SOMEVA RENEWABLES

MAKING COMPLEX EASY
A TETRA TECH COMPANY

POTTINGER WIND FARM

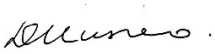
Environmental Impact Statement



Pottinger Wind Farm
16 May 2024

Version	Purpose of document	Authored by	Reviewed by	Review date
1.0	EIS Draft	RPS Team (Appendix B)	Dianne Munro	29 April 2024
2.0	EIS Final	RPS Team (Appendix B)	Dianne Munro	16 May 2024

Approval for issue

Dianne Munro		16 May 2024

This report was prepared by RPS within the terms of RPS' engagement with its client and in direct response to a scope of services. This report is supplied for the sole and specific purpose for use by RPS' client. The report does not account for any changes relating the subject matter of the report, or any legislative or regulatory changes that have occurred since the report was produced and that may affect the report. RPS does not accept any responsibility or liability for loss whatsoever to any third party caused by, related to or arising out of any use or reliance on the report.

Prepared by:

RPS

Dianne Munro
Senior Principal

Unit 2A, 45 Fitzroy Street
Carrington NSW 2294

T +61 2 4940 4200
E dianne.munro@rpsgroup.com.au

Prepared for:

Someva Renewables

Tim Mead
Development Director

Level 8, 16 Spring Street
Sydney NSW 2000

T +61 419 900 277
E Tim.M@someva.com.au

**Cover photo courtesy of Moir LA, 2023*

Contents

REAP DECLARATION **1**

EXECUTIVE SUMMARY **2**
Introduction 2
Project Need 2
Project Summary 3
Stakeholder Engagement 5
Environmental and Social Impact Assessment 5
Justification and Evaluation 8

1 INTRODUCTION **10**
1.1 Background 10
1.2 History 12
1.3 Applicant 14
1.4 Project Overview 14
1.5 Objectives 17
1.6 Strategies to Avoid, Minimise or Offset 17
1.7 Related Development 17
1.8 Restrictions or Covenants 18

2 STRATEGIC CONTEXT **19**
2.1 Government Strategies, Policies and Plans 19
2.1.1 International 19
2.1.2 Federal 20
2.1.3 NSW Government 21
2.1.4 Local 22
2.2 Land Use Planning 23
2.2.1 Riverina Murray Regional Plan 2041 23
2.2.2 Hay Shire Council Local Strategic Planning Statement 2020 23
2.2.3 Hay Shire Council Community Strategic Plan 2022-2032 23
2.3 Project Justification 24
2.3.1 Benefits 24
2.3.2 Site Suitability 25
2.4 Key Features of Project Area and Surrounds 28
2.4.1 Local and Regional Community 28
2.4.2 Surrounding Land Use 30
2.4.3 Natural Features 32
2.4.4 Built Features 35
2.4.5 Land Ownership 38
2.4.6 Risks and Hazards 42
2.5 Cumulative Impacts 42
2.5.1 Cumulative Guideline Requirements 42
2.5.2 REZ Status, Proximate Projects and Cumulative Impacts 42
2.6 Alternatives Considered 44
2.6.1 No Project 44
2.6.2 Alternative Sourcing of Energy 44
2.6.3 Alternative Site Location 45
2.6.4 Original (Maximum) Site Layout 45
2.7 Benefits of Project Compared to the Original Layout 47

