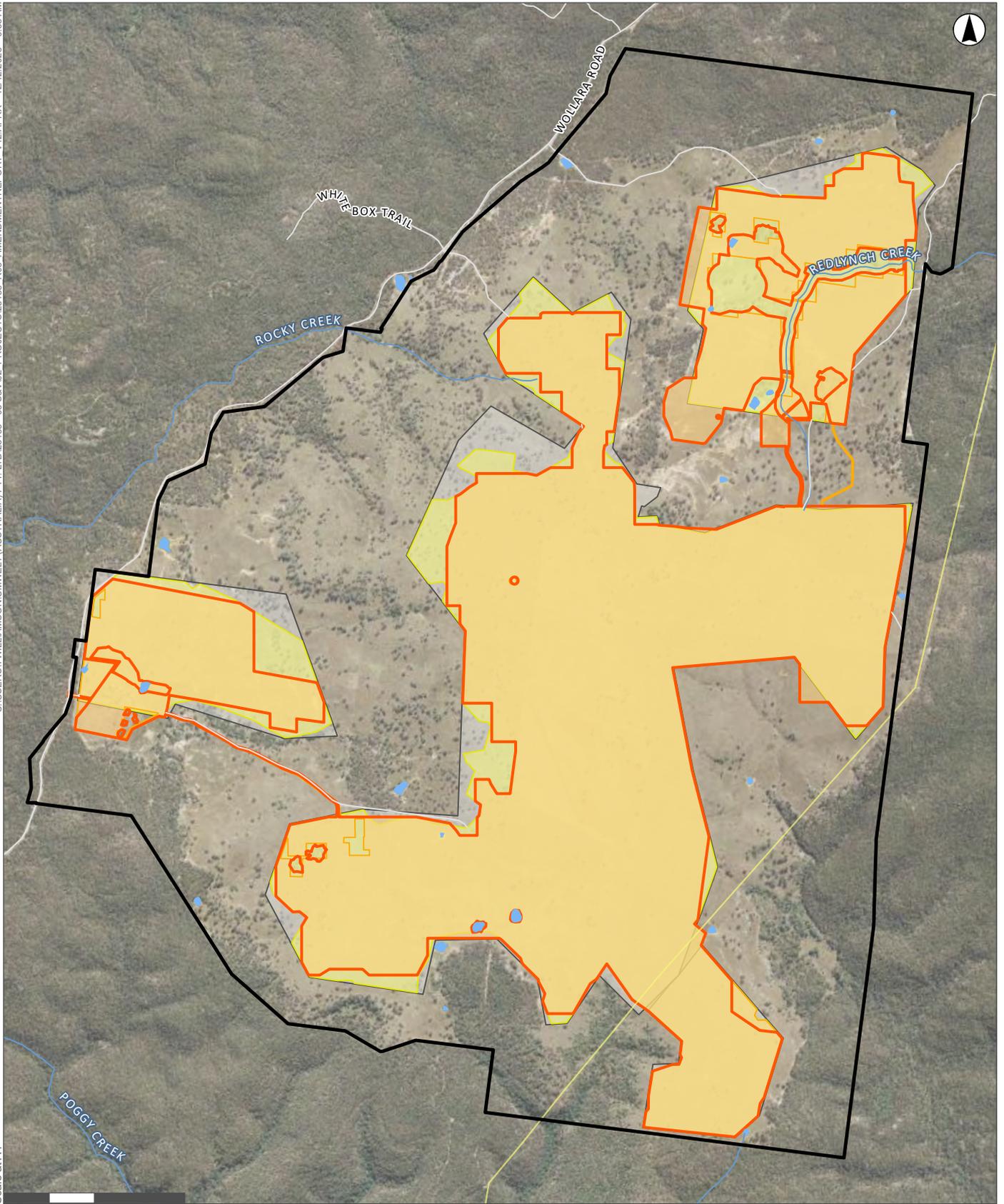
## 1.3 Proposed Amendments

Following review of public and agency submissions received during the exhibition period, along with detailed technical design advancements, several amendments are proposed for the Project. These proposed amendments are summarised below and elaborated on in **Section 3.0**. These amendments are all design refinements and do not materially change the nature of the Project.

A summary of the key proposed amendments to the EIS Project are provided in **Table 3.2**, with an overview map provided in **Figure 1.3** below. The proposed amendments are described in detail in **Section 3.0**.

**Table 1.1 Proposed Amendments**

No.	Description
1	<b>Transport route amendments</b> – Transport route amendments to include the use of Barnett Street, and upgrade of the intersection of the Golden Highway and Ringwood Road.
2	<b>Wollara Road and Ringwood Road Upgrades</b> – Upgrades to additional parts of Wollara Road and Ringwood Road.
3	<b>BESS Design Amendments</b> – Increased centralised BESS capacity and option of a decentralised BESS as well as the option to host both centralised and decentralised BESS units.
4	<p><b>Development Footprint Modifications</b> – Minor modifications to the Development Footprint and internal layout including and depicted in <b>Figure 1.4</b>:</p> <ul style="list-style-type: none"> <li>• Removal of travelling stock reserve (TSR) 4481 from within the Project Area, although site access will continue to cross the TSR using the existing track.</li> <li>• Relocation and/or removal of solar arrays within the Development Footprint to avoid Regent Honeyeater habitat, scattered trees and Box Gum Woodland.</li> <li>• Increased width of selected internal access roads to accommodate subterranean power cables.</li> <li>• Realignment of the northern internal access road to avoid Regent Honeyeater habitat and Box Gum woodland.</li> </ul>
5	<b>Additional Transmission Tower</b> – Construction of an additional transmission tower adjacent to the BESS/substation.
6	<b>Workforce Accommodation</b> – Revised approach for workforce accommodation.

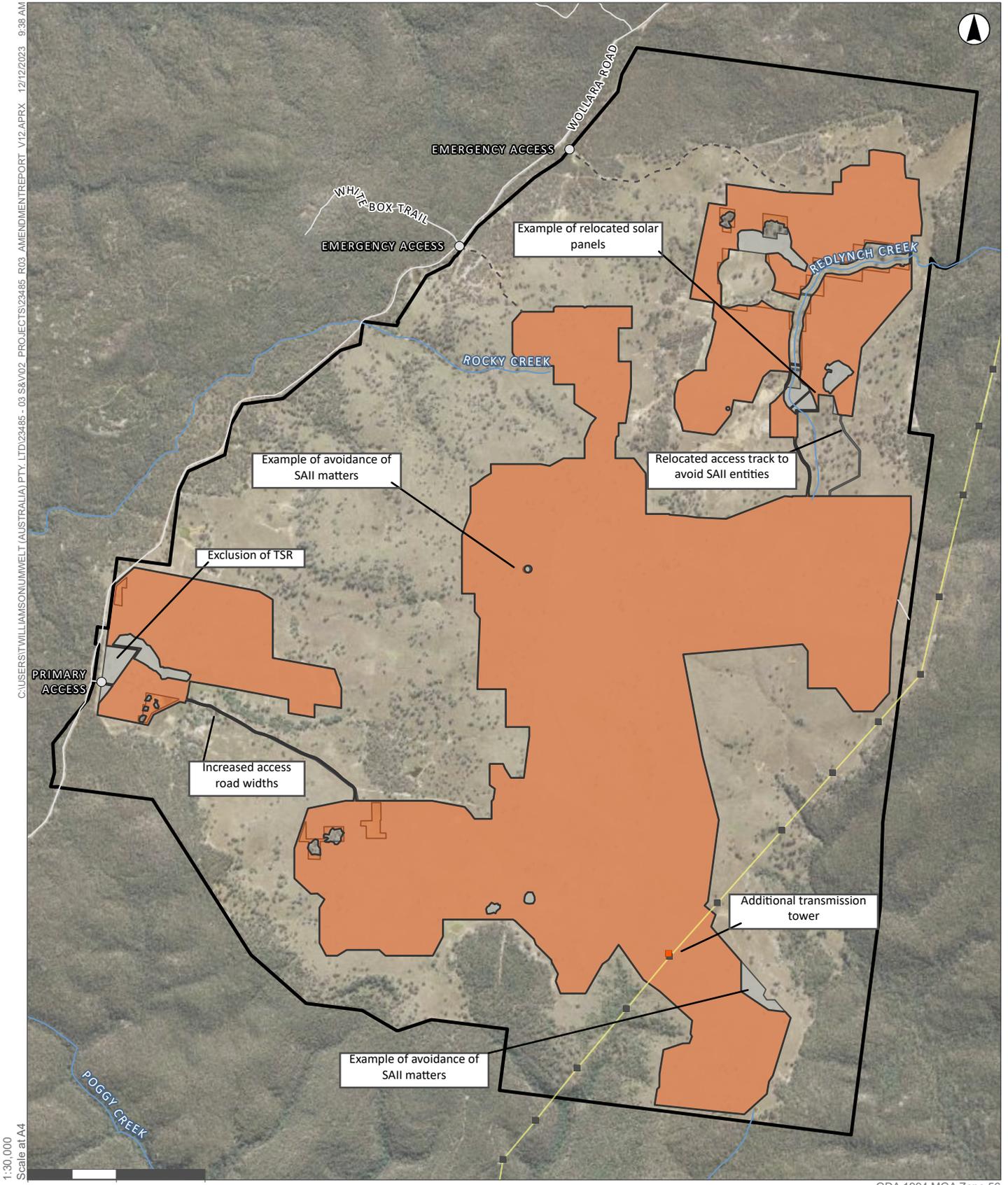


GDA 1994 MGA Zone 56

- Legend**
- Project Area
  - Roads and Tracks
  - Electricity Transmission Line
  - Watercourse
  - Waterbodies
  - Development Footprint - Design Refinement D
  - Development Footprint - Design Refinement C
  - Development Footprint - Design Revision B
  - Development Footprint - Design Revision A

**FIGURE 1.3**  
Design Refinements

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- Legend**
- Existing Tower
  - New Tower
  - Access Points
  - Electricity Transmission Line
  - Watercourse
  - Roads and Tracks
  - - - Emergency Access Tracks
  - ▭ Project Area
  - ▭ Development Footprint (EIS)
  - ▭ Development Footprint (Amended Project)

GDA 1994 MGA Zone 56

**FIGURE 1.4**  
Summary of the Proposed Amendments to Development Footprint

## 1.4 Structure of this Report

This Amendment Report is structured in accordance with the DPIE Guideline (2022) as presented in **Table 1.2**. In consultation with DPE, the Amendment Report (Part A) will be submitted prior to the BDAR (Part B).

**Table 1.2 Report structure**

Section	Description
<b>Part A</b>	
<b>Section 1.0</b>	Introduces the EIS Project and a summary the proposed amendments.
<b>Section 2.0</b>	Identifies any changes to the strategic context relevant to the Amended Project.
<b>Section 3.0</b>	Describes the proposed amendments to the EIS Project.
<b>Section 4.0</b>	Identifies any changes to the statutory requirements as a result of the proposed amendments to the EIS Project.
<b>Section 5.0</b>	Summarises the stakeholder engagement that has been undertaken during the development of the Project Amendments.
<b>Section 6.0</b>	Provides a detailed summary of any changes in impacts resulting from the proposed amendments to the EIS Project.
<b>Section 7.0</b>	Provides an updated justification of the amended EIS Project.
<b>Section 8.0</b>	Provides a list of references used during the preparation of this report.
<b>Appendices</b>	Information and technical reports supporting the main document.
<b>Part B</b>	
<b>Section 1.0</b>	Introduces the BDARs supporting Part A
<b>Solar Farm BDAR</b>	Information and technical report supporting Part A
<b>Road Upgrade BDAR</b>	Information and technical report supporting Part A

## 1.5 Assessment Undertaken

Amendments to the following assessments have been undertaken to assess the Amended Project design:

Part A (this document):

- Traffic and Transport Impact Assessment (TTIA), summarised in **Section 7.1** and appended to this Amendment Report as **Appendix D**.
- Aquatic Assessment, summarised in Section 7.2 and appended to this Amendment Report as **Appendix E**.
- An Accommodation and Employment Strategy (AES), summarised in **Section 7.3.1** and appended to this Amendment Report as **Appendix F**.
- Noise and Vibration Impact Assessment (NVIA), summarised in **Section 7.4** and appended to this Amendment Report as **Appendix G**.

- Preliminary Hazard Analysis (PHA), summarised in **Section 7.5** and appended to this Amendment Report as **Appendix H**.
- Landscape Character and Visual Impact Assessment (LCVIA), summarised in **Section 7.7** and appended to this Amendment Report as **Appendix I**.
- Aboriginal Cultural Heritage Assessment Report (ACHAR), summarised in **Section 7.8** and appended to this Amendment Report as **Appendix J**.
- Water Resource Impact Assessment (WRIA), summarised in **Section 7.6** and appended to this Amendment Report as **Appendix K**.

Part B (separate document):

- Biodiversity Development Assessment Reports (BDAR), for each of the Solar Farm and the Public Road and Culvert Upgrades, are summarised in and appended to this report as Part B.

A summary of which amendments have required updates to, or revised assessment has been summarised below.

**Table 1.3 Summary of assessment by amendments**

Amendment	TTIA	Aquatic Assessment	AES	NVIA	PHA	WRIA	LCVIA	ACHAR	BDAR
<b>Transport Route Amendments</b>	Assessed	Not applicable	Assessed	Assessed	Not Applicable	Assessed	Assessed	Assessed	Assessed
<b>Wollara Road and Ringwood Road Upgrades</b>	Assessed	Not Applicable	No change to or additional impacts	Assessed	Not Applicable	Assessed	Assessed	Assessed	Assessed
<b>BESS Design Amendments</b>	Not Applicable	No additional impacts	No change to or additional impacts	Assessed	Assessed	No change to or additional impacts	Assessed	No change to or additional impacts	No additional impacts
<b>Development Footprint Modifications - Minor</b>	Not Applicable	Assessed	No change to or additional impacts	Assessed	Assessed	Assessed	Assessed	No change to or additional impact	Assessed
<b>Additional Transmission Tower</b>	Not Applicable	No change to or additional impacts	Assessed	No change to or additional impacts	No change to or additional impacts				
<b>Workforce Accommodation</b>	Assessed	Not Applicable	Assessed	Assessed	Not Applicable	Not Applicable	Not Applicable	Not Applicable	Not Applicable

## 2.0 Strategic Context

The strategic context as described in Section 2.0 of the EIS remains relevant for the Amended Project. The Project is aligned with the NSW and Commonwealth governments' energy and climate policies and will make a meaningful contribution to achieving the goal of net zero emissions by 2050.

### 2.1 Strategic Context for Project amendments

The Amended Project, described in **Section 3.0**, generally consists of layout refinements and minor modifications and does not change the overall strategic context. The justifications for the proposed amendments are outlined in **Section 8.0**.

An overview of the strategic context for the Amended Project is provided below, where it differs from that relevant to the EIS Project.

#### 2.1.1 Renewable Energy Market

The development of the Project aligns with global, Commonwealth and NSW commitments to increase renewable energy generation and reduce carbon emissions across the NSW and Australian economies.

NSW is currently in a transition to build a reliable, affordable, and sustainable electricity future to support a growing economy (NSW Government, 2023a). Key to this goal is the timely and organised retirement of the states four major coal generators. Liddell Power Station was closed in April 2023, while Bayswater, Eraring, Mount Piper and Vales Point B are closing in 2033, 2025, 2040 and 2033 respectively (AEMO, 2023). These power stations currently provide approximately three quarters of NSW's electricity supply and two thirds of the firm capacity required during peak demand periods. To achieve the retirement schedule, the commissioning of renewable energy generation and storage projects must be delivered to provide ample generation and capacity to fill the void from the retirement of the coal generators (AEMO, 2023).

The NSW Government has indicated that Renewable Energy Zones (REZs) will play a vital role in delivering affordable energy generation to help prepare the State for the expected retirement of thermal power stations over the coming decades. Despite the coordinated approach of the REZs, they have been hit with delays, as well as technical and social challenges. These delays place a greater importance on projects like Goulburn River, which propose to connect to existing infrastructure. Whilst outside of a REZ, the Project is strategically located along one of the key power transmission arteries in NSW that can deliver large amounts of renewable energy to the consumer.

Renewable energy sources accounted for 35.9% of the total electricity generation in 2021, up from 32.5% in 2020 (Clean Energy Council, 2022). Coal's share of electricity generation continued to decline, reaching 47% in 2021, down from 51% in 2020 (Clean Energy Council, 2022). Gas and oil remained stable at 19 % and 2% respectively. Among the renewable energy sources, solar was the largest contributor with 14%, followed by wind with 11% and hydro with 6%. Battery storage and hydrogen also made significant progress, with several large-scale projects announced or completed in 2021. (DCCEEW, 2022a). That said, additional renewable energy capacity is being added to the NEM at a lower rate than what AEMO has identified as required to achieve the transition to renewable energy (Parkinson, Renew Economy, 2020). The Amended Project will assist in addressing this energy shortfall by delivering approximately 550 MWp of renewable energy capacity to the NEM. This contribution will help to replace the generation capacity lost when NSW's largest power station, Eraring, closes in 2025.

The Amended Project aligns with the current strategic direction of the NSW and Australian energy generation market and assists in achieving the planned transition to an increased contribution of renewable energy to Australia's energy needs. As an existing renewable energy operator in Australia, LSbp has a track record of delivering large-scale renewable energy projects.

### **2.1.2 Climate Change Act 2022**

The Climate Change Bill 2022 was introduced by the Australian federal government on 27 July 2022 and passed both Houses of Parliament on 8 September 2022 becoming the *Climate Change Act 2022* (CC Act). The ambition of the CC Act is to set Australia's greenhouse gas emissions reduction targets in law. The new reduction targets include a net zero target by 2050 and a reduction to 43% of 2005 levels by 2030. It also requires the Minister for Climate Change to present a summary of the country's progress toward these targets, as well as actions to be taken to achieve them.