3 PROJECT DESCRIPTION **53**
3.1 Overview 53
3.2 Interaction with or Reliance on other Developments 54

3.3 Project Area....56
3.3.1 Micro-siting....56
3.4 Project Components....58
3.4.1 Wind Turbine Generators....58
3.4.2 Battery Energy Storage System....58
3.4.3 Electrical Infrastructure....64
3.4.4 Site Access and Transport Route....65
3.4.5 Other Associated Infrastructure....74
3.4.6 Ancillary Activities....74
3.4.7 Subdivisions....75
3.5 Construction....77
3.5.1 Indicative program....77
3.5.2 Workforce and Construction Hours....79
3.5.3 Workforce Accommodation....79
3.5.4 Pre-Construction Activities....79
3.5.5 Site Preparation and Construction Activities....80
3.5.6 Plant and Equipment....82
3.5.7 Traffic Movements....83
3.5.8 Temporary infrastructure....83
3.5.9 Ancillary activities and materials....84
3.5.10 Services and Utilities....84
3.5.11 Rehabilitation....85
3.6 Operations....86
3.6.1 Commissioning....86
3.6.2 Maintenance....86
3.6.3 Workforce and Hours of Operation....86
3.7 Decommissioning and Rehabilitation....87
3.8 Staging....87
3.9 Community Benefit and VPA....88
3.10 Environmental Management System....88

4 STATUTORY CONTEXT....89
4.1 Power to Grant Development Consent....89
4.1.1 T&I SEPP....90
4.1.2 EII Act....90
4.2 Other Approvals....90

5 STAKEHOLDER ENGAGEMENT....94
5.1 Introduction....94
5.2 Social Locality....95
5.3 Community Stakeholder Identification and Feedback Received....98
5.4 Regulatory Engagement Conducted and Feedback Received....104
5.5 Future Engagement Action Plan....108

6 IMPACT ASSESSMENT AND MITIGATION....110
6.1 Risk Assessment....110
6.2 Noise....111
6.2.1 Background....111
6.2.2 Methodology....111
6.2.3 Impact Assessment....115
6.2.4 Mitigation and Management....119
6.3 Landscape and Visual Impact Assessment....120
6.3.1 Background....120
6.3.2 Methodology....121

6.3.3 Impact Assessment 124
6.3.4 Mitigation and Management 133
6.4 Biodiversity 134
6.4.1 Background 134
6.4.2 Methodology 135
6.4.3 Impact Assessment 144
6.4.4 Mitigation and Management 160
6.5 Aboriginal Heritage 166
6.5.1 Background 166
6.5.2 Methodology 167
6.5.3 Impact Assessment 169
6.5.4 Mitigation and Management 175
6.6 Historic Heritage 179
6.7 Soils 185
6.8 Agriculture 190
6.8.1 Background 190
6.8.2 Methodology 190
6.8.3 Impact Assessment 192
6.8.4 Mitigation and Management 194
6.9 Hydrology and Flooding 194
6.9.1 Background 195
6.9.2 Impact Assessment 196
6.9.3 Mitigation and Management 198
6.10 Water Resources 202
6.10.1 Background 202
6.10.2 Methodology 203
6.10.3 Impact Assessment 204
6.10.4 Mitigation and Management 205
6.11 Traffic 206
6.11.1 Background 206
6.11.2 Methodology 206
6.11.3 Impact Assessment 207
6.11.4 Mitigation and Management 215
6.12 Telecommunications 219
6.12.1 Background 219
6.12.2 Methodology 219
6.12.3 Impact Assessment 219
6.12.4 Mitigation and Management 223
6.13 Aviation 223
6.13.1 Background 223
6.13.2 Methodology 224
6.13.3 Impact Assessment 225
6.13.4 Mitigation and Management 230
6.14 Preliminary Hazard Analysis 231
6.14.1 Background 231
6.14.2 Methodology 231
6.14.3 Impact Assessment 232
6.14.4 Mitigation and Management 236
6.15 Blade Throw 236
6.15.1 Background 236
6.15.2 Methodology 237
6.15.3 Impact Assessment 237
6.15.4 Mitigation and Management 242

6.16 Bushfire 242
6.16.1 Background 242
6.16.2 Methodology 243
6.16.3 Impact Assessment 243
6.16.4 Mitigation and Management 248
6.17 Air Quality 249
6.17.1 Background 249
6.17.2 Methodology 249
6.17.3 Existing Environment 249
6.17.4 Impact Assessment 250
6.17.5 Mitigation and Management 252
6.18 Waste Management 253
6.18.1 Background 253
6.18.2 Methodology 256
6.18.3 Impact Assessment 256
6.18.4 Mitigation and Management 260
6.19 Social 261
6.19.1 Background 261
6.19.2 Methodology 262
6.19.3 Impact Assessment 262
6.19.4 Mitigation and Management 268
6.20 Economics 272
6.20.1 Background 272
6.20.2 Methodology 272
6.20.3 Impact Assessment 272
6.20.4 Mitigation Measures 278
6.21 Cumulative Impact Assessment 279
6.21.1 Background 279
6.21.2 Impact Assessment 279
6.21.3 Mitigation and Management 283