### **2.1.3 NSW Electricity Strategy**

Current and future electricity development in NSW is supported through the NSW Government's Electricity Strategy (NSW Government, 2023a) and the NSW Electricity Infrastructure Roadmap. These take an integrated approach to all demand and supply options, including action by households and small businesses, demand management and investment in large-scale, affordable and reliable generation. The Project is consistent with the objectives of the Electricity Strategy and Infrastructure Road Map, by aiming to provide large-scale renewable electricity generation that is affordable and reliable.

#### **2.1.3.1 Draft Energy Policy Framework**

The Draft Energy Policy Framework for State Significant Development (NSW Government, 2023) currently on exhibition (as of December 2023) provides the community, industry, applicants, and regulators with information on the planning framework for the assessment and approval of State significant energy projects. Specifically for Solar Farms it proposes additional guidance for the establishment of benefit sharing and provides a decommissioning calculator. As this is currently on exhibition it has not been formally considered in the preparation of the Amendment Report.

The Large Scale Solar Energy Guideline (2022) was developed to assist with delivering the NSW Government's commitment outlined in the NSW Registered Environmental Assessment Practitioner. The Amended Project has been assessed in accordance with the 2022 Guideline. Although not specified in the Secretary's Environmental Assessment Requirements (SEARs), both the EIS and this Amendment Report have considered the Solar Energy Guidelines.

## 3.0 Description of the Amendments

Proposed amendments to the Project are summarised in **Table 3.1** and addressed further in the subsequent sections of this chapter.

**Table 3.1 Project Amendments**

Amendment Number	Description	Detailed Description
1.	Transport Route Amendments	<p>Amendments to the transport route as outlined in <b>Section 3.2</b>, including:</p> <ul style="list-style-type: none"> <li>A revised transport access/egress route to improve road safety, including the diversion of construction vehicles egress west at the Golden Highway and Ringwood Road intersection to a vehicle turning area on Barnett Street, Merriwa.</li> <li>An upgrade of the intersection of the Golden Highway and Ringwood Road with an acceleration lane added and the formulation of two bus stops on Ringwood Rd to support these movements.</li> </ul>
2.	Wollara Road and Ringwood Road Upgrades	<ul style="list-style-type: none"> <li>Additional upgrades to 4.7 km of Wollara Road and 1.6 km of Ringwood Road, as outlined in <b>Section 3.3</b>.</li> </ul>
3.	BESS Design Amendments	<ul style="list-style-type: none"> <li>Increased centralised BESS capacity and option of a decentralised BESS including the option to host both centralised and decentralised BESS units, as outlined in <b>Section 3.4</b>.</li> </ul>
4.	Development Footprint Modifications – Minor	<p>Modifications to the Development Footprint and internal layout as outlined in <b>Section 3.5</b>, including:</p> <ul style="list-style-type: none"> <li>A re-alignment of the Development Footprint to avoid TSR 44841, noting that existing access will be maintained across TSR 44841.</li> <li>Relocation or removal of solar arrays within the Development Footprint to further avoid serious and irreversible impacts (SAIL) to important habitat for the Regent Honeyeater and Box Gum Woodland.</li> <li>Relocation of the access road connecting the northern portions of the site to cover a shorter distance and further avoid SAIL to important habitat for the Regent Honeyeater and Box Gum Woodland.</li> <li>An increase in the width of two (2) internal access roads which connect the western and northern portions of the site from 6 m (as originally proposed in the Project EIS) to &lt;10 m, to allow for underground transmission corridors as part of the internal reticulation network, rather than overhead transmission cables.</li> <li>Reduction of the development footprint to 792.19 ha as a result of the above modifications.</li> </ul>
5.	Additional Transmission Tower	<ul style="list-style-type: none"> <li>Construction of an additional transmission tower within the existing easement of the 500 kV transmission line adjacent the BESS/substation, as outlined in <b>Section 3.6</b>.</li> </ul>
6.	Workforce Accommodation	<ul style="list-style-type: none"> <li>Additional assessment and revised approach for workforce accommodation, as outlined in <b>Section 7.3.1</b>.</li> </ul>

### 3.1 Summary of Amendments

A comparison of proposed amendments to the Project to that assessed in the Project EIS (Umwelt, 2023a) is provided in **Table 3.2** below.

**Table 3.2 Comparison of proposed amendments to the Project to that assessed in the Project EIS**

Project Stage	EIS Project	Amended Project	Difference between EIS Project and Amended Project
<b>Project Component</b>			
<b>Transport and Road – comprising Amendment 1: Transport Route Amendments and Wollara Road and Ringwood Road Upgrades</b>			
Transport route to and from the Site	Proposed to utilise the Golden Highway, Ringwood Road, and Wollara Road from the north, and Wollara Road from the south.  It is noted that a small number of light vehicles for workers who reside to the south may use Wollara Road.	Amendments to transport route to restrict construction vehicles to a left in and left out movement at the Golden Highway and Ringwood Road intersection. Amendment to distribution of trips with a larger proportion utilising the northern (and preferred) route.  It is noted that a small number of light vehicles for workers who reside to the south may use Wollara Road.  Note: 6-12 oversize overmass (OSOM) vehicle movements will still use a right turn movement onto Golden Highway, as they will be under traffic management.	Specifying that a larger proportion of project-related transport will utilise the northern (and preferred) route.  No option for Project construction traffic for a right turn in or a right turn out between Golden Highway and Ringwood Road.  Change to the traffic and social impacts associated with the accommodation of workforce and transport to Site.
Wollara Road	Use of 4.7 km of unsealed road network.	Realignment, widening and sealing a 4.7 km section of Wollara Road prior to use.	Realignment, widening and sealing a 4.7 km section of Wollara Road prior to use by Project traffic.
Ringwood Road	1.8 km of existing sealed road network and upgrade of two (2) culvert bridges.	Realignment, widening and sealing of 3.4 km of Ringwood Road across two sections and upgrade of two (2) culvert bridges.	An additional 1.6 km of Ringwood Road will now be widened and sealed.
Golden Highway and Ringwood Rd	No works proposed in EIS.	Improvements to safe intersection sight distance (SISD) for left turn movements into and out of Ringwood Road from the Golden Highway.  <ul style="list-style-type: none"> <li>Vegetation removal and minor lane widening works on the eastern side of the intersection.</li> </ul>	Upgrade works are proposed at the intersection to improve SISD.

Project Stage	EIS Project	Amended Project	Difference between EIS Project and Amended Project
		<ul style="list-style-type: none"> <li>Addition of an acceleration lane on the western side of the intersection including tree removal.</li> <li>Formalisation of the bus stop pullover area.</li> </ul>	
Barnett Street	No works proposed in EIS.	Diversion of construction vehicle egress west at the Golden Highway and Ringwood Road intersection to a vehicle turning area on Barnett Street, Merriwa. Note: 6-12 Oversize Overmass (OSOM) vehicles will still use a right turn movement onto Golden Highway as they will be under traffic management.	Use of the Barnett Street vehicle turning area to allow the safe movement of construction-related vehicles (up to 19 m) and facilitate the left in/left out traffic route during construction.
<b>BESS – comprising Amendment 3: BESS Design Amendments</b>			
BESS Configuration	Centralised BESS option proposed.	Centralised and decentralised BESS options proposed.	Addition of a decentralised BESS option or a combined centralised and decentralised combined BESS option. Project will be delivered with one of the three options permitted.
Centralised BESS capacity (MWp)	280 MWp	450 MWp	+170 MWp
Centralised BESS capacity (MWh)	570 MWh	900 MWh	+330 MWh
Decentralised BESS capacity (MWp)	Not proposed in EIS.	580 MWp	+580 MWp
Decentralised BESS capacity (MWh)	Not proposed in EIS.	1,160 MWh	+1,160 MWh
Centralised and Decentralised BESS capacity (MWp)	Not proposed in EIS.	1,030 MWp	+750 MWp
Centralised and Decentralised BESS capacity (MWh)	Not proposed in EIS.	2,060 MWh	+1,490 MWh
Transformers	4	4	No change.

Project Stage	EIS Project	Amended Project	Difference between EIS Project and Amended Project
Inverters (PCS)	104	140	+36
<b>Project Layout – Comprising Amendment 4: Development Footprint Modifications</b>			
Project Area	Approximately 2,000 ha	Approximately 1,996.5 ha	Reduced following the amendments to the Project Area to avoid further development on TSR 44841.
Development Footprint (ha)	Approximately 799.5 ha.	Approximately 792.19 ha.	7.31 ha reduction, following the relocation of solar arrays, access road and infrastructure away from Box Gum Woodland and Regent Honeyeater habitat, and TSR 44841.
Internal Access Road width (m)	Four (4) m, with a six (6) m access road leading to the substation.	8 to 10 m at selected locations between Project areas to accommodate the proposed buried cable easements.  Relocation of the access road connecting the northern portions of the site to cover a shorter distance.	Increase up to ten (10) m at selected locations to accommodate the proposed buried cable easements.  Relocation of the access road connecting the northern portions of the site to further reduce impacts on Box Gum Woodland and Regent Honeyeater habitat.
<b>Development Footprint – Comprising Amendment 4: Development Footprint Modifications</b>			
Development Footprint (physical relocation description)	Solar arrays located within the Development Footprint as per Figure 3.1 of the EIS.	Relocation and removal of solar arrays within the Development Footprint.  Removal of TSR4481 from the Development Footprint and Project Area including panels, fencing and landscaping.	Modifications to the internal layout within the Development Footprint.  Reduction in total size of the Development Footprint  Reduced area of impact on Regent Honeyeater important habitat and Box Gum Woodland.
<b>Transmission Network – Comprising Amendment 5: Additional Transmission Tower</b>			
Transmission tower	Not included in EIS.	Transmission tower to be constructed within south-eastern portion of the Project Area, within the existing transmission line easement.	One (1) additional transmission tower.
<b>Accommodation – Comprising Amendment 6: Workforce Accommodation</b>			
Location of Accommodation	Dispersed across nearby towns within the Upper Hunter and Mid-Western Local Government Areas (LGAs).	Largely consolidated to Merriwa Workers Accommodation (proposed development by third party).	A large proportion of the workforce will be accommodated in a central location approximately 31 km from the Site in Merriwa.  Change to the traffic and social impacts associated with the accommodation of workforce and transport to Site.

## 3.2 Transport Route Amendments

### 3.2.1 Access/Egress Movements

A revised transport access/egress route is proposed at the Golden Highway and Ringwood Road intersection. LSbp propose to limit construction vehicle movements to a left in, left out arrangement. To facilitate the onward journey for left out vehicles, a vehicle turning area on Barnett Street, Merriwa is proposed to be used to allow all construction-related vehicles (up to 19 m) to safely turn around and return east along the Golden Highway towards Merriwa. No upgrades are required at Barnett Street to accommodate the safe movement of construction-related vehicles.

The revised transport route including vehicle turning area is illustrated on **Figure 3.1** below. Swept path analysis for this facility is provided in **Appendix D**. Consents have been received from Upper Hunter Shire Council (UHSC) as the road authority, as well as the adjacent private landowner, for the intended use of the turning area and are included in **Appendix B**.

The revised transport route, including use of the vehicle turning area, was discussed with Transport for NSW (TfNSW) in response to TfNSW's submission on the Project EIS. The outcomes of consultation with TfNSW and other agencies are provided in **Section 6.0**.

**FIGURE 3.1**

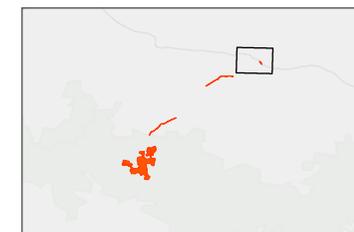
**Amended Project - Transport Route including Barnett Street Vehicle Turning Area**

**Legend**

- Watercourse
- Waterbodies
- Lot Boundary

**Transport Routes**

- Project Traffic Egress
- Project Traffic Ingress



Meters

Scale: 1:0 at A4  
GDA2020 MGA Zone 56

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### 3.2.2 Golden Highway and Ringwood Road Upgrades

LSbp propose upgrades to the intersection of the Golden Highway and Ringwood Road in line with Austroads SISD standards. The designs are provided in **Appendix D**.

These upgrades would include:

- Pruning and removal of vegetation and select trees on the western side of the intersection on Lot 1 DP34496. Currently estimated at six (6) established trees.
- The construction of a 325 m acceleration/merge lane to allow vehicles to safely turn left onto the Golden Highway from Ringwood Road (Lot 1 DP34496).
- Realignment of the existing low voltage power line to provide clearance to the acceleration lane (if required and subject to detailed design).
- Extension of the existing Golden Highway westbound and Ringwood Road left-in deceleration lane taper to 30 m and widening of the intersection.
- Pruning of vegetation on the eastern side of the intersection wholly within the road reserve.
- Formalisation of the informal bus stop on Ringwood Road at the intersection with Golden Highway (Lot 7303/DP 1146691).

Landowners consent for the proposed upgrades is provided in **Appendix B**.

The proposed Golden Highway and Ringwood Road upgrades are illustrated on **Figure 3.2** below.

**FIGURE 3.2**

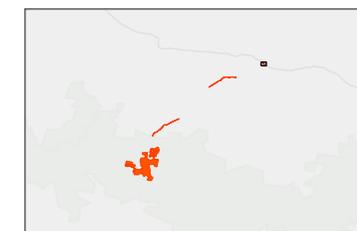
**Amended Project -  
Golden Highway and Ringwood  
Road Intersection Upgrade**

**Legend**

- Lot Boundary
- Waterbodies
- Road Upgrade Development Footprint



**NOTE:** Development Footprint comprises ground disturbance works within the road reserve and vegetation clearing/pruning on adjacent land



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### 3.3 Wollara Road and Ringwood Road Upgrades

Upgrades to Wollara and Ringwood Roads were proposed by LSbp in the Project EIS (refer to **Figure 3.3**), including:

- Upgrades to culverts at the existing road crossings of Bow River and Killoe Creek located on Ringwood Road.
- Widening and resealing of 1.8 km of Ringwood Road between Bow River and Killoe Creek.

As described in the TTIA (Appendix 15 of the Project EIS) the existing conditions of these roads comprises:

- Ringwood Road – a local road that is sealed and generally flat with low vertical grades and varying road width and a maximum road width of approximately 5 m along the alignment.
- Wollara Road – a local road that comprises a combination of sealed and unsealed sections north of the site and unsealed sections south of the site. The road width varies along the length of the road.

LSbp are now proposing additional road upgrades as community benefits under the Voluntary Planning Agreement (VPA) with the UHSC. These works would also facilitate further improvements to enable the safe movement of heavy vehicles. The proposed road upgrades include:

- Realignment, widening and sealing an additional 1.6 km section of Ringwood Road between Killoe Creek and Binks Road.
- Realignment, widening and sealing a 4.7 km unpaved section of Wollara Road between the Goulburn River National Park boundary and 1621 Wollara Road. No upgrades are proposed in the portion of Wollara Road within the Goulburn River National Park.
- These upgrades will include eight (8) m bitumen-sealed formation with a minimum of 500 millimetre (mm) unsealed shoulders. The horizontal and vertical alignment of the proposed road will ensure safe sight distance and an improved road network for the users.

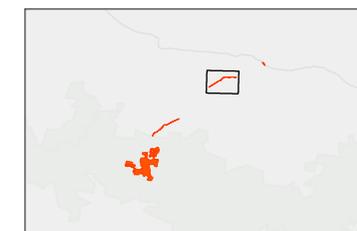
Landowners consent for the proposed works is provided in **Appendix B**. The proposed Wollara Road and Ringwood Road upgrades are illustrated on **Figure 3.3** below.

**FIGURE 3.3**

**Amended Project -  
Wollara Road and Ringwood  
Road Upgrades**

**Legend**

-  Watercourse
-  Lot Boundary
-  Waterbodies
-  Road Upgrade Development Footprint



Meters

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### 3.4 BESS Design Amendments

LSbp is proposing to amend the centralised BESS design as documented in the EIS to allow for increased capacity. The capacity of the centralised BESS is proposed to increase to 450 MWp/900 MWh from 280 MWp/570 MWh (as per the Project EIS) to allow for greater energy storage capacity, required to safely and cost effectively decarbonise Australia's energy network.

LSbp is also seeking to amend the Project EIS to include the option of a decentralised BESS, to allow for greater flexibility in the design of the final BESS facility. The decentralised BESS option involves 560 individual 6.1 m (i.e., 20 foot) battery containers and DC-DC converters, and associated infrastructure being situated next to the PV inverter stations located throughout the solar arrays, rather than in a centralised location as proposed in the EIS. The layout of the centralised and decentralised options is shown in **Figure 3.4** and **Figure 3.5**.