7 PROJECT JUSTIFICATION 284
7.1 Action Taken to Avoid/Minimise, Mitigate and/or Offset Impacts 284
7.1.1 Site Selection 284
7.1.2 Project Refinements 284
7.2 Consistency with Strategic Context 286
7.3 Compliance with Statutory Requirements 286
7.4 Objects of the EP&A Act 287
7.5 Consistency with Community Views 287
7.6 Ecologically Sustainable Development 288
7.7 Scale and Nature of Impacts 289
7.8 Compliance Monitoring and Communication 293
7.9 Remaining Uncertainties 293
7.10 Conclusion 293

8 TERMINOLOGY AND ACRONYMS 294

9 REFERENCES 302

Tables

Table ES1 Environmental Impact Summary 6
Table 2–1 Nearby National Parks and Conservation Areas 35
Table 2–2 Proximate Dwelling Entitlements 38
Table 2–3 Projects in Proximity with Cumulative Impact Potential 43
Table 2–4 Project Layout Amendments, Benefits and Outcomes 47
Table 3–1 Conceptual Project Summary 53
Table 3–2 Indicative OSOM delivery route from Port of Adelaide 65
Table 3–3 Conceptual External Road Upgrades 66
Table 3–4 Indicative Project Construction Schedule 78
Table 3–5 Indicative Construction Materials 84
Table 3–6 Indicative Quarries to be utilised for the Project 84
Table 3–7 Estimated Project Water Requirements 85
Table 3–8 Indicative Project Development Timeline 88
Table 4–1 Other Approvals 91
Table 5–1 Key Stakeholder Groups in the Community 94
Table 5–2 Priority Engagement Tools 96
Table 5–3 Conducted Stakeholder Engagement – Community 99
Table 5–4 Stakeholder Identification, Level of Interest and Issues Raised 100
Table 5–5 Social Impact Themes Summary 103
Table 5–6 Regulatory Engagement Conducted 104
Table 6–1 Risk Assessment Summary (Post Mitigation) 110
Table 6–2 Noise Monitoring Locations and Periods 112
Table 6–3 Measured Background Noise Levels at Hub Height 112
Table 6–4 Construction Noise Management Levels Criteria 113
Table 6–5 Road Traffic Noise Criteria 113
Table 6–6 Vibration Types 114
Table 6–7 Vibration Criteria 114
Table 6–8 Blasting Criteria 114
Table 6–9 Operational Noise Intrusive and Amenity Noise Trigger Levels 115
Table 6–10 Predicted Construction Noise Levels During Standard Hours 116
Table 6–11 Predicted Construction Noise Levels Outside of Standard Hours 116
Table 6–12 Predicted Noise Levels on Local Roads 117
Table 6–13 WTG Noise Predictions at Non-Associated Dwellings and Sensitive Receivers 118
Table 6–14 Visual LCU Assessment 130
Table 6–15 Key Biodiversity Constraints 135
Table 6–16 Biodiversity Field Surveys 136
Table 6–17 Observed PCTs in the Project Area 136
Table 6–18 Threatened Ecological Communities 138
Table 6–19 Threatened Species Summary 138
Table 6–20 Bat and Bird Survey Data 139
Table 6–23 Direct Ecological Impacts 144
Table 6–24 Biodiversity Indirect Impacts 146
Table 6–25 Biodiversity Prescribed Impacts 150
Table 6–26 Predicted Bird and Bat Impacts Associated with WTG collision 156
Table 6–27 Cumulative Impact Summary 157
Table 6–28 MNES within the Project Area 158
Table 6–29 Biodiversity Mitigation Summary 161
Table 6–30 Biodiversity Offsets Project Area – Ecosystem Credits 164
Table 6–31 Biodiversity Offsets Barrier Range – Ecosystem Credits 165
Table 6–32 Biodiversity Offsets Project Area – Species Credits 165
Table 6–33 Biodiversity Offsets Barrier Area – Species Credits 166