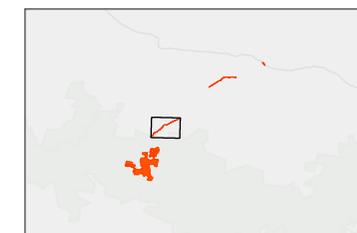
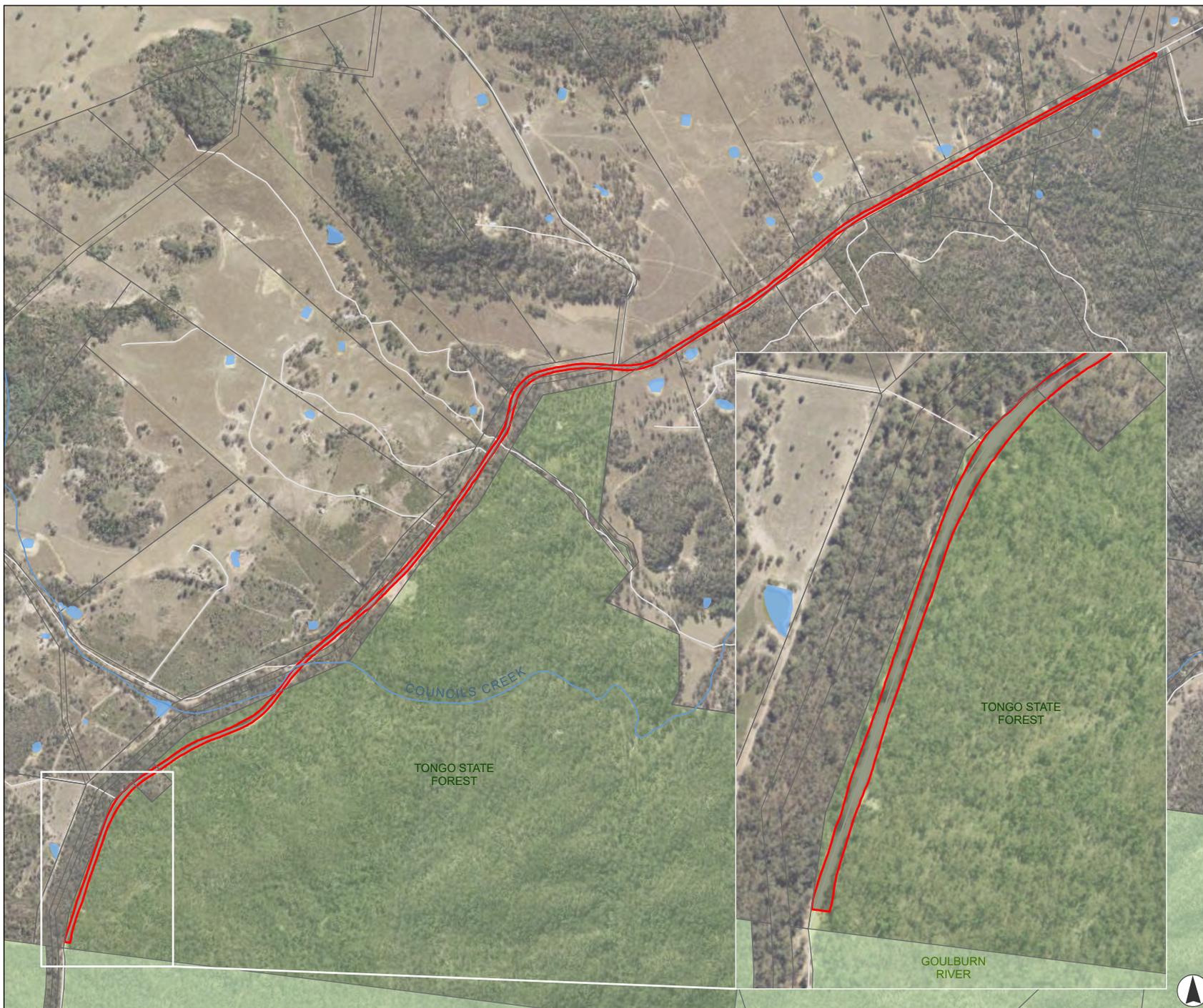
A third option is also proposed, in which both centralised and decentralised BESS units are selected for the Project.

**FIGURE 3.4**

**Proposed Section of Road Sealing along Wollara Road**

**Legend**

- Watercourse
- Lot Boundary
- NSW National Parks
- NSW State Forests
- Waterbodies
- Road Upgrade Development Footprint

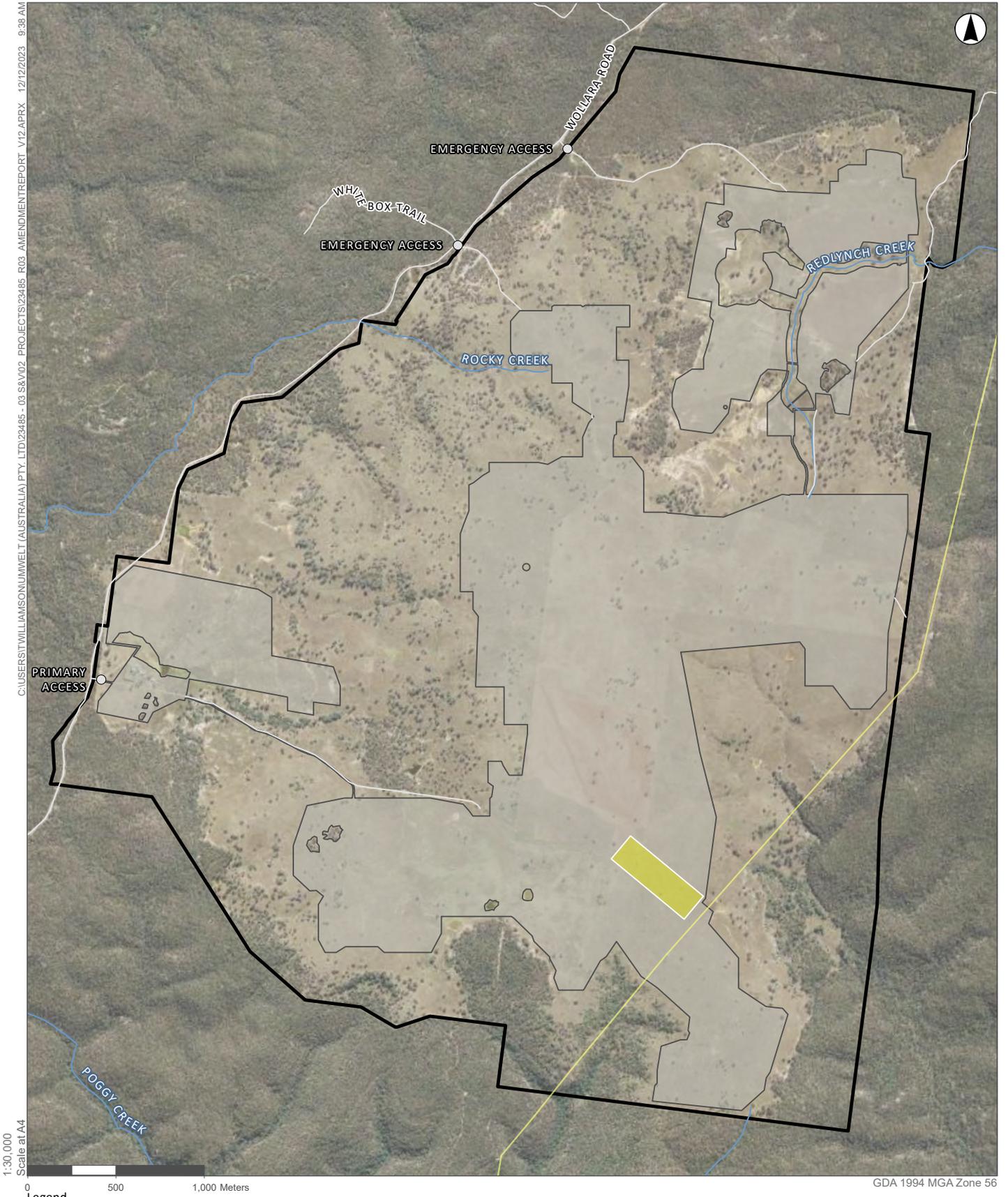


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- Legend
- Access Points
  - Electricity Transmission Line
  - Watercourse
  - Roads and Tracks
  - ▭ Project Area
  - ▭ Proposed Centralised BESS
  - ▭ Development Footprint (Amended Project)

**FIGURE 3.5**  
Proposed Centralised BESS  
Layout

The capacity of the proposed decentralised BESS option is 580 MWp/1160 MWh. No additional inverters or transformers would be required. The Project is now proposed to have the option of a combined BESS capacity of 1,030 MWp/2,060 MWh.

The decentralised BESS option has a combined area greater than the centralised option, due to the distribution of equipment and infrastructure across the Project Area and spacing between key items e.g., BESS containers/modules. The option to utilise both centralised and decentralised BESS options would encompass the greatest area for placement of BESS infrastructure. However, all infrastructure is proposed to reside entirely within the existing Project Area and Development Footprint, as assessed under the EIS.

## **3.5 Development Footprint Modifications**

A number of modifications are proposed to the Development Footprint as outlined in **Figure 3.6** and described further below.

### **3.5.1 Exclusion of Travelling Stock Reserve**

Further consultation with DPE – Crown Lands following public exhibition of the Project EIS has resulted in a minor realignment of the Development Footprint to avoid overlapping with TSR 44841. The western extent of the Project Area is now proposed to extend towards the east and will avoid TSR 44841. The revised Project Area and Development Footprint is outlined on **Figure 3.6** below. TSR 44841 will remain as a site access point, utilising the existing access track.

### **3.5.2 Relocated Solar Panels and Access Track**

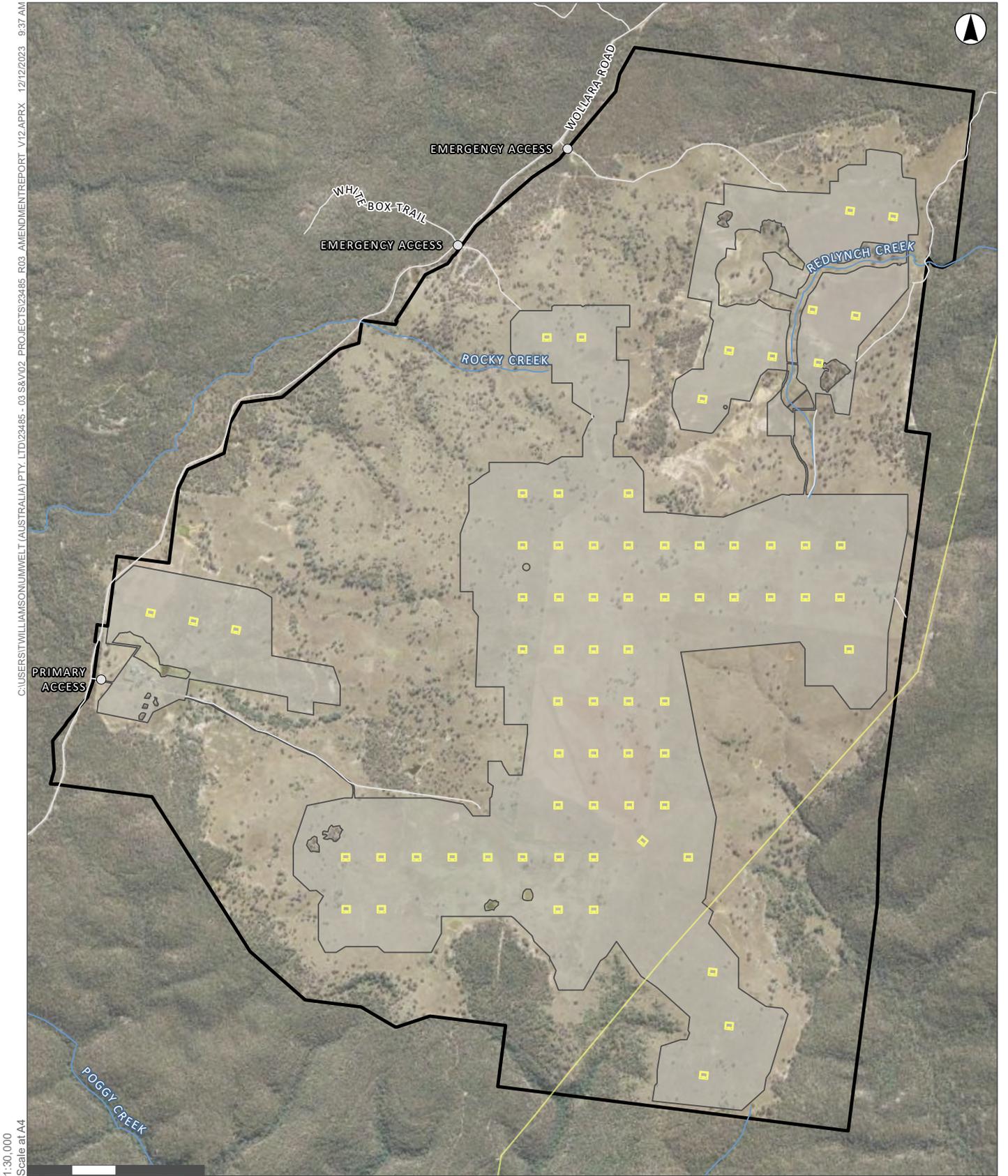
The positioning of solar panels and other Project infrastructure has been amended in response to comments received during the EIS exhibition stage and further consultation with NSW Biodiversity and Conservation Division (BCD) during the RtS phase.

Solar panels within the EIS Project Development Footprint have been relocated to previously unused areas within the Project Area to increase avoidance of PCTs and threatened species habitat, with a focus on reducing impacts to SAI entities. The access track between the central and north eastern areas of solar panel arrays has also been realigned, to minimise clearing within mapped important habitat for Regent Honeyeater and Box Gum Woodland.

### **3.5.3 Increased Internal Access Road Widths**

An increase in the width of the internal access road corridors is proposed to accommodate the revised design of the internal reticulation network. It is now proposed that subterranean (underground) transmission corridors would be used as part of the internal reticulation network, which are proposed to travel parallel to the internal access roads, in turn increasing the width of the internal access road corridors. The proposed expansion of the internal road corridors will be to a maximum width of 10 m. The expanded internal access roads are illustrated on **Figure 3.9** below.

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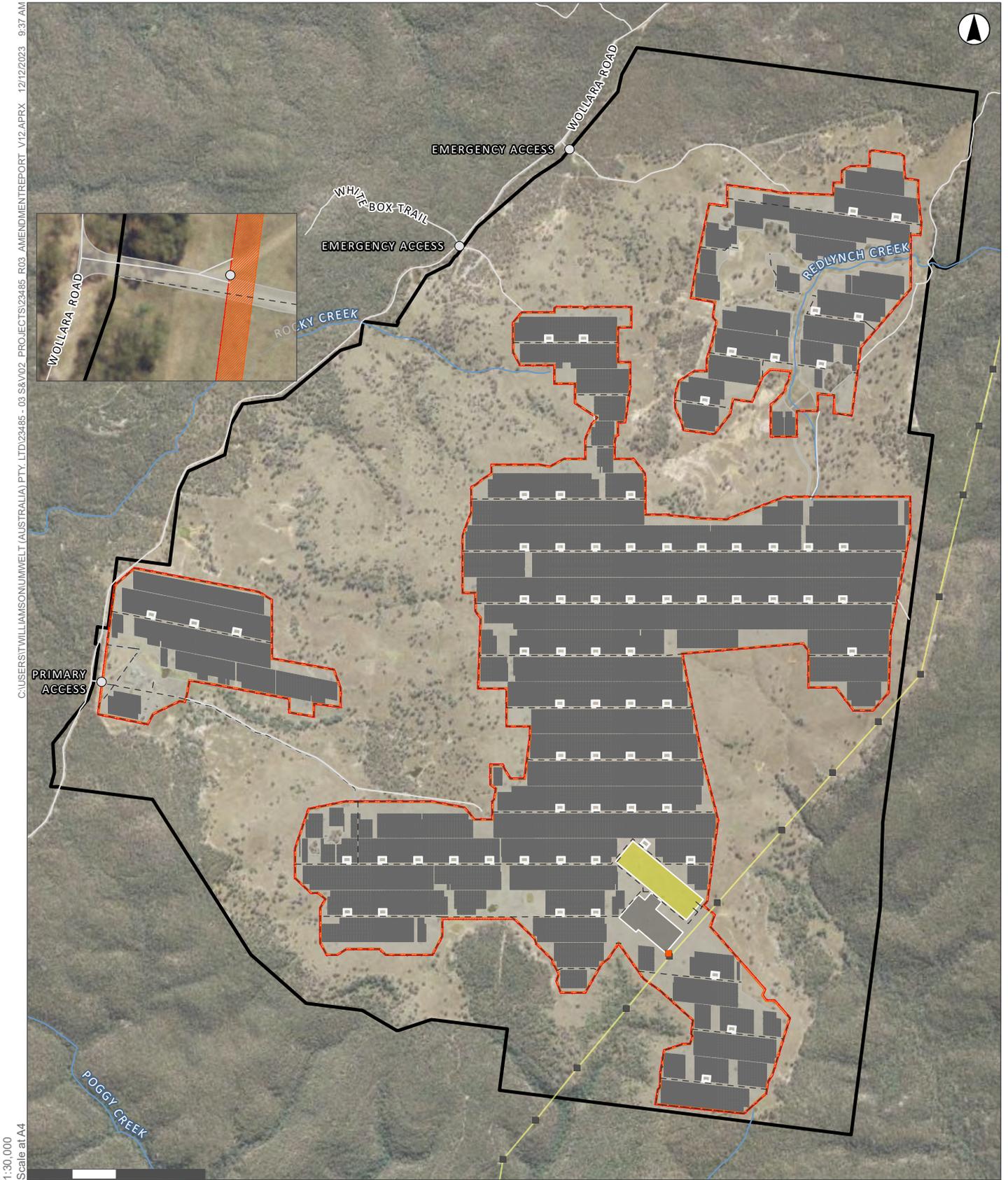


- Legend**
- Access Points
  - Electricity Transmission Line
  - Watercourse
  - Roads and Tracks
  - ▭ Project Area
  - ▭ Proposed Decentralised BESS
  - ▭ Development Footprint (Amended Project)