Table 6–34 Aboriginal Community Consultation Summary 167
Table 6–35 Aboriginal Heritage Desktop Search Results 169
Table 6–36 Aboriginal Cultural Heritage Sites Recorded During the Site Survey 170
Table 6–37 Aboriginal Heritage Impact Summary 173
Table 6–38 Aboriginal Heritage Management Summary 175
Table 6–39 Historic Heritage Desktop Search Results 179
Table 6–45 Proposed Infrastructure within Waterfront Land 196
Table 6–46 Annual Extraction Limits for Murrumbidgee Valley Alluvial Groundwater Sources 203
Table 6–47 Site Water Demand Construction 204
Table 6–48 Traffic Terminology 207
Table 6–49 Traffic Generation During Construction Period 208
Table 6–50 Vehicle Distribution 208
Table 6–51 Cumulative Traffic Impacts with nearby Developments 209
Table 6–52 SIDRA Analysis Results Summary 209
Table 6–53 Mid-block Traffic Assessment 210
Table 6–54 Traffic Road Names and Jurisdictions 211
Table 6–55 Telecommunication Links in Close Proximity to the Project Area 219
Table 6–56 Link Details 220
Table 6–57 Cumulative Impacts on Telecommunications Services 222
Table 6–58 GRID LSALT Impact Analysis 226
Table 6–60 Aviation Risk Assessment Summary 229
Table 6–61 Identified Potentially Hazardous Scenarios 232
Table 6–62 Frequency of Blade Throw Incidents Occurring 238
Table 6–63 Summary of Theoretical Blade Throw Distances (Sarlak and Sørensen, 2026) 239
Table 6–64 Typical Risks of Common Activities Compared to Blade Throw Risks 241
Table 6–65 Bushfire Vegetation Assessment 243
Table 6–66 Background Air Quality Monitoring (Hay Airport) 250
Table 6–67 Existing Waste Management Facilities and Streams 255
Table 6–68 Indicative Construction Waste Streams 257
Table 6–69 Indicative Operational Waste Streams 258
Table 6–70 Indicative Decommissioning Waste Streams 259
Table 6–71 Social Impacts Summary by Evaluated Significance 262
Table 6–72 SIA Mitigation Measures by Affected Groups 268
Table 6–73 Average Annual Construction Impacts 273
Table 6–74 Annual Regional and NSW Economic Impacts of Forgoing Agriculture in Construction 274
Table 6–75 Average Annual Operational Impacts 275
Table 6–76 Annual Regional and NSW Economic Impacts of forgoing Agriculture in Operation 276
Table 6–77 Cumulative Developments and Potential Impacts 280
Table 6–78 Cumulative Impacts Summary 282
Table 7–1 Summary of Project Impact Minimisation and Benefits through Layout Refinement 285
Table 7–2 Project Alignment with Principles of ESD 288
Table 7–3 Project Environmental Costs and Benefits Summary 289
Table C1 SEARs Requirements: SSD-59235464 1
Table C2 SEARS Regulator Submissions SSD-59235464 8
Table C3 Supplementary SEARs Requirements for SSD-59235464 20
Table C4 Additional SEARs for Southern Extension Area - SSD-59235464 22
Table E1 WTG Parameters 1
Table F1 Lot / DPs to which applies to Host Landowner 1 1
Table F2 Lot / DPs which applies to the Host Landowner 2 2
Table F3 Lot / DPs to which apply to the BESS 3
Table F4 NSW Lot / DPs to which the Application applies (Transport Route) 3
Table F5 SA Parcel/Plans to which the Application applies (Transport Route) 4