GDA 1994 MGA Zone 56

**FIGURE 3.6**  
Proposed Decentralised BESS  
Layout

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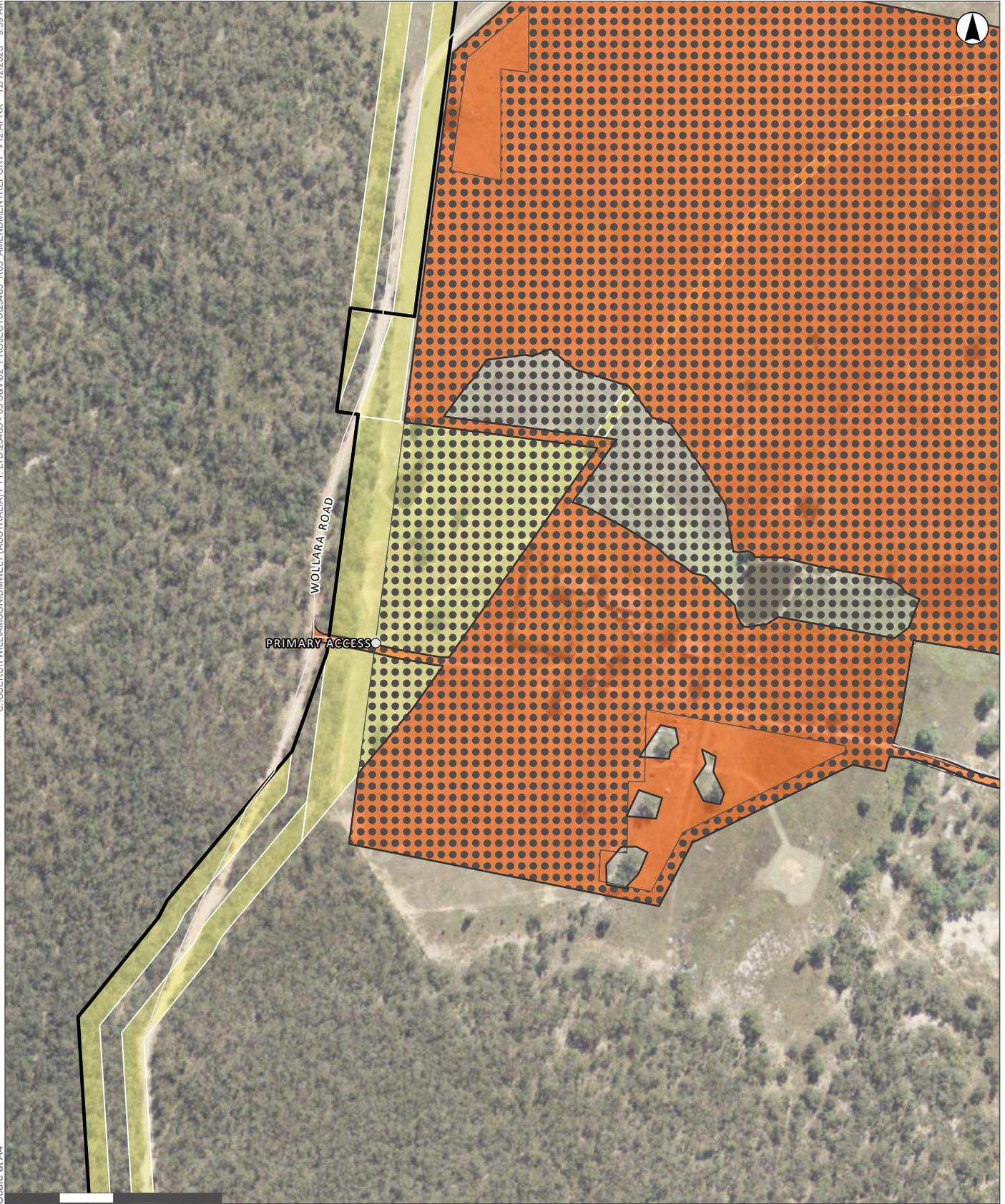


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GDA 1994 MGA Zone 56

- |                                 |   |
|---------------------------------|---|
| ■ Existing Tower                | ■ Project Area                            |
| ■ New Tower                     | ■ Solar Panels                            |
| ○ Access Points                 | ■ Fire Break                              |
| — Electricity Transmission Line | ■ Battery Energy Storage System           |
| - - Indicative Access Tracks    | ■ Inverter                                |
| — Roads and Tracks              | ■ Substation                              |
| — Security Fence                | ■ Development Footprint (Amended Project) |
| — Watercourse                   |   |

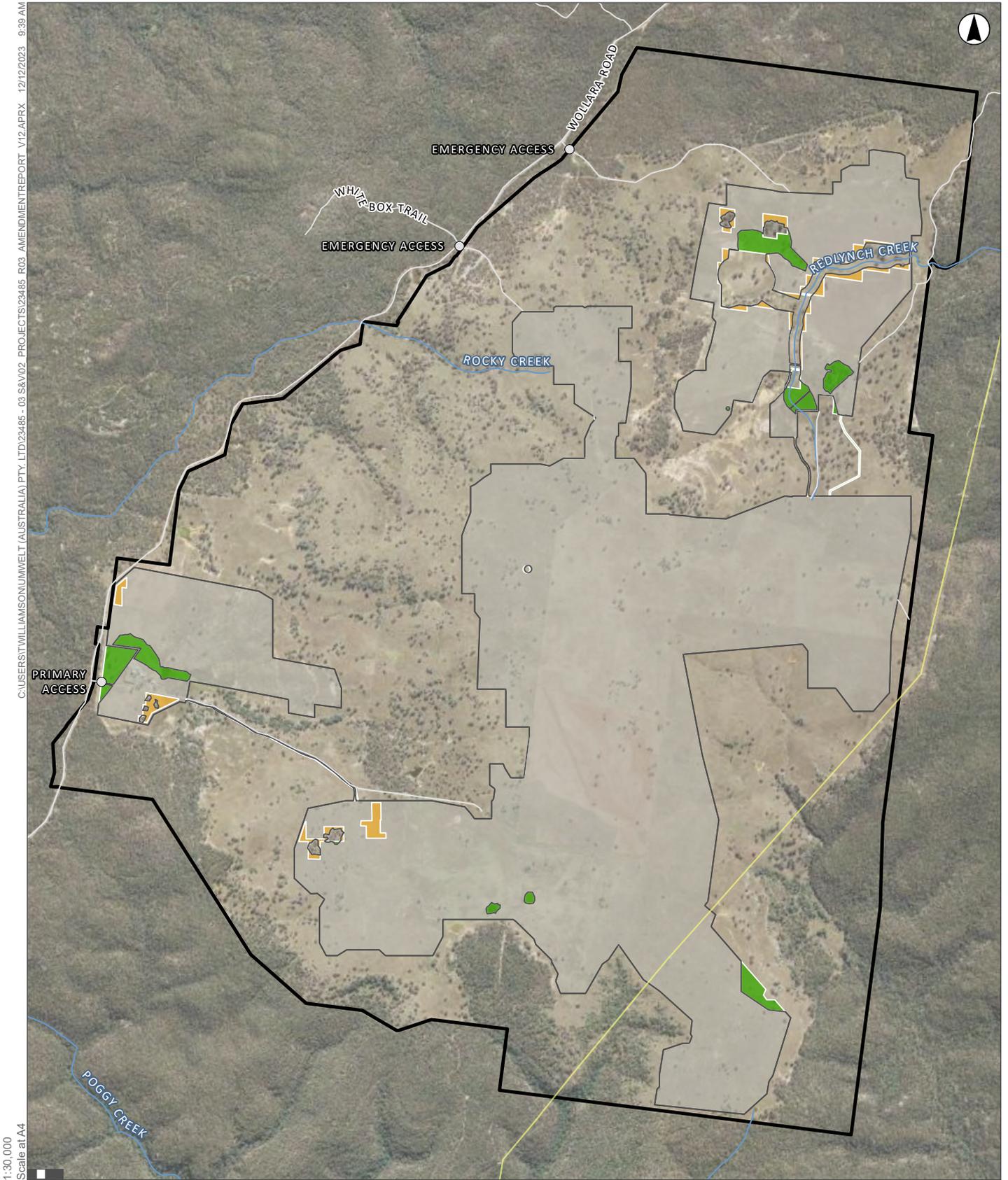
**FIGURE 3.7**  
Amended Project –  
Development Footprint &  
Internal Layout



- Legend**
- Access Points
  - Electricity Transmission Line
  - Watercourse
  - Roads and Tracks
  - Crown Land
  - Project Area
  - Development Footprint (EIS)
  - Development Footprint (Amended Project)

**FIGURE 3.8**  
Amended Project - Revised Western Extent of the Project Layout to Avoid TSR 44841

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**Legend**

- Access Points
- Electricity Transmission Line
- Watercourse
- Roads and Tracks
- Project Area
- Areas Added to Development Footprint
- Areas Removed from Development Footprint
- Development Footprint (Amended Project)

GDA 1994 MGA Zone 56

**FIGURE 3.9**  
Amended Project - Areas removed from Development Footprint

### 3.6 Additional Transmission Tower

Section 3.2 of the EIS (Umwelt, 2023) identified that an additional transmission tower may be required on the current transmission line to accommodate the connection of the Project to the NEM. Further consultation undertaken with Transgrid during exhibition of the Project EIS has determined that the additional tower would now form part of the Amended Project. The installation of this transmission tower will occur within the southeastern portion of Project Area as depicted in **Figure 1.4** adjacent to the existing 500 kV transmission line easement. The transmission tower would be constructed at a height of approximately 65 m, in line with existing transmission towers within the Project Area.

### 3.7 Workforce Accommodation

Section 6.12 of the Project EIS proposed that the construction workforce would be accommodated within existing accommodation of surrounding towns and villages within the Upper Hunter and Mid-Western LGAs. Since submission of the EIS, LSbp have been approached by a private developer who is proposing to construct a 500-bed workforce accommodation camp on private land in Merriwa, NSW. It is noted that this workforce accommodation site will operate as a commercial business separate to the Goulburn River Solar Farm development and will accommodate workers across a range of projects and industries in the Upper Hunter. The development is subject to a Development Application with UHSC and is expected to be operating in time for the ramp up of the solar farm workforce.

LSbp has negotiated an option for up to 300 personnel to be accommodated at the proposed Merriwa workforce accommodation camp, with potential to increase the number of rooms if required.

An AES has been prepared to provide an overview of the baseline economic, social and housing context surrounding the Amended Project and to outline LSbp's proposed approach to managing, enhancing or mitigating key employment and accommodation impacts of the Project, inclusive of the changes to workforce accommodation detailed above. A number of feasible alternatives and complimentary options to the proposed workforce camp at Merriwa have also been identified within the AES.

The AES is summarised in **Section 7.3.1** and included in this Amendment Report as **Appendix F**.

## 4.0 Impact Avoidance and Mitigation

Similar to previous design revisions as described in Section 1.4 of the EIS, the design has continued to consider the environmental, economic, social, engineering and cultural opportunities and constraints of the Project. Avoiding impacts of significant environmental and cultural elements has continued to be a focus of design revision, followed by implementation of mitigation measures.

This Amendment Report presents Design Revision D, the Amended Project, which has been prepared following exhibition of the EIS and receipt of submissions. The Development Footprint revisions can be seen in **Figure 1.3**. A summary of the changes made to further avoid impacts between Design Revision C (the EIS Project) and D include:

- Reduction of the development footprint from 799.5 ha to 792.19 ha comprising:
  - Realignment of the Project Area and Development Footprint to avoid TSR 44841.
  - Relocation and/or removal of solar arrays within the Development Footprint to further avoid SAI1 to important habitat, including removal of 3.3 ha of Regent Honeyeater important habitat from the Development Footprint and a 0.57 ha reduction of impacts on Box Gum Woodland.
  - Extension of the riparian buffer around Redlynch Creek, including removal of solar panels.
- Replacement of the standard security fencing (top strand barbed) with an alternative design (no barbed wire) to minimise potential impacts on wildlife.
- Avoidance of an Aboriginal heritage site, 37-1-1027 (Redlynch Creek IF1), previously impacted by the EIS Project.
- Identification of local workers accommodation in Merriwa to reduce impacts on accommodation providers and other services.
- Sealing of 4.7 km of Wollara Road to reduce impacts of traffic movements on unsealed road.

In addition to the above, the Amended Project comprises other changes which are assessed in this Amendment Report but have not resulted in further avoidance of impacts.

LSbp has continued to strike a balance between maintaining a viable capacity of the Project while avoiding (where possible) and otherwise minimising impacts. Previously identified and new mitigation measures are included in **Appendix C**. LSbp has also continued to consult with UHSC and the local community on the Project, its potential impacts and benefit sharing, as described in **Section 6.0**.

LSbp are progressing with a Biodiversity Stewardship Agreement (BSA) application for the remaining 1,200 ha within the Project Area that is outside of the Development Footprint. Engagement with National Parks and Wildlife Service (NPWS) has been undertaken and is ongoing to explore the option of gifting this land to NPWS for inclusion within the Goulburn River National Park. Regardless of future ownership of the BSA, on-going management commitments across the BSA would be met long term, supporting connectivity and conservation outcomes and conservation longevity for 60% of the Project Area. The BSA site contains significantly more habitat diversity and areas of higher ecological value than the Development Footprint. For example, there is 817 ha of Regent Honeyeater Important Habitat within the BSA, compared to 41.66 ha in the Development Footprint. Further details regarding avoidance specific to biodiversity is contained in Part B.

## 5.0 Statutory Context

Since exhibition of the EIS there has not been any significant changes to the statutory context for the Project. A summary of the status of the NSW and Commonwealth approvals processes is provided below.

### 5.1 NSW Assessment and Approval Process

The statutory context has not changed from the original application, as documented in the EIS. The EIS is yet to be determined.

Following submission of the EIS to DPE it was placed on public exhibition from 13 June 2023 to 10 July 2023. A RtS has been prepared to address submissions received during public exhibition.

Additionally, this Amendment Report has been prepared in accordance with clause 113 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) which states that an application may, with the approval of the Planning Secretary, be amended at any time before the application is determined.

The Planning Secretary has been advised LSbp's intention to amend the Project with this Amendment Report describing the proposed Project amendments and assessing the associated impacts.

### 5.2 Commonwealth Assessment and Approval Process

On 2 February 2022, the Project was determined to be a Controlled Action requiring approval under the *Environment Protection and Biodiversity Conservation Act 1999* by the Commonwealth Minister for the Environment due to its potential impact on listed threatened species and ecological communities.

The assessment path for the Project is under the bilateral agreement between the Commonwealth and NSW Government. The Department of Climate Change, Energy the Environment and Water (DCCEEW) determined it a controlled action on 2 February 2022 and issued assessment requirements which were issued as Supplementary SEARs for the Project (refer to Appendix 1 of the EIS). A summary of the assessment findings related to MNES is included in Section 7.0 of the EIS and Part B of the Amendment Report.

The controlled action decision (EPBC 2021/ 9102) relates to the Solar Farm Project. The proponent is applying for a variation to the action to also include the road upgrades. This application is being done in parallel to the Amendment Report assessment, with timing determined in consultation with DPE and DCCEEW. The Road Upgrades BDAR includes the assessment of potential impacts to MNES associated with the road improvements.

## 6.0 Stakeholder Engagement

This section outlines community and stakeholder engagement carried out during and following exhibition of the Project EIS.

### 6.1 Consultation to Support the EIS Project Public Exhibition

The Project EIS was placed on public exhibition by DPE from 13 June to 10 July 2023. The exhibition period provided stakeholders with an opportunity to review the EIS and make a submission to DPE.

The EIS was publicly available on DPE's Major Projects website, and the following communication materials continued to be available during the EIS exhibition period.

- project website – <https://lightsourcebp.com/project/goulburn-river-solar/>
- project email address – [Goulburnriversolar@lightsourcebp.com](mailto:Goulburnriversolar@lightsourcebp.com)
- LSbp free call contact number – 1300 873 575
- project fact sheets – all downloadable via the website.

### 6.2 Consultation During Development of the Amendments

#### 6.2.1 Consultation Following Exhibition

Following exhibition of the EIS, consultation and engagement activities were undertaken with a range of stakeholders including directly impacted land holders, government authorities, local councils and utility owners. Details of the consultation and key items of discussion are presented in **Section 6.2.1** and **Section 6.3**.

As part of the development of the AES, a variety of stakeholders were consulted. Further details of consultation undertaken as part of the AES is provided in **Appendix F**. Further consultation with the local community will be undertaken to coincide with the release of the Amendment Report, to inform them of the changes proposed.

### 6.3 Ongoing Consultation

Consultation with the community and key stakeholders is ongoing and will continue prior to and during construction and operation of the Project. Ongoing consultation activities will aim to provide the community and stakeholders with awareness of construction processes and activities, updates on the proposed timing of construction and opportunities for ongoing feedback and input throughout construction and operations.

The Project website, email address and free call number will continue to be available prior to and during construction and operations. Targeted consultation methods, such as newsletters, notifications, signage and face-to-face communications, will also continue to occur.

A Stakeholder and Community Engagement Plan (SCEP) has been developed and will continue to be implemented throughout future stages of construction, operation and decommissioning. The SCEP is dynamic and is updated as required during each phase. Engagement during operations will focus on maintaining regular communications with the community including reporting back to the community on compliance obligations, operations and generation updates, benefit sharing programs and promotion of community initiatives or events.

Environmental Management Plan(s) will address the procedures for receiving, evaluating and responding to complaints, environmental incidents and non-conformance during the construction and operation of the Project.

## **6.4 Benefit Sharing**

The proposed VPA with UHSC was ratified on 13th June, 2023. This included the addition of further road upgrades as agreed with Council and as described and assessed within this Amendment Report. The VPA is due to go on exhibition in January 2024 and will be signed following development approval of the Goulburn River Solar Farm.

## 7.0 Assessment of Impacts

This section provides a summary of the revised assessments undertaken to assess the potential construction and operational impacts associated with the Amended Project. The impacts associated with decommissioning remain the same as presented in the EIS and as such have not been further outlined in this Amendment Report.

Where required, additional or revised mitigation measures have been proposed. A consolidated summary of all proposed commitments identified in the EIS, RtS, and any changes made through this Amendment Report, is presented in Appendix C.

This Amendment Report and associated appendices have been prepared in consideration of the *State Significant Infrastructure Guidelines – Preparing an Amendment Report* (DPE, 2021). An overview of the revised assessments required to determine the impacts of the Amended Project and a reference to their location in this report is provided in **Table 7.1**. Technical assessments undertaken to support this Amendment Report are provided in **Appendix A** to **Appendix K**.

A number of technical assessments contained within the EIS did not require amendment or a revised assessment as a result of the Amended Project including:

- Economic Impact Assessment (EIA) – none of the amendments proposed in the Amended Project change or alter the components of the Project description used to prepare the EIA.
- Soils, Land Use and Agricultural Impact Assessment (SLUAIA) – none of the amendments proposed in the Amended Project change or alter the components of the Project description used to prepare the SLUAIA or result in impacts to new areas not already addressed within the EIS SLUAIA.
- Historic Heritage Impact Assessment (HHA) – none of the amendments proposed in the Amended Project change or alter the components of the Project description used to prepare the HHA or result in impacts in proximity to new heritage items.