Figures

Figure ES0-1 Conceptual Project Layout 4
Figure 1-1 Regional Locality 11
Figure 1-2 The Riverine Grazier, 'Manny Pottinger honoured in project naming', November 29 2023 13
Figure 1-3 Conceptual Project Layout Overview 16
Figure 2-1 Wind Resource Mapping 26
Figure 2-2 Land Use 27
Figure 2-3 Project Locality 29
Figure 2-4 Cumulative Developments 31
Figure 2-5 Existing Natural Environment 33
Figure 2-6 Land Zoning 36
Figure 2-7 Existing Built Environment 37
Figure 2-8 Land Ownership 40
Figure 2-9 Land Ownership – Crown Land 41
Figure 2-10 Original Project Layout 46
Figure 2-11 Layout Amendments 51
Figure 2-12 Project Constraints 52
Figure 3-1 Conceptual Project Layout 55
Figure 3-2 Project Boundaries 57
Figure 3-3 Conceptual Project Layout – North East 60
Figure 3-4 Conceptual Project Layout – North West 61
Figure 3-5 Conceptual Project Layout – South East 62
Figure 3-6 Conceptual Project Layout – South West 63
Figure 3-7 West Burrabogie Road Conceptual Access Design 68
Figure 3-8 Jerilderie Road Conceptual Access Design 69
Figure 3-9 Wargam Road Conceptual Access Design 70
Figure 3-10 East-West Road Conceptual Access Design 71
Figure 3-11 Cobb Highway / Warwillah Road Strategic Design 72
Figure 3-12 Indicative External Transport Route and Road Upgrades 73
Figure 3-13 Indicative Subdivisions 76
Figure 5-1 Social Locality 97
Figure 6-1 Visual Magnitude 125
Figure 6-2 Visual Montage NAD_02 127
Figure 6-3 Visual Montage NAD_26 128
Figure 6-4 Visual Landscape Features 132
Figure 6-5 Plant Community Types – Vegetation 142
Figure 6-6 Threatened Flora and Fauna 143
Figure 6-7 Aboriginal Heritage Sites 171
Figure 6-8 Aboriginal Heritage Sites by Management Measure 178
Figure 6-9 Land and Soil Capability 189
Figure 6-10 1%AEP Flood Event 200
Figure 6-11 5%AEP Flood Event 201
Figure 6-12 Bushfire Prone Land 247

Appendices

Appendix A Risk Assessment
Appendix B Project Team
Appendix C SEARs and Regulatory Requirements
Appendix D Statutory Compliance
Appendix E WTG and Infrastructure Parameters
Appendix F Schedule of Lands and Restrictions and Covenants
Appendix G Mitigation and Management Summary
Appendix H Noise Impact Assessment
Appendix I Visual Impact Assessment
Appendix J Biodiversity Assessment Report
Appendix K Aboriginal Cultural Heritage Assessment Report
Appendix L Historic Heritage Assessment Report
Appendix M Soils and Agricultural Assessment
Appendix N Hydrology Impact Assessment
Appendix O Traffic Impact Assessment
Appendix P Telecommunications Impact Assessment
Appendix Q Aviation Impact Assessment
Appendix R Preliminary Hazards Analysis
Appendix S Bushfire Assessment Report
Appendix T Social Impact Assessment
Appendix U Economic Impact Assessment

REAP DECLARATION

Project details	
Project name	Pottinger Wind Farm
Application number	SSD-59235464
Address of the land on which the infrastructure is to be carried out	West Burrabogie Road Booroorban NSW 2710
Applicant details	
Applicant name	Pottinger Renewables Pty Ltd
Applicant address	Level 8, 16 Spring Street Sydney NSW 2000
Details of person by whom this EIS was prepared	
Name	Dianne Munro
Address	2a/45 Fitzroy Street Carrington NSW 2294
Professional qualifications	Master of Environmental Law Bachelor of Science Registered Planner
Declaration by registered environmental assessment practitioner	
Name	Dianne Munro
Registration number	100073
Organisation registered with	Planning Institute of Australia
Declaration	The undersigned declares that this EIS: • Has been prepared in accordance with Division 5, Part 8 of the *Environmental Planning and Assessment Regulation* 2021; • Contains all available information relevant to the environmental assessment of the development, activity or infrastructure to which the EIS relates; • Does not contain information that is false or misleading; • Addresses the Planning Secretary's environmental assessment requirements for the Project; • Identifies and addresses the relevant statutory requirements for the Project, including any relevant matters for consideration in environmental planning instruments; • Has been prepared having regard to the Department's State Significant Development Guidelines - Preparing an Environmental Impact Statement; • Contains a simple and easy to understand summary of the Project as a whole, having regard to the economic, environmental and social impacts of the Project and the principles of ecologically sustainable development; • Contains a consolidated description of the Project in a single chapter of the EIS; • Contains an accurate summary of the findings of any community engagement; and • Contains an accurate summary of the detailed technical assessment of the impacts of the Project as a whole.
Signature	
Date	16 May 2024