**Table 7.1 Additional Studies and Assessment Approach**

Environmental aspect	Assessment approach	Reference
<b>Traffic and Transport</b>	Revised assessment has been undertaken to address submissions, determine the potential traffic and transport impacts associated with the Amended Project as well as identifying the required road upgrades to facilitate safe access. The assessment is set out in the amended Transport and Traffic Impact Assessment (Turnbull Engineering, 2023).	<b>Section 7.1</b>
<b>Aquatic Assessment</b>	Revision of the aquatic assessment has been undertaken to determine the potential impacts associated with the Amended Project. The assessment is set out in the amended Aquatic Impact Assessment (Coast Ecology, 2023).	<b>Section 7.2</b>
<b>Social and Economic Impacts</b>	Assessment of social and economic impacts have been summarised in <b>Section 7.3</b> of this Amendment Report. Additionally, an AES (Umwelt,2023) identifying options and considerations for the construction workforce has been prepared.	<b>Section 7.3</b>

Environmental aspect	Assessment approach	Reference
<b>Noise</b>	Revised assessment has been undertaken to determine the potential impacts of the Amended Project including increased BESS capacity, additional road upgrades and the potential impacts of the new transport route. The assessment is set out in the Addendum Noise and Vibration Impact Assessment (Umwelt, 2023).	<b>Section 7.4</b>
<b>Hazards and Risk</b>	Revised assessment has been undertaken to determine the potential impacts of the Amended Project including the increased BESS capacity, inclusion of the DC BESS option and the combination of both options. The assessment is set out in the Addendum Preliminary Hazard Assessment (Umwelt, 2023).	<b>Section 7.5</b>
<b>Water</b>	Revised assessment has been undertaken to determine the potential impacts of the Amended Project in particular the modification to the Development Footprint.  The assessment is set out in the amended Water Resource Impact Assessment (Umwelt, 2023).	<b>Section 7.6</b>
<b>Visual Impact</b>	Revised assessment has been undertaken in the RtS and to determine the potential impacts of the Amended Project.  The assessment is set out in the Addendum Landscape and Visual Impact Assessment (Envisage, 2023).	<b>Section 7.7</b>
<b>Aboriginal Heritage</b>	Revised assessment has been undertaken in the RtS and to determine the potential impacts of the Amended Project, in particular, the additional road upgrades.  The assessment is set out in the Addendum Aboriginal Cultural Heritage Report (OzArk, 2023).	<b>Section 7.8</b>
<b>Biodiversity</b>	Additional biodiversity surveys have been undertaken to address submissions and determine the potential impacts associated with the Amended Project. Impacts have been assessed via the revision of the Solar Farm BDAR and Public Road & Culvert Upgrade BDAR as presented in the EIS. These are addressed within Part B of the Amendment Report.	<b>Part B</b>

## 7.1 Traffic and Transport

The TTIA for the EIS Project was prepared by Turnbull Engineering Pty Ltd (Turnbull) in May 2023. An update to this TTIA has been prepared by Turnbull to respond to submissions and assess the traffic and transport impacts associated with the Amended Project. The amended TTIA (Turnbull, 2023) is provided in **Appendix D**.

The amendments to the Project with the potential to influence the TTIA are outlined in **Table 7.2**.

**Table 7.2 Amendments that influence the TTIA**

Amendment Number	Amendment Description	Potential to influence TTIA
1	Transport route	Yes – Refer to <b>Section 7.1.2.1.</b>
2	Wollara Road and Ringwood Road Upgrades	Yes – Refer to <b>Section 7.1.2.1.</b>
3	BESS Design Modification	Nil – No change to or additional transport impacts.
4	Development Footprint Modification	Nil – No change to or additional transport impacts.
5	Additional Transmission Tower	Nil – No change to or additional transport impacts.
6	Workforce Accommodation	Yes - Refer to <b>Section 7.1.2.1.</b>

### 7.1.1 Existing Environment

The Project EIS and original TTIA accounted for some road and culvert upgrades at Wollara and Ringwood Roads and considered access via Golden Highway. The Amended Project now comprises additional public road repair and upgrade areas and a revised transport route to those assessed in the EIS:

- Revised Project construction transport route limited to left in and left out movements at the Golden Highway and Ringwood Road intersection.
- Use of a vehicle turning area on Barnett Street to facilitate traffic returning east from the Project site in a safe and controlled environment.
- Upgrades at the intersection of the Golden Highway and Ringwood Road intersection to improve safety.
- Additional road upgrades at Wollara Road and Ringwood Road to improve safety and accommodate construction traffic.

Barnett Street was not described in the Project EIS/TTIA. Barnett Street is a north-south unsealed access road located approximately 3.8 km west of the Golden Highway/Ringwood Road intersection.

A speed survey on the Golden Highway approximately 70 m east of Ringwood Road was carried out over a one-week period from Tuesday, 31 October 2022, to Monday, 6 November 2023. During the survey period, the 85<sup>th</sup> percentile speed on the Golden Highway was found to be 98.8 km/hr in the eastbound direction and 99.9 km/hr in the westbound direction. Speed survey results have informed the SISD for the proposed Golden Highway and Ringwood Road intersection upgrade.

The amended TTIA has used revised road network data and guidelines to inform the updated assessment.

#### Intersection Layout and Geometry

The Amended Project assessments were revised and/or undertaken for key intersections comprising Golden Highway/Ringwood Road and Golden Highway/Barnett Street.

These intersections are priority controlled and include basic left turn and right turn treatments, except at the treatments detailed below in **Table 7.3**. Under traffic management, 6–12 OSOM vehicles will still use a right turn movement onto Golden Highway.

**Table 7.3 Intersection Treatments**

Intersection	Treatment
Golden Highway/Ringwood Road	Existing auxiliary left turn lane on the Golden Highway in the westbound direction.
Golden Highway/Barnett Street	Existing auxiliary right turn lane on the Golden Highway in the westbound direction.

### Safe Intersection sight distance

The SISD is the minimum sight distance which should be provided on the major road at any intersection.

In the Amended Project, SISD assessments were revised and/or undertaken for key intersections comprising Golden Highway/Ringwood Road and Golden Highway/Barnett Street, as shown in **Table 7.4**.

These intersections will be used for heavy vehicles, light vehicles and shuttle buses travelling to and from the Project. Further information about this assessment is detailed in **Appendix D**.

**Table 7.4 Transport Route Safe Intersection Sight Distance Assessment**

Intersection	Posted Speed (km/hr)	Design Speed (km/hr)	Reaction Time (sec)	Grade (%)	Required SISD (m)
Golden Highway/Ringwood Road	100	110	2*	2 (Golden Highway westbound) -2 (Golden Highway eastbound)	277 m looking east from Ringwood Road 292 m looking west from Ringwood Road
Golden Highway/Barnett Street	100	110	2.5	1 (Golden Highway westbound) -4 (Golden Highway eastbound)	296 m looking east from Barnett Street 316 m looking west from Barnett Street

*\*A two second reaction time has been applied, given that drivers would be alert near the intersection due to the road alignment, additional signage located on approach to the intersection and taking into account the speed survey results.*

All SISD checks under current road conditions were achieved, except for a vehicle on Ringwood Road looking east along the Golden Highway. The required SISD of 277 m is not achieved. Ringwood Road looking east has a current sight distance that is deficient by 97 m (i.e., 180 m) and makes the right-out turn onto Golden Highway non-compliant.

#### 7.1.1.1 Proposed Transport Route

Following consultation with TfNSW and as a result of a revised assessment undertaken by Turnbull, the proposed transport route for all construction vehicles is proposed to be amended. This amendment considers the existing sight distance issues for vehicles turning right out of Ringwood Road onto the Golden Highway.

The amendments are summarised as follows:

- Ingress to the site for all construction vehicles will be from the north via the Golden Highway, Ringwood Road, Wollara Road.
- Egress from the site for all construction vehicles will be via a left turn at the Ringwood Rd and Golden Highway intersection and the subsequent use of the existing turnaround facility on Barnett Street to continue on the Golden Highway in the eastbound direction.
- All Project vehicles (excluding OSOM) during construction will be restricted to performing a left-in and left-out turn at the Golden Highway/Ringwood Road intersection.

The EIS Project also included a proportion of light vehicles travelling from the south via Wollar Road, Ringwood Road and Wollara Road. This has changed as the workforce is now proposed to originate from accommodation in and around Merriwa (See **Section 7.3.1**) and therefore almost all construction vehicle movements will originate from the north.

- The access route from the south is not suitable for heavy vehicles due to:
- potential flooding issues at the Ringwood Road and Wollara Road junction over the Goulburn River
- steep grades and tight turning curves on Wollara road through the National Park.
- Movement to the Site from the south is only anticipated if a worker lives within the Mid-Western Regional LGA. Movement from the south was assessed in the EIS and reiterated in **Appendix D**, to address this less likely direction of travel.

#### **7.1.1.2 School Bus Routes and Bus Stops**

An informal bus stop is in use at on Ringwood Road near the intersection with the Golden Highway. This bus stop is used by one school bus route, with one service in the morning and one in the afternoon during school pick up and drop off.

As part of the proposed intersection upgrade works, LSbp propose to formalise this bus stop to improve safety and provide beneficial infrastructure to the local community.

#### **7.1.1.3 Cycle Network**

Review of the cycle network was required due to updates to the NSW's Definitions of an existing cycle network. Figure 2.17 of the updated TTIA (**Appendix D**) show the cycle network surrounding the site. An additional four scenic cycle routes were identified through this review. However, these routes travel away from Merriwa and the Project site to the east and do not utilise Ringwood and Wollara Roads.

#### **7.1.1.4 Crash Data**

A review of updated crash data on roads surrounding the Project Area for the most recent five-years (available from 2016 – 2022) from *Transport for NSW's Centre for Road Safety* was reviewed. In the five-year period from 2018 to 2022, a total of 70 crashes were recorded on roads surrounding the Project Area. Road incidents are further detailed in Figure 2.18 of the **Appendix D**. Of the updated crash figures, five crashes occurred on the Golden Highway between Ringwood Road and Barnett Street, one crash occurred at the Wollar Road and Ringwood Road intersection resulting in a serious injury and 26 crashes in Merriwa resulted in an injury and three crashes resulted in a fatality.

## 7.1.2 Impact Assessment

The Amended TTIA has assessed the potential traffic and transport impacts associated with the Amended Project as well as identifying the required road and intersection upgrades and repair treatments required to facilitate safe access as detailed in **Section 3.0**.

### 7.1.2.1 Construction Impacts

#### Traffic Volumes

There is no change to the peak construction traffic as a result of the Amended Project, anticipated to occur in 2025. An appropriate background traffic growth rate has been applied to the 2022 traffic volumes collected since the EIS assessment. A two per cent per year background traffic growth rate has been applied to the 2022 traffic volumes collected, based on corridor growths outlined in the Golden Highway Corridor Strategy (Transport for NSW, 2017).

In addition to background traffic, anticipated peak hour vehicle movements generated by nearby projects are also included in the assessment. Planning documents used in the EIS assessment to determine traffic generated by nearby projects that will use the Golden Highway still apply. In addition to these projects, traffic volumes from Stubbo Solar Farm, Dunedoo Solar Farm and Bowdens Silver Project were included in the Amended TTIA.

The 2025, peak hour cumulative volumes (at both morning and evening peak hour) on Golden Highway are anticipated to be 85 light vehicles and 97 heavy vehicles.

#### Intersection Performance

The performance of the Golden Highway and Ringwood Road intersection was assessed using the intersection modelling software SIDRA. Intersection impacts were assessed with and without project construction vehicles for the anticipated peak traffic period in 2025. Cumulative construction impacts at the Golden Highway and Ringwood Road intersection are detailed below in **Table 7.5**.

**Table 7.5 Intersection performance during construction (cumulative) – Golden Highway and Ringwood Road intersection**

Approach and peak period	2025 cumulative base				2025 cumulative construction			
	DOS*	Average delay (sec/veh)	LOS**	95% back of queue (m)	DOS	Average delay (sec/veh)	LOS	95% back of queue (m)
<b>Weekday morning peak (7:15 am to 8:15 am)</b>								
Golden Highway eastbound	0.15	9	A	<5	0.15	10	A	<5
Golden Highway westbound	0.19	9	A	<5	0.19	9	A	<5
Ringwood Road northbound	0.03	12	A	<5	0.04	13	A	<5
Overall intersection	0.19	9	A	<5	0.19	13	A	<5

Approach and peak period	2025 cumulative base				2025 cumulative construction			
	DOS*	Average delay (sec/veh)	LOS**	95% back of queue (m)	DOS	Average delay (sec/veh)	LOS	95% back of queue (m)
<b>Weekday evening peak (3:00 pm to 4:00 pm)</b>								
Golden Highway eastbound	0.21	8	A	<5	0.26	8	A	<5
Golden Highway westbound	0.16	9	A	<5	0.16	10	A	<5
Ringwood Road northbound	0.01	12	A	<5	0.07	15	B	<5
Overall intersection	0.21	12	A	<5	0.26	15	B	<5

\* DOS (Degree of Saturation).

\*\* LOS (Level of Service).

As shown in **Table 7.5**, the Project construction traffic combined with the cumulative traffic on the network would result in minor increases in the average delay at the Golden Highway and Ringwood Road intersection. The increase in delay is calculated to be 4 seconds during the morning peak hour and 3 seconds during the evening peak hour. Light vehicles (unrelated to the Project) turning right from Ringwood Road onto the Golden Highway would wait one to three seconds longer at the intersection.

It is assessed that the increase in construction related vehicles due to the Amended Project would result in a slight increase in the average delay. However, the intersection would still operate with spare capacity. The overall impacts to the Golden Highway and Ringwood Road intersection are expected to be minor.

### Warrants for intersection improvements

Approach traffic volumes at the Golden Highway and Ringwood Road intersection in 2025 with Amended Project construction traffic is shown in **Table 7.6**. The peak hour volumes in **Table 7.6** include those generated by other projects, as outlined in Table 4.1 of **Appendix D**. The major road volume on the Golden Highway that influences the right turn treatment required, increases due to other project traffic and the Project construction traffic.

**Table 7.6 Traffic volumes for turn treatments analysis (cumulative) – Golden Highway and Ringwood Road**

Movement	2025 Base		2025 Construction	
	Morning peak hour	Evening peak hour	Morning peak hour	Evening peak hour
Major road traffic volume (Q <sub>M</sub> ) for left turn	246	198	246	198
Major road traffic volume (Q <sub>M</sub> ) for right turn	424	490	511	577
Left turn volume (Q <sub>L</sub> )	24	7	95	13
Right turn volume (Q <sub>R</sub> )	5	1	5	1

The turn warrants assessment for the Amended Project, inclusive of cumulative totals at the Golden Highway and Ringwood Road intersection, is shown in **Appendix D**, Figure 4.6 and Figure 4.7.

The assessment found that an auxiliary left turn lane (full or short) is required and a channelised right turn lane (short) may be required to meet the turn warrants assessment for the morning peak hour. A basic left turn lane and right turn lane is required to meet the turn warrants assessment for the evening peak hour. The intersection currently has an auxiliary left turn lane (short) and a basic right turn lane. All construction traffic will make a left turn onto the Golden Highway toward the Barnett Street turning area.

The turn warrants assessment with cumulative construction traffic is marginally above the threshold for a full auxiliary left turn lane however the cumulative volumes used in the assessment are a worst-case scenario. The likely volumes would be lower and within the threshold for a short auxiliary left turn lane. Further detail regarding the basis for this conclusion can be found in Section 4.1.1 of **Appendix D**.

Due to the likely lower cumulative volumes and existing site constraints, a short auxiliary left-turn lane has been deemed appropriate for the Golden Highway on approach to Ringwood Road. This has been incorporated into the design of the proposed intersection upgrade and would require an extension to the existing taper to be compliant. This is discussed further in Section 3.2.5 of **Appendix D**.

### **Impact to the Bus Network**

The school bus route that operates on Ringwood Road towards Merriwa and Scone would experience minor impacts due to the additional construction traffic using this road and the increase in left-in and left-out movements at the Golden Highway and Ringwood Road intersection. As part of the proposed intersection upgrade of Golden Highway and Ringwood Road, the existing informal bus stop on Ringwood Road would be formalised. The formalisation of this bus stop would improve this amenity for school students and parents/carers that use this bus stop. The proposed acceleration lane on the Golden Highway would also be to the benefit of the school bus and parents/carers.

### **Impact to the Cycle Network**

Cyclist volumes on the Golden Highway, Ringwood Road and Wollara Road would likely be low and hence, the overall impact on cyclists is anticipated to be minor.

### **Cumulative Construction Traffic Impacts**

A list of projects that have been considered for the cumulative construction impact assessment are shown in Table 4.6 of **Appendix D**. For the purposes of the amended TTIA, changes to the assessed cumulative impacts since the EIS are detailed in Section 4.1.5 of **Appendix D**.

Dunedoo Solar Farm, Stubbo Solar Farm and Bowdens Silver Project are the only additional developments assessed in the cumulative impact assessment since the EIS TTIA. The Golden Highway is the main route for construction vehicles shared by developments with similar construction timelines as the Project. Many of the developments considered in the assessment will not have peak construction traffic which coincides with the peak construction period of the Project. The only developments with a peak construction time that aligns with the Project are expected to be Wollar Solar Farm and Dunedoo Solar Farm.

During peak construction of the Project and non-peak construction of other projects, the surrounding road network would be able to accommodate the additional construction vehicle volumes, due to the spare capacity available as shown in Section 4.11 of **Appendix D**.

The result of the assessment demonstrates that the Golden Highway has sufficient capacity to accommodate the construction vehicles generated by these projects along with Project-related traffic.

### 7.1.2.2 Operational Impacts

No additional operational transport and traffic impacts are anticipated due to the amendments to the Project.

### 7.1.3 Mitigation and Management Measures

Additional mitigation measures required due to the Amendments outlined in **Section 3.0** include:

- As part of the Construction Traffic Management Plan (CTMP) to be prepared post-approval, a Vehicle Movement Plan will be included that clearly shows the construction vehicle routes and permitted movements, including restriction at the Ringwood Road/Golden Highway intersection (left in/left out movement permitted). The CTMP will also encompass a Drivers Code of Conduct that all construction phase vehicle drivers (including of light vehicles) would need to read and sign to confirm their responsibilities and reinforce correct behaviour. Further details on how traffic routes will be managed during construction are included in the TTIA (**Appendix D**).
- Osborn’s Transport, Merriwa Pre School, Scone Grammar School and Scone High School would be consulted on the proposed formalisation of the bus stop on Ringwood Road at the Golden Highway intersection and informed of the additional construction traffic that would be generated by the Project.
- Additional signage and line marking is recommended at the Golden Highway and Barnett Street intersection and installation of warning signs (“Symbolic Truck”) are recommended near the primary site access point.

## 7.2 Aquatic Assessment

The Aquatic Assessment was amended to assess the impact of the Amended Project on aquatic ecology and the likelihood of impacting threatened species, populations and endangered ecological communities (EECs).

The amendments to the Project with the potential to influence the aquatic assessment are outlined in **Table 7.7**.

**Table 7.7 Amendments that influence the Aquatic Assessment**

Amendment Number	Amendment Description	Potential to influence Aquatic Assessment
1	Transport route	Nil - Aquatic assessment included with Road Upgrades BDAR (Part B).
2	Wollara Road and Ringwood Road Upgrades	Nil – Aquatic assessment included with Road Upgrades BDAR (Part B).
3	BESS Design Modification	Nil – No change to or additional aquatic impacts.
4	Development Footprint Modification	Yes – Refer to <b>Section 7.2.1</b> .
5	Additional Transmission Tower	Nil – No change to or additional aquatic impacts.
6	Workforce Accommodation	Nil – Not related to on ground works with potential to impact aquatic environments.

## 7.2.1 Impact Assessment

### 7.2.1.1 Key Fish Habitat

Watercourses within the Development Footprint are mapped by DPI (2007) as Key Fish Habitat (KFH), however the Aquatic Assessment identified they met the definition of Type 3 minimally sensitive KFH due to their highly ephemeral nature and lack of important habitat features.

During design refinements for the Amended Project, KFH was generally excluded from the Development Footprint. No additional impacts to watercourses or KFH were identified during the update to the Aquatic Assessment in comparison to the Project as assessed during the EIS phase.

### 7.2.1.2 Other Waterbodies

The Amended Project results in minimal changes to water resources and thus additional impacts have not been identified. The Amended Project does not elevate the potential impact to aquatic ecology as assessed in the EIS.

## 7.2.2 Cumulative Impacts

Consistent with Section 5.7 of the EIS Aquatic Assessment, cumulative impacts from existing and approved projects within the Goulburn River catchment are unlikely to be significant. No additional cumulative impacts are anticipated from the Amended Project.

## 7.2.3 Management and Mitigation Measures

No additional management and mitigation measures for the protection of aquatic ecology are required for the Amended Project.

## 7.3 Social Impact

The type and scope of social impacts anticipated for the Amended Project remain consistent with the impacts and benefits identified within the EIS including the additional road and intersection upgrades, the revised transport route and the formalisation of the bus stop on Ringwood Rd. No additional social impacts associated with the Amended Project are predicted to occur.

The EIS Project identified management measures for potential social impacts including the preparation and implementation of an AES following approval and prior to construction. In response to submissions, it was determined that timing for the AES be brought forward, to provide detailed assessment and support the Rts and this Amendment Report. The AES is summarised in **Section 7.3.1** and provided in full at **Appendix F**.

The amendments to the Project with the potential to influence the Social Impact Assessment (SIA) are outlined in **Table 7.8**.

**Table 7.8 Amendments that Influence the Social Assessment**

Amendment Number	Amendments	Potential to influence Social Assessment
1	Transport route	Nil - No change to or additional social impacts.
2	Wollara Road and Ringwood Road Upgrades	Nil – No change to or additional social impacts.
3	BESS Design Modification	Nil – No change to or additional social impacts.
4	Development Footprint Modification	Nil – No change to or additional social impacts.
5	Additional Transmission Tower	Nil – No change to or additional social impacts.
6	Workforce Accommodation	Yes – refer to <b>Section 7.3.1.</b>

### 7.3.1 Accommodation and Employment Strategy

The AES has been prepared in direct response to the findings and recommendations identified in the Social Impact Assessment for the EIS Project. Formal submissions while the EIS Project was on exhibition highlighted concerns regarding the limited accommodation in the region, along with local employment levels. These are addressed in the AES, presented in **Appendix F**.

The AES has been developed to meet the following objectives:

- Ensure there is sufficient accommodation for the required workforce, taking into consideration the cumulative impacts associated with other developments in the region within the same timeframe.
- Reduce the strain on the local accommodation and housing sector during the influx of workforces.
- Maximise the capacity for Lightsource bp to generate local benefits through local procurement and employment outcomes.
- Identify options for the effective and appropriate accommodation of workforce associated with the Amended Project.
- Respond to the community, council and agency concerns in relation to temporary workforce accommodation and local employment opportunities.
- Detail the consultation and analysis undertaken to-date to support consideration of accommodation and employment and procurement opportunities associated with the Amended Project.

The AES comprises a combination of desktop analysis of existing databases and engagement with key stakeholders to inform an evaluation of accommodation and employment options and opportunities. **Appendix F** details engagement with key stakeholders undertaken for the AES.

#### 7.3.1.1 Accommodation Framework

The AES presents an Accommodation Framework which aims to provide evidence-based recommendations to manage social opportunities and impacts associated with housing the temporary construction workforces required for the Amended Project. In developing the framework and profile, a range of accommodation types have been considered.

**Table 7.9** provides an overview of accommodation availability and likely distribution based on the accommodation profiling conducted for the Amended Project. It reflects accommodation composition at a peak workforce of 350, with accommodation compositions changing over the course of construction to reflect fluctuations in on-site workforce. Accommodation modelling has been based on conservative estimates and assumes all proposed proximal projects will progress and at the times indicated in their EIS or website documentation. Access to accommodation may differ depending on changing timelines and local conditions and is likely to be higher than the data modelled in **Table 7.9**.

It is predicted that approximately 35 workers will live locally and remain in their own homes. Further, approximately 14 rooms of existing short-term accommodation and 40 rooms of new short-term accommodation are likely to be available to the construction workforce during peak construction, without materially infringing on short-term accommodation access for other users. Up to three rental homes are likely to be available to the construction workforce.

The remaining workers during the peak construction phase are proposed to be housed in a Temporary Workforce Accommodation Facility (TWA Facility). As of December 2023, Lightsource bp has signed a Memorandum of Understanding with a local developer who are proposing the development of 500 fully furnished, self-contained ensuite units within the township of Merriwa. Lightsource bp has an option in place to rent up to 300 rooms during the construction period of the Project, with potential to increase the number of rooms if required. The commencement of this facility is being coordinated between the two parties to align with the ramp up of workforce numbers onsite at Goulburn River.

**Appendix F** provides information regarding the accommodation types that have been considered and their availability in detail.

**Table 7.9 Accommodation Option Breakdown at Peak Workforce**

Accommodation Components (assumes peak workforce of 350)	Number of Workers Housed	Housing Form
Local workforce	Approximately 35	Existing homes
Existing short-term accommodation	14	14 rooms
New short-term accommodation	40	40 rooms
Rental accommodation	9	3 rented rooms
<b>Subtotal</b>	<b>Up to 100</b>	
Custom-built Temporary Workforce Accommodation Facility	Up to 300	Temporary Workforce Accommodation Facility
<b>Total</b>	<b>Up to 350</b>	

### 7.3.1.2 Employment and Procurement Framework

An Employment and Procurement Framework was developed within the AES to provide evidence-based recommendations to manage the local employment and procurement opportunities associated with the Project.

An effective local employment and procurement strategy ensures that local entities have full, fair, and reasonable opportunity to bid for the supply of key goods or services for the Amended Project. Therefore, the desired outcomes for the Project for an effective local employment and procurement strategy include:

- Creation of training and employment opportunities through procurement processes, clauses, and specifications in contracts. It is important to note that these opportunities may lag, and trainees may not have the opportunity to benefit from the Amended Project but will have the opportunity to benefit from future projects.
- Directly targeting harder to- reach or more vulnerable and marginalised groups when creating employment and procurement opportunities.
- Encouragement of local economic development and growth.
- Engagement of local small- to medium enterprises (SMEs) and social benefit suppliers, providing them with the same opportunities as other larger businesses, including the ability to engage in procurement processes.
- An analysis of existing Construction and Manufacturing businesses within the study area indicated that Mid-Western Regional LGA has the largest number of businesses with likely capability to service the Amended Project. Both Muswellbrook and Upper Hunter Shire LGAs are significantly smaller in terms of population and their Construction and Manufacturing capacity. While Muswellbrook may benefit from strong regional strengths in mining and related industries, Upper Hunter's existing reliance on agriculture may indicate lower capability to benefit from the Amended Project procurement opportunities.

The key objectives of the employment framework for the Project are to:

- Implement strategies to target minimum of 35 construction phase workers (representing 10% of the workforce) sourced locally (i.e., from neighbouring LGAs).
- Meet the baseline requirements and implement strategies to support achievement of the stretch goals of Merit Criteria 8 of the AEMO Tender Guidelines for regional economic development. This includes a goal of 40% of supply chain inputs coming from Australia and New Zealand during the development phase, 51% during the operations and maintenance phase and 10% of steel products and components using locally milled steel.
- Implement strategies and procurement weightings to maximise the number of sub- contractors and suppliers sourced locally.
- Generate lasting training and skills development opportunities for the region.
- Pro-actively generate opportunities for under- represented communities, including First Nations people, women, and unemployed and under- employed people.
- Transparently communicate employment and procurement opportunities to the local community and provide updates in whether objectives are achieved.
- These objectives inform the proposed actions and mitigation strategies **Section 7.3.3**.

### 7.3.2 Cumulative Impacts

The AES assessed the potential for SSD projects within a 100 km radius of the Amended Project. Cumulative impacts may arise if the construction periods of these projects coincide with the construction period of the current development. The assessment identifies SSDs in the CWO REZ and identifies whether their construction timeframes are likely to overlap with the Project in question. **Table 7.10** details projects which are likely or highly likely to contribute to the cumulative impact of an increased workforce in the CWO REZ. The cumulative impact assessment considers factors such as the distance between projects, the size of project workforces, proximity to larger-order townships providing accommodation and services and expected construction timelines.

The impact of the Project has also been considered, with additional analysis to assess cumulative impacts of concurrent SSD projects proposed nearby. The assessment of cumulative projects has identified existing regional strengths, including regional expertise in mining and construction sectors and access to land with the capacity to host a temporary workforce accommodation facility for workers.

**Table 7.10 Cumulative Impact of Proximal Developments**

State Significant Development	LGA	Description	Indicative Construction Timeline (where available)	Location and Distance from the Project	Approximate Workforce Numbers	Likelihood of cumulative impact	Cumulative Impact
<b>Barneys Reef Wind Farm</b> SSD-24106966	Mid-Western Regional LGA	350 MW wind farm, up to 63 wind turbines.	2025–2027	Castlereagh Highway, 16 km north of Gulgong (50 km) Located within CWO REZ	340 jobs during the construction phase and approximately 10 jobs during the operational phase.	Cumulative impact on housing, employment and access to services is <b>likely</b> given proximity of projects.	Construction timeframes may overlap later in the Project’s construction phase.
<b>Merriwa Solar Farm</b> SSD-30913035	Upper Hunter Shire LGA	Development of a 550 MW solar farm and a BESS.	Construction to be completed in 2027	Merriwa (30 km)	500 jobs during construction.	Cumulative impact on housing, employment and access to services is <b>likely</b> given proximity between projects. However, timing suggests that Projects peak construction will be completed before Merriwa Solar Farm commences.	Construction timeframes may overlap later in the Project’s construction phase.
<b>Bellambi Heights Solar Farm</b> SSD-33344237	Mid-Western Regional LGA	A 200 MW Battery (built in 2x 100 MW stages), connecting to existing 330 kV transmission line.	2025–2026	Castlereagh Highway and Puggoon Road, Beryl (54 km)	Employment generation would include approximately 70–100 people for battery per stage.	Cumulative impact on housing, employment and access to services is <b>likely</b> given proximity between projects and overlapping development phases.	Construction timeframes may overlap later in the Project’s construction phase.

State Significant Development	LGA	Description	Indicative Construction Timeline (where available)	Location and Distance from the Project	Approximate Workforce Numbers	Likelihood of cumulative impact	Cumulative Impact
<b>CWO REZ Transmission Infrastructure SSI-48323210</b>	-	Development of new twin double circuit 500 kV transmission lines between Wollar and the proposed substations at Merotherie and Elong Elong.	2024–2027	25 km	Peak workforce of 650, with a construction period of 36 months.	Cumulative impact on employment and access to services is <b>highly likely</b> given proximity between projects and differences in development phases. Impacts to housing are mitigated by plans for a temporary workforce accommodation camp.	Construction timeframes may overlap throughout the Project's construction phase
<b>Moolarben OC3 Extension Project SSD-33083358</b>	Mid-Western Regional LGA	Extension of open cut mining at OC3 to the south.	Construction to be completed in 2025	Ulan Rd, Ulan (48 km)	Not Available.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects.	Construction timeframes may overlap earlier in the Project's construction phase.
<b>Valley of the Winds Wind Farm SSD-10461</b>	Warrumbungle Shire LGA	800 MW wind farm, up to 175 wind turbines.	2025–2027	Coolah (57 km) Located within CWO REZ	400 peak construction workforce.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects and overlapping construction time frames.	Construction timeframes may overlap later in the Project's construction phase.

State Significant Development	LGA	Description	Indicative Construction Timeline (where available)	Location and Distance from the Project	Approximate Workforce Numbers	Likelihood of cumulative impact	Cumulative Impact
<b>Tallawang Solar Farm</b> SSD-23700028	Mid-Western Regional Council	Development of a 500 MW solar farm with 200 MW battery energy storage system and associated infrastructure.	2025–2027	Puggoon Rd (50 km) Located within CWO REZ	380 full time equivalent (FTE) jobs during construction (with a peak of 420), and 10 FTE jobs during operation.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects and overlapping construction timeframes.	Construction timeframes may overlap later in the Project’s construction phase.
<b>Birriwa Solar Farm</b> SSD-29508870	Mid-Western Regional LGA	600 MW solar farm with 1000 MW BESS.	2025–2027	Barneys Reef Rd, Birriwa (60 km) Located within CWO REZ	Peak construction workforce of 800. 20 full time equivalent jobs throughout operations, 28-month construction period.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects and overlapping timeframes.	Construction timeframes may overlap throughout in the Project’s construction phase.
<b>Wollar Solar Farm</b> SSD-9254	Mid-Western Regional LGA	290 MW solar farm.	2024	Mudgee (22 km)	Construction workforce of up to 300 over a two-year period.	Cumulative impact on housing, employment and access to services is <b>highly likely</b> given proximity between projects.	Construction timeframes may overlap throughout the Project’s construction phase.

State Significant Development	LGA	Description	Indicative Construction Timeline (where available)	Location and Distance from the Project	Approximate Workforce Numbers	Likelihood of cumulative impact	Cumulative Impact
<b>Stubbo Solar Farm SSD-10452</b>	Mid-Western Regional LGA	400 MW solar farm with energy storage.	2025–2026	Blue Springs Rd, Stubbo (48 km) Located within CWO REZ	Employment generation would include approximately 400 people during construction over 2 years.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects.	Construction timeframes may overlap throughout the Project's construction phase.
<b>Liverpool Range Wind Farm SSD-6696</b>	Warrumbungle Shire LGA, Upper Hunter Shire LGA & Mid-Western Regional LGA	Up to 1,000 MW wind farm with up to 267 wind turbines.	2025–2027	Coolah (55 km) Located within CWO REZ	Up to 800 construction workers and 47 roles during operations. 550 peak workforce, approx. 24–36 months for construction.	Cumulative impact on housing, employment and access to services is <b>likely</b> given distance between projects.	Construction timeframes may overlap throughout the Project's construction phase.

### 7.3.3 Management and Mitigation Measures

**Section 7.3.1.1** and **Section 7.3.1.2** provides evidence- based measures to manage workforce accommodation and local employment and procurement opportunities, as well as other social opportunities and impacts associated with the Amended Project.

Measures to enhance positive social outcomes and mitigate negative social outcomes for the Project include:

- Limiting the number of existing short- term accommodation beds accessed to no more than 14 existing short term accommodation beds across the study area on any given night. This is designed to avoid ‘crowding out’ effects on other accommodation users. This figure could be re-assessed if substantial reductions in local occupancy rates are identified and recorded in the social locality.
- Limit the use of existing rental accommodation as a housing source for the Amended Project by ensuring sufficient access to custom- built temporary workforce accommodation.
- Work with the local accommodation providers to provide advanced notice of accommodation requirements and anticipate timing of key tourism events.
- Consider partnering with or funding existing local accommodation providers to expand their accommodation capacity.
- Establish, review, and maintain a LSbp Goods and Services Register database and make this available to head contractors to support local procurement.
- Utilise Project newsletters, website, and media releases at key milestones throughout the Project development, construction and operation timeline to promote information on how local suppliers may become involved in the Project.
- Promote and fund Apprenticeships and Traineeships as a key employment strategy and work with regional employment agencies, Training Services NSW, education providers and Group Training Organisations to develop strategies to enable apprentices to access experience across different infrastructure projects.
- There are sufficient opportunities to house the anticipated construction and operational workforces, employ local workers, and procure local goods and services while also maximising social benefits to communities and reducing potential negative impacts. Proactive management and monitoring of outcomes will be achieved through post- approval management strategies and mechanisms.