EXECUTIVE SUMMARY

This Summary provides a non-technical overview of the Project and assessment outcomes only and should be read in conjunction with the Environmental Impact Statement.

Introduction

This Environmental Impact Statement has been prepared for Pottinger Renewables Pty Ltd (Applicant) to assess the environmental aspects relating to the development of the Pottinger Wind Farm (Project). The Project is a joint venture between AGL Energy and 100% Australian-owned renewable energy company Someva Renewables. This wind generation Project will provide a reliable and affordable source of electricity and help mitigate greenhouse gas emissions associated with energy generation. It will also provide significant economic benefits to the Riverina Murray region with an Estimated Development Cost of $2.152 billion.

The Project is located in the rural locality of Booroorban 60 kilometres south of Hay within the Riverina Murray region of NSW, within the Hay and Edward River Local Government Areas. The Project is also located within the South West Renewable Energy Zone, one of five areas identified by the NSW Government to target for development of new renewable energy generation, transmission and storage Projects. The NSW Government has indicated Renewable Energy Zones will play a vital role in delivering affordable energy generation following the retirement of coal power stations over the coming decades.

The Project Area extends across 26,000 hectares across land owned by two associated host landholders. The Project includes a wind farm, a battery energy storage system, electrical reticulation and associated ancillary features. The Disturbance Footprint of the Project will be up to 1,066 hectares during construction.

The Project has been declared State Significant Development under Part 2.2, clause 2.6 and Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* and therefore requires development consent under Part 4 of *Environmental Planning and Assessment Act 1979*.

RPS Group AAP Consulting Pty Ltd has prepared this EIS on behalf of the Applicant to support the State Significant Development Application for the Project (SSD-59235464).

This Environmental Impact Statement also supports a Section 75 the *Environmental Protection and Biodiversity Conservation Act 1999* Application (EPBC 2023/9679).

Project Need

Electricity is Australia's largest source of emissions, accounting for around 33% of Australia's total annual emissions. Commonwealth and NSW Governments have made a commitment to reduce emissions under the United Nations Paris Agreement and have set a target to achieve net zero emissions by 2050. The transformation of the Australian energy sector to a mix of low-emission renewable energy sources, such as wind and solar will help achieve this target.

The Project will support the transformation of the energy sector from a centralised system of large fossil fuel (coal and gas) generation towards an array of smaller scale and widely dispersed wind, solar and other renewable energy generators. It is estimated all existing NSW coal-fired power plants (capacity of approximately 8,000 Megawatts) will be retired by 2040, new low emission energy sources are required to replace power plants and to meet future energy demands.

The Australian Energy Market Operator's 2022 'Integrated System Plan' forecasts a substantial growth in electricity demand, due to the electrification of transport, industry, office and homes; reduced use of fossil fuels; and economic growth. To meet this demand by 2050, the amount of electricity delivered to the National Energy Market will need to significantly increase. The Project will help meet the demand for renewable electricity by providing 1.3 Gigawatts of renewable energy capacity to the National Energy Market.

Project Summary

The Project will involve the construction, operation and decommissioning of a wind farm and associated infrastructure with a targeted electricity generation capacity of 1.3 Gigawatts. The Project will supply electricity to the national electricity grid via the existing electricity transmission network and participate in the National Electricity Market.

The Project is part of the Pottinger Energy Park, which includes