## 7.4 Noise and Vibration

The Noise and Vibration Impact Assessment (NVIA) (Umwelt, 2023) prepared for the EIS has been revised after consideration of public and agency submissions received following exhibition of the EIS Project, as well as other further detailed design of the technical aspects of the EIS Project. The NVIA Addendum report (**Appendix G**) is supplementary to the previously prepared NVIA (Umwelt, 2023). The amendments to the Project with the potential to influence the NVIA are outlined in **Table 7.11**.

**Table 7.11 Amendments that influence the NVIA**

Amendment Number	Amendment Description	Potential to influence NVIA
1	Transport route	Yes – Amendments assessed in <b>Section 7.4.1</b> .
2	Wollara Road and Ringwood Road Upgrades	Yes – Amendments assessed in <b>Section 7.4.1</b> .
3	BESS Design Modification	Yes – Amendments assessed in <b>Section 7.4.1</b> .
4	Development Footprint Modification	Nil – No change to or additional noise impacts.
5	Additional Transmission Tower	Nil – No change to or additional noise impacts.
6	Workforce Accommodation	Nil – No change to or additional noise impacts.

### 7.4.1 Construction Noise Assessment

The Amended Project includes additional areas of road repairs and upgrades which have been assessed via an additional construction noise assessment. The construction noise assessment covers the following works areas:

- Work Area 1 – Golden Highway and Ringwood Road Intersection - Pruning and removal of vegetation and trees, construction of a merge lane, extension of deceleration lane and formalisation of two (2) bus stops either side of Ringwood Road.
- Work Area 2 – Ringwood Road - Realignment, widening and sealing of an additional 1.6 km section of Ringwood Road between Killoe Creek and Binks Road.
- Work Area 3 – Wollara Road - Realignment, widening and sealing a 4.7 km unpaved section of Wollara Road between the Goulburn River National Park boundary and 1621 Wollara Road.
- Noise levels have been predicted for four indicative construction scenarios, as well as the predicted noise contours for the worst- case scenario(s) with all equipment operating described and presented in **Appendix G**.

Prediction of the construction noise levels was undertaken under worst- case noise- enhancing meteorological conditions (D-class with 3 m/s windspeed). The predictions are conservative and assume all equipment associated with each scenario is operating simultaneously at the closest point to the receiver. In reality, a receiver would only experience a range of construction noise levels, dependent upon the number of plant items operating at any one time and their location as the works progress along the roadway. The assessment of construction noise therefore represents a conservative approach. As required under the Interim Construction Noise Guideline (DECC, 2009) (the ICN Guideline), the predictions included a 5 dB(A) penalty for the noise character of the construction activities.

The construction noise levels are predicted to exceed the noise management levels (NMLs) at some receivers adjacent to the road upgrade corridors on Ringwood and Wollara Road under some scenarios. However, no receivers are predicted to be highly noise affected (i.e., exposed to construction noise levels greater than 75 dB(A)). Further details regarding the construction noise impacts are available in Table 3.4 of **Appendix G**.

The construction noise levels are not predicted to be exceeded at other receivers. Reasonable and feasible noise mitigation and management strategies were provided in Section 5.4 of the EIS NVIA 2023 that are still consistent with these findings.

### **7.4.2 Construction Vibration Levels**

The recommended safe working distances for vibration- generating equipment from sensitive receivers (i.e., the receiver building or its occupants) are consistent with the EIS NVIA 2023 and can be found in **Appendix G**.

Consistent with the EIS NVIA 2023, other than receivers R11, R12 and R15, all the identified residential dwellings fall outside of the minimum working distances. For Work Area 2, receiver R11, R12, and R15 fall within the minimum working distance for human response for some plant items. (i.e., vibratory roller >7 tonnes and large hydraulic hammer >18 tonnes). However, given the transient nature of the works, human disturbance impacts are anticipated to be low.

Construction vibration mitigation strategies were provided in Section 5.4 of the EIS NVIA 2023, and are relevant to the Amended Project, including for road upgrades where no additional management and mitigation strategies are necessary.

### **7.4.3 Operational Noise Assessment**

The Amended Project includes amendments to the type and location of noise generating infrastructure, specifically the BESS. The nearest sensitive receivers are consistent with the EIS Project, and operational Project Noise Trigger Levels as outlined within the EIS NVIA 2023. The noise levels have been predicted under default worst- case meteorological conditions (D- class with 3 m/s windspeed or F- class with 2 m/s windspeed) in accordance with the *Noise Policy for Industry* (NPfI 2017). For a conservative assessment against the nighttime noise goal, it was assumed that all plant and equipment within the development footprint would be operating concurrently at 100% capacity.

The predicted operational noise levels at the identified receivers for scenarios are presented below. Predicted operational noise levels have been undertaken for the following scenarios:

1. Decentralised BESS (1,160 MWh).
2. Centralised BESS (900 MWh).
3. Decentralised plus centralised BESS (2,060 MWh).

This assessment found that the Amended Project is expected to comply with the applicable day, evening, and night- time noise limits at nearby sensitive receivers not involved with the Project. Therefore, no additional noise mitigation is anticipated to be required for the operation of the Project.

### **7.4.4 Road Traffic Noise**

The original EIS Project noise assessment established the construction traffic noise criterion of 60 dB(A) during the hours of 7.00 am to 10.00 pm, and 55 dB(A) between the hours of 10.00 pm and 7.00 am. The NSW Road Noise Policy (DECCW, 2011) sets out criteria for road traffic noise through the provision of a framework that addresses traffic noise issues associated with new developments, new or upgraded road developments, or planned building developments. Based on functionality, Ringwood Road/ Wollara Road is classified as a sub-arterial road.

The following assumptions in relation to traffic movements were made during the Amended NVIA:

- No Project related construction vehicles are anticipated to utilise Barnett Street turning area during the night period (i.e., prior to 6.00 am and after 10.00 pm).
- The majority of daily Project-related light-vehicle movements and shuttle buses will utilise the Barnett Street turning area when egressing the site (i.e., 5.30 pm to 6.30 pm), with a worst-case assumption that 50% of the daily movements would occur during any given hour. The shuttle buses for construction workers have been assessed as heavy vehicles.
- Daily Project-related heavy-vehicle movements will be spread evenly throughout the day (i.e., averaged on an hourly basis).
- There are negligible existing traffic movements along Barnett Street that are not associated with the operations of Receiver R110.
- For the purposes of this assessment, Barnett Street has been classified as a local road with a daytime assessment criterion of 55 LAeq(1hr).
- A Barnett Street traffic speed of 40 km/h has been adopted.

#### 7.4.5 Cumulative Impacts

Consistent with Section 8 of the EIS NVIA 2023, cumulative noise and vibration impacts from existing and approved projects in the area are not anticipated due to large separation distances and therefore comply with the NPfl requirements.

#### 7.4.6 Management and Mitigation Measures

No additional management and mitigation measures for noise and vibration are required for the Project.

### 7.5 Preliminary Hazard Analysis

An addendum to the EIS PHA (Umwelt, 2023) has been prepared to assess the Amended Project. The Addendum PHA (Umwelt, 2023) is provided in **Appendix H**. The Addendum PHA is supplementary to the previously prepared EIS PHA (2023) and should be read in conjunction.

The PHA Addendum was undertaken to address the increased BESS capacity and option of a decentralised BESS, and the choice to host both centralised and decentralised BESS units.

The amendments to the Project with the potential to influence the PHA are outlined in **Table 7.12**.

**Table 7.12 Amendments that influence the PHA**

Amendment Number	Amendment Description	Potential to influence PHA
1	Transport route	Nil - No change to or additional hazards.
2	Wollara Road and Ringwood Road Upgrades	Nil – No change to or additional hazards.
3	BESS Design Modification	Yes – Amendments assessed in <b>Section 7.5</b> .

Amendment Number	Amendment Description	Potential to influence PHA
4	Development Footprint Modification	Nil – No change to or additional hazard impacts.
5	Additional Transmission Tower	Nil – No change to or additional hazard impacts.
6	Workforce Accommodation	Nil – No change to or additional hazard impacts.

### 7.5.1 Impact Assessment

The conceptual layout of the proposed AC Couple (Centralised) BESS and the proposed DC Coupled (Decentralised) BESS are shown in **Figure 3.4** and **Figure 3.5** respectively. Further detailed conceptual layouts of both the AC Coupled (Centralised) and DC Coupled (Decentralised) BESS units are found in **Appendix H**. The risk control strategies detailed in the *Goulburn River Solar Farm Preliminary Hazard Analysis (2023)* remain applicable to the Amended Project.

In summary, the EIS PHA identified maximum distances to fatal impacts and injury impacts for thermal radiation, explosion overpressure and toxic gas dispersion and found these impacts were contained within the Project Area, and that the potential for adverse impacts was associated with first responders attending a hazardous event.

The impacts as a result of a hazard event associated with the Amended Project as described in **Section 3.0**, will be no greater than the impact as defined in the EIS.

### 7.5.2 Cumulative Impacts

There are no additional cumulative impacts associated with the Amended Project, when compared to the EIS Project.

### 7.5.3 Management and Mitigation Measures

The PHA (Umwelt, 2023) prepared for the EIS details a comprehensive description of the risk control strategies that are to be implemented as part of the Project. In response to agency submissions, LSbp has identified their commitment to the development and documentation of site- specific plans and procedure designed to manage the residual risk presented by the EIS Project following the implementation of technical and non- technical controls described in the EIS PHA.

In response to agency submissions, LSbp is committing to a Fire Safety Study (FSS), which will be prepared in accordance with HIPAP 2 prior to commencing construction of the BESS. The FSS will consider:

- the operational capability of local fire agencies and the need for the facility to achieve an adequate level of on-site fire and life safety independence
- fire propagation and a worst-case scenario
- the requirements of the Fire Management Plan (FMP) that would be prepared in consultation with NSW Rural Fire Service.

It is noted the FSS will also inform the requirements of the FMP including:

- The methods and resources needed to manage and extinguish lithium battery fires
- The management of a defensible Asset Protection Zone (APZ) as described in Planning for Bush Fire Protection 2019.

The FSS will inform the requirements of an Emergency Response Plan (ERP) that will be prepared in accordance with HIPAP 2 prior to commencing construction of the BESS. The ERP will inform the requirements of an Emergency Services Information Package (ESIP) that would be prepared in accordance with FRNSW fire safety guideline – Emergency services information package and tactical fire plans. Both the ERP and the ESIP will:

- Inform first responders of site-specific features and safety measures required to ensure they are able to undertake their duties effectively.
- Include agency specific Standard Operational Guidelines.

## 7.6 Water

An addendum to the EIS Project Water Resource Impact Assessment (WRIA) (Umwelt, 2023) has been prepared to assess the Amended Project. The Addendum WRIA (Umwelt, 2023) is provided in **Appendix K** and assesses the potential impacts of the Project on water resources in the vicinity of the Amended Project Area as well as addressing relevant submissions made during the public exhibition of the EIS.

The amendments to the Project with the potential to influence the WRIA are outlined in **Table 7.13**.

**Table 7.13 Amendments that influence the WRIA**

Amendment Number	Amendments	Potential to influence WRIA
1	Transport route	Nil – No change to or additional water resource impacts.
2	Wollara Road and Ringwood Road Upgrades	Yes – Refer to Section 7.6.
3	BESS Design Modification	No – No change to or additional water resource impacts.
4	Development Footprint Modification	Yes - Refer to Section 7.6.
5	Additional Transmission Tower	Nil – No change to or additional water resource impacts.
6	Workforce Accommodation	Nil – No change to or additional water resource impacts.

The potential impacts of this Amendment to the Project include surface water quality due to erosion and sedimentation during construction. These impacts can sufficiently be mitigated through erosion and sediment control measures in accordance with the principles and requirements in Managing Urban Stormwater – Soils and Construction, Volume 1 (Landcom, 2004) and Volume 2D (NSW Department of Environment, Climate Change and Water, 2008b), commonly referred to as the “Blue Book”. There are no new or increased impacts on water resources as a result of the Amended Project.

## 7.6.1 Cumulative Impacts

Consistent with Section 6.10 of the EIS, cumulative impacts are considered to be negligible as the Project is in the upper reaches of the catchment area and other projects do not occur in these areas.

## 7.7 Landscape and Visual

An addendum to the EIS Project Landscape and Visual Impact Assessment (LVIA) (Envisage, 2022) has been prepared to assess the potential changes in visual impact associated with the Amended Project compared to the EIS Project in accordance with all relevant guidelines within the *Technical Supplement – Landscape and Visual Impact Assessment* which accompanies the NSW.. The Addendum LVIA (Envisage, 2023) is provided in **Appendix I**. The amendments to the Project with the potential to influence the LVIA are outlined in **Table 7.14**.

**Table 7.14 Amendments assessed in the LVIA**

Amendment Number	Amendments	Potential to influence LVIA
1	Transport route	Yes – Amendments assessed in <b>Section 7.7</b> .
2	Wollara Road and Ringwood Road Upgrades	Yes – Amendments assessed in <b>Section 7.7</b> .
3	BESS Design Modification	Yes – Amendments assessed in <b>Section 7.7</b> .
4	Development Footprint Modification	Nil – No change to or additional landscape and visual impacts.
5	Additional Transmission Tower	Nil – No change to or additional landscape and visual impacts.
6	Workforce Accommodation	Nil – No change to or additional landscape or visual impacts.

Impact was determined by combining sensitivity to change, with the magnitude of change that would result from the Project. The possible level of impact ranges from ‘high’ to ‘very low’ as shown in **Table 7.15**.

**Table 7.15 Matrix of Impact**

	High Visual Sensitivity	Moderate Visual Sensitivity	Low Visual Sensitivity	Very Low Sensitivity
Very High Magnitude	High	High	Moderate	Moderate
High Magnitude	High	Moderate	Moderate	Low
Moderate Magnitude	Moderate	Moderate	Low	Low
Low Magnitude	Moderate	Low	Low	Very Low
Very Low Magnitude	Low	Low	Very Low	Very Low

An additional site inspection was conducted 1 September 2023 to view locations affected by the proposed amendments. Private property was not required to be accessed, with viewpoints assessed from the nearest publicly accessible locations.

### 7.7.1 Landscape Character Impacts of the Amendments

As part of the Amended Project, the proposed Wollara Road upgrade would be located within the dense forested landscape character zone, however the proposed Golden Highway intersection upgrade is located beyond the two originally described landscape character areas.

As a result, a revised landscape character zone has been added to the assessment. This landscape character zone is typified by the two-lane sealed highway, which carries comparatively higher-speed, greater volume, heavier traffic than other roads of the study area. The terrain at the intersection is undulating, with cut and fill embankments. Individual tall native trees occur either side of the road within a grassed verge, and there are areas of dense shrubs and trees. For the purposes of this report, this character zone is called the 'Golden Highway' landscape character zone.

The assessment of impacts to landscape character to the Amended Project are shown in **Table 7.16** and further detailed is provided in Appendix I.

**Table 7.16 Assessment of Landscape Character Impacts**

Landscape Character Zone	Sensitivity of existing landscape character to the Amended Project	Magnitude of change to landscape character		Landscape Character Impact	
		Original Assessment	Amended Project	Original Assessment	Amended Project
Dense forested landscape	Low (As determined in the original assessment).	Very Low	Moderate	Very Low	Low
Golden Highway landscape	Low	N/A	Low	N/A	Low

### 7.7.2 Visual Impacts of the Amendments

The LVIA for the EIS Project focused on detailed assessment of five residences (R3, R5, R9, R21, R46) and one public road (Wollara Road) within a 4 km radius of the Project. Initially, viewpoints R9 and R21 were excluded due to obstructed views caused by vegetation. However, with the Amended Project involving tree removal between R9 and R21 and the Project Area, a re-examination was conducted. **Table 7.17** provides a summary of the changes to the visual impact to public and residential viewpoints in proximity to the Project. Further information regarding these findings can be found in **Appendix I**. All changes to visual impacts result in either a low or very low assessment rating at all viewpoints assessed in the Amended LVIA.

**Table 7.17 Updated Visual Impact Assessment**

Viewpoint		Visual sensitivity rating		Visual magnitude rating		Visual impact rating		Residual impact rating	
		Original assessment	Amended Project	Original assessment	Amended Project	Original assessment	Amended Project	Original assessment	Amended Project
<b>Residence</b>	R9	N/A	Low	N/A	Low	N/A	Low	N/A	Low
	R22	N/A	Low	N/A	Low	N/A	Low	N/A	Low
	R29	N/A	Low	N/A	Low	N/A	Low	N/A	Low
	R32	N/A	Low	N/A	Low	N/A	Low	N/A	Low
	R39	N/A	Low	N/A	Low	N/A	Low	N/A	Low
	R44	N/A	Low	N/A	Low	N/A	Low	N/A	Low
<b>Public Roads</b>	Golden Highway/ Ringwood Road intersection	N/A	Very low	N/A	Low	N/A	Very Low	N/A	Very Low

### 7.7.3 Cumulative Impacts

There are no additional cumulative impacts associated with the Amended Project compared to the Project presented in the EIS.

### 7.7.4 Management and Mitigation Measures

Additional mitigation measures to address impacts associated with the Amended Project are detailed below.

- Subsequent to Project approval, refine the landscape plan to encompass the Amended Project. The aim of the detailed landscape plan is to establish a quick growing, dense screen to reduce public views of the solar panels from Wollara Road, as well as providing additional ecological benefits.
- The detailed landscape plan is to be prepared prior to landscape implementation and, be guided by ongoing consultation with NP&WS and TfNSW (particularly regarding plant species, spacing, and whether soil improvement is required and road safety measures/tree clearance zones and TFNSW relevant policy).
- Progressively stabilise surfaces as construction is completed.
- Monitor road upgrades to ensure the stabilisation of verges.
- Implement correctional measures if erosion occurs or dust is an issue.
- Include retention of trees where possible within/near the road upgrade construction zone.
- Include protection of trees within/near the road upgrade construction zone. Monitor disturbed trees that have been heavily impacted within their root zone for stability and longevity.

## 7.8 Aboriginal Heritage

An Addendum ACHAR has been prepared by OzArk (2023) to assess the potential Aboriginal heritage impacts of the Amended Project. The Addendum ACHAR is provided in **Appendix J** and should be read in conjunction with the ACHAR prepared for the EIS. The amendments to the Project with the potential to influence the ACHAR are outlined in **Table 7.18**.

**Table 7.18 Amendments that influence the ACHAR**

Amendment Number	Amendments	Potential to influence ACHAR
1	Transport route	Yes – Refer to <b>Section 7.8.2</b> .
2	Wollara Road and Ringwood Road Upgrades	Yes – Refer to <b>Section 7.8.2</b> .
3	BESS Design Modification	No – No change to or additional Aboriginal cultural heritage impacts.
4	Development Footprint Modification	Yes – Refer to <b>Section 7.8.2</b> .
5	Additional Transmission Tower	Nil – No change to or additional Aboriginal cultural heritage impacts.
6	Workforce Accommodation	Nil – No change to or additional Aboriginal cultural heritage impacts.

### 7.8.1 Consultation

A letter was sent to all Registered Aboriginal Parties (RAPs) on 29 August 2023 summarising the status of the Project and providing notification that further assessment for amendments to the Project would be undertaken, noting the amendments were all proposed within the existing surveyed areas or areas in close proximity with the same landforms.

No specific cultural values were identified by the RAPs regarding the Amended Project, however the strong cultural values of Aboriginal communities towards landscapes and cultural heritage sites continue to be recognised.

Full detail of the consultation undertaken as part of the Addendum ACHAR including the update letter are provided in **Appendix J**.

### 7.8.2 Impact Assessment

An additional desktop study was conducted on 16 October 2023 for the Addendum ACHAR.

No further field survey was required or undertaken given the amendments proposed are within areas previously surveyed for the ACHAR in August 2022 or comprise areas in close proximity with the same landform.

An Aboriginal Heritage Information Management System (AHIMS) search was conducted on 16 October 2023. The search returned 117 entries which is 11 entries higher than the previous searches conducted for the ACHAR. The additional 11 sites correlate to the 11 sites identified during previous surveys for the ACHAR complete for the EIS Project which were subsequently recorded and registered to AHIMS.

One previously identified site, 37-1-1033 (Killoe Creek GG1) is located in proximity of the road upgrades however the Amended Project will not result in harm to this site.

The realignment of the Development Footprint has resulted in the avoidance of harm to 37-1-1027 (Redlynch Creek IF1) and is illustrated in Figure 7.1 of **Appendix J**. This site was previously identified as impacted by the Project and was identified to be salvaged. It will no longer be harmed.

### 7.8.3 Cumulative Impacts

There are no additional cumulative impacts associated with the Amended Project compared to the Project presented in the EIS.

### 7.8.4 Management and Mitigation Measures

As a result of the Amended Project, the recommendations of the ACHAR have been revised as follows:

- ACHAR Recommendation 2 now reads: Four known Aboriginal sites, 37-1-1027 (Redlynch Creek IF1), 37-1-1032 (Ringwood Gully IF6), 37-1-1033 (Killoe Creek GG1), and 37-1-1037 (Rocky Creek Gully OS4) will not be harmed by the Project as they are located outside the Access route and the Development Footprint.

- ACHAR Recommendation 3 now reads: Seven known Aboriginal sites, 37-1-1028 (Rocky Creek Slope IF2), 37-1-1029 (Wollara Road IF3), 37-1-1030 (Monaghans Creek IF4), 37-1-1031 (Rocky Creek Gully IF5), 37-1-1034 (Redlynch Creek OS2), 37-1-1035 (Redlynch Creek OS1), and 37-1-1036 (Redlynch Creek OS3) will be salvaged by a surface collection of visible artefacts. The recommended methodology for the salvage will be set out in the ACHMP and will include the measures outlined in Section 9.2.1 of the ACHAR.

The following recommendations concerning Aboriginal cultural values for the Amended Project build upon those provided in the ACHAR.

- Following development consent of the Project, the proponent will develop an ACHMP which is to be agreed to by the RAPs and the Department of Planning and Environment (with input from Heritage NSW). The ACHMP will include an unanticipated finds protocol, unanticipated skeletal remains protocol, protocols related to heritage inductions for work crews, and long-term management of any Aboriginal sites being impacted.
- 37-1-1033 (Killoe Creek GG1) will not be harmed by the Addendum proposal as it is located outside the impact area.
- Further recording and investigation of the grinding groove site (Killoe Creek GG1) will be conducted. The methodology of this investigation will be set out in the ACHMP but will include detailed mapping and photography of the site.
- All land-disturbing activities must be confined to within the Addendum study area. Should the parameters of the proposed work extend beyond this, then further archaeological assessment will be required.

## 8.0 Justification of the Amended Project

This section provides a justification of the Amended Project, taking into consideration the environmental, social and economic impacts, as compared to the EIS Project, as well as considering the strategic context and suitability of the Project site. The Amended Project is also considered in the context of the principles of ecologically sustainable development (ESD) as defined in Schedule 2 of the EP&A Regulation.

### 8.1 Environmental, Economic and Social Impacts

The changes proposed by the Amended Project were developed in response to ongoing consultation with agencies, progression of detailed design, and submissions received during the EIS exhibition period. LSbp, in consultation with landowners and agencies, has sought to progress the design and reduce environmental impacts wherever possible.

Key changes from the EIS Project to the Amended Project include an upgrade to the intersection of the Golden Highway and Ringwood Road, additional road upgrades to Wollara Road and Ringwood Road, increased BESS capacity and the option of a decentralised BESS, reduction in the development footprint, relocation of solar arrays and an increased width of some internal access road corridors, construction of an additional transmission tower adjacent to the BESS and substation and a revised approach to the workforce accommodation strategy. These design changes have been assessed and will not result in any unacceptable impacts. The Project can comply with statutory requirements and relevant standards, policies and guidelines.

For most environmental aspects there would be no substantial change to impacts and/or a positive outcome as a result of the Amended Project, when compared with the EIS Project.

### 8.2 Strategic Context

NSW is in a transition to build a reliable, affordable and sustainable electricity future with the NSW Government taking action to deliver cheap, reliable, and clean electricity for homes and businesses in NSW (EnergyCo, 2023a). The REZs were formally declared under the *Electricity Infrastructure Investment Act 2020* with the Project located 20 km from the Central-West Orana REZ and 50 km from the Hunter Central Coast REZ. The NSW Government has indicated that REZs will play a vital role in delivering affordable energy generation to help prepare the State for the retirement of thermal power stations over the coming decades. Recent delays in the CWO REZ, including the 6 month delay to Access Rights, highlights the complexity and risk of relying on REZ's for near term decarbonisation targets. Goulburn River, connecting to existing transmission infrastructure, presents a project capable of delivering to the grid without the need for transmission upgrades.

The increase in BESS capacity is in response to developments in the Australian Energy Market over the past year, including the release of long duration storage contracts by EnergyCo, capacity contracts by AEMO, network support contracts by Transgrid and the recent announcement of 9GW of storage contracts under the Capacity Investment Scheme by the Federal Government. The increased demand for battery services to support the network as it shifts to a low emissions network is evident, thus the increased BESS capacity is in a response to these contracts.

The Project is aligned with the strategic direction of the NSW and Australian energy generation market and will assist in achieving the planned transition to an increased contribution of renewable energy to Australia's energy needs. Located near the CWO REZ, the Project is in proximity to a defined area planned for renewable energy development by the NSW Government. LSbp, as an existing renewable energy operator in Australia with a track record of delivering large-scale renewable energy projects, is well placed to progress the delivery of the Project.

### **8.3 Suitability of the Site**

The focus of the amendments within the Project Area have been on developing a design that is constructable and allows for further reduction in environmental and social impacts where possible. The Amended Project incorporates additional road upgrades and amendments to the Development Footprint to avoid Regent Honeyeater habitat, Box Gum Woodland, and TSR 44841. The Amended Project has considered these aspects through consultation with landowners, including crown, lands as to how the Project could best be accommodated within their individual landholdings. As such, it is considered that site suitability has been progressed and improved from that identified by the EIS Project.

The site itself remains suitable for large scale renewable energy generation. The location of cleared agricultural land adjacent to the 500 kV network is a rarity. LSbp assessed several sites along the 225 km 500 kV transmission line running from Bayswater Power Station to Mt Piper Power Station, finding only two prospective sites with suitable area to house sufficient capacity (550 MW) to justify the cut-in to the transmission line. Additional sites were ruled out due to biodiversity constraints, mine-site tenements, insufficient acreage, high value agricultural land, topography, or the need to run new transmission lines several km to connect to the existing network.

The Project Site was chosen due to its relative isolation from neighbours, direct access to the overhead transmission line, sufficient cleared land and fewer biodiversity constraints (relative to other sites assessed).

The transmission line running from Bayswater Power Station to Mount Piper Power Station was the target for site investigations due to its high capacity, low curtailment levels and high Marginal Loss Factor Coefficient. These factors minimise the generation lost during transmission and ultimately reduce the cost of electricity for the consumers. They also support the market operator's (AEMO) aim of managing a stable power network by placing renewable generation sources in parts of the network design to handle high power flows. The selection of the Bayswater to Mt Piper 500 kV transmission line has been validated with the announcement of EnergyCo's plans to connect the Central West Orana REZ to the same transmission line.

In summary, the selection of the Project Site was assessed across several categories mentioned above and was deemed the most appropriate site for utility-scale solar and BESS development.

### **8.4 Ecologically Sustainable Development (ESD)**

To justify the Amended Project with regard to the principles of ESD, the benefits of the Amended Project in an environmental and socio-economic context should outweigh any negative impacts.

The principles of ESD encompass the following:

- The precautionary principle.
- Intergenerational equity.
- Conservation of biological diversity.
- Valuation, pricing and incentive mechanisms.

An assessment of the Amended Project against the principles of ESD is provided in the sections below.

### **8.4.1 The Precautionary Principle**

The EP&A Regulation defines the precautionary principle as:

*'if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*

- *careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment*
- *an assessment of the risk-weighted consequences of various options.'*

LSbp have delivered 6.1GW of renewable energy globally since 2010, predominantly from developing solar farms. LSbp have taken three solar farms through to operation stage in Australia, two of which are in NSW. Another two are under construction currently, including one in NSW. Their approach to developing and operating solar farms is proven and means that risks can be qualified and quantified with a relatively high level of certainty.

The technical specialists who have completed assessments have all worked in solar and renewable projects providing experience to ensure the successful implementation and operation of the Project. Umwelt, as the EIS lead consultant, have worked numerous projects in NSW/Hunter, navigating regulatory frameworks and environmental considerations.

The precautionary principal has been applied in a number of ways. This is particularly the case with biodiversity, where fundamentally, a 'worst case' scenario has been considered, with an assumption that all native flora and fauna will be removed from within the development footprint. In reality, the derived native grassland which is present across the majority of the development footprint is expected to regenerate following construction. There is also potential for regenerated Box Gum Woodland grassland to improve condition from its current state, with reduced grazing pressure, shading, and increased moisture under and around the panel arrays.

In order to achieve a level of scientific certainty in relation to potential impacts associated with the proposed amendments to the EIS Project, extensive evaluation of all the key components of the Project have been undertaken. Detailed assessment of all key issues and the identification of management measures has been undertaken and are comprehensively documented in this Amendment Report.

The assessment process has involved detailed studies of the existing environment, and where applicable the use of scientific modelling to assess and determine potential impacts as a result of the Amended Project. To this end, there has been careful evaluation to avoid and minimise the risk of irreversible damage to the environment, wherever possible.

The decision-making process for the design, impact assessment and development of management processes has been transparent through the consultation process with both government authorities, landowners and the community.

Consistent with the precautionary principle, the environmental assessment of the Project has sought to minimise environmental impact through the avoidance of impacts and a range of mitigation measures are proposed to address and identified residual impacts.

### **8.4.2 Intergenerational Equity**

The EP&A Regulation defines the principle of intergenerational equity as:

*‘... that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations.’*

Intergenerational equity refers to equality between generations. It requires that the needs and requirements of today’s generations do not compromise the needs and requirements of future generations in terms of health, biodiversity and productivity.

The Amended Project is considered to be consistent with the principle of intergenerational equity as it can be carried out in a way that would maintain the health, diversity and productivity of the environment now and into the future. The key benefit of the Amended Project will be Project’s strong contribution to energy capacity, reliability and security in the transition away from coal-fired power generation to renewables. The amendments proposed to the EIS Project enable more electricity storage capacity with minor adjustments to the layout and design of the EIS Project.

The Project as a whole is designed to contribute to the net zero emissions targets that Australia and the state of New South Wales has committed to. This target is in support of greater intergenerational equity and ensuring that future generations inherit a liveable planet.

The addition of 1,200 ha of biodiversity offsets adjacent to and surrounding the Development Footprint, in combination with the biodiversity enhancement measures, will further contribute to intergenerational equity by increasing the area of land under conservation. Repairs and upgrades to the local road network will improve safety for all road users and improve condition of infrastructure to support the local community.

### **8.4.3 Conservation of Biological Diversity**

The EP&A Regulation identifies that the principle of conservation of biological diversity and ecological integrity should be a fundamental consideration in the decision-making process. The conservation of biological diversity refers to the maintenance of species richness, ecosystem diversity and health and the links and processes between them. A summary is provided here and further detail is available in Part B of the Amendment Report.

The Amended Project includes measures to increase avoidance of PCTs and threatened species habitat, including the relocation and removal of solar arrays. This measure is on top of the measures already implemented in the EIS Project aimed at conservation of biological diversity. All environmental components, ecosystems and habitat values potentially affected by the Amended Project have been assessed in the BDARs (Part B) which include detailed measures to avoid and minimise impacts to biodiversity.

The outer edge of the BSA abuts Goulburn River National Park on all sides. Establishing the Goulburn River BSA will bolster the existing protected area estate (regardless of the ultimate land tenure) and improve wildlife connectivity. Actively managing an additional 1,200 ha for conservation will reduce edge effects on the national park, such as the weed incursion and pest animal predation/competition which currently occur. The Goulburn River BSA will benefit threatened species and a diversity of non-threatened native species which are known or likely to occur. Further details regarding avoidance specific to biodiversity is contained in Part B.

#### 8.4.4 Valuation Principle

The goal of improved valuation of natural capital is included in Agenda 21 of Australia's Intergovernmental Agreement on the Environment. The principle has been defined in the EP&A Regulation as follows:

*... that environmental factors should be included in the valuation of assets and services, such as:*

- i. polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement;*
- ii. the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste; and*
- iii. environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.*

LSbp has intrinsically valued the environmental resources by designing the Amended Project to avoid and minimise potential environmental and social impacts as much as practicable. The Amended Project is considered to be consistent with the valuation principle of ESD as LSbp will be required to pay the full costs associated with:

- Ensuring the Project is designed and implemented in accordance with the relevant standards.
- Offsetting residual impacts to biodiversity in accordance with State and Commonwealth guidelines.
- Management measures to minimise potential environmental and social impacts.

Implementing the mitigation measures for the Amended Project would impose an economic cost on LSbp, increasing both the capital and operating costs of the Project so as to provide sound environmental outcomes. In this manner, environmental resources have been given appropriate valuation.

The Project is considered ecologically sustainable, due to the social, economic and environmental benefits discussed, and the mitigation measures put in place to protect from adverse impacts on the environment.

## 8.5 Conclusion

The Project is a direct response to the NSW and Commonwealth Governments' commitments to transition to renewable electricity generation. The changes that make up the Amended Project enhance the strategic context of the EIS Project by increasing the energy storage capacity in the NEM. The NEM needs to rapidly transition to renewable energy to support the NSW Climate Change Policy Framework, as well as the Commonwealth Government's commitments under the Paris Agreement. At present, additional renewable energy capacity is being added to the NEM at a lower rate than what the AEMO has identified as required to achieve the transition to renewable energy (Parkinson, Renew Economy, 2023). The Amended Project will materially assist in addressing this shortfall by delivering 550 MWp of renewable energy capacity and up to 1035 MW of energy storage to the NEM to help replace the generation capacity which will be lost when NSW's largest power station, Eraring, closes in 2026.

Further, as outlined in **Section 8.4**, the Amended Project is consistent with the principles of ESD. The Project will also contribute significant capital investment within the region, generate jobs during the construction and operational phases, provide indirect benefits to local services throughout the life of the Project (e.g. indirect employment creation in local and regional economies would include jobs supported through transportation, trade supplies, services, accommodation, catering, retail services, etc.), and provide benefits to the local community through legacy infrastructure such as road upgrades, the implementation of the proposed Benefit Sharing Program and planning agreement with UHSC.

The assessment findings indicate that while there will be environmental and social impacts associated with the Amended Project, the impacts are able to be managed with the implementation of the identified management measures. Furthermore, a number of amendments centred around road upgrades will improve road safety for all users and upgrade existing infrastructure. The extent of the impacts has been minimised through the design process where possible and where impacts are predicted, LSbp has committed to management, mitigation and offset measures to address these impacts. The assessment findings indicate that while there will be environmental and social impacts associated with the Amended Project, these are generally comparable to the EIS Project.

In conclusion, the Project will provide long-term, strategic benefits to the State of NSW, including:

- Providing a significant boost in renewable generation and energy storage to assist with fulfilling the current obligations under State and Commonwealth renewable energy targets and reduce the need to prolong coal generators retirement dates.
- Providing for cleaner reliable electricity generation, assisting with meeting current load demand while reducing greenhouse gas emissions and the impacts of climate change.
- Providing regional investment in the NSW renewable energy sector.
- Contribute to the NEM electricity storage capacity and offer grid stability during the energy transmission.
- Delivery critical infrastructure such as road upgrades that will serve to benefit the community for decades to come.

- Delivering long term multi-use infrastructure in the form of road upgrades to the local community.
- Supporting community investment through the 40 year VPA with Upper Hunter Shire Council.

With the implementation of the management, mitigation and offset measures proposed by LSbp, it is considered that the Amended Project would result in a net benefit to the local and regional NSW community.

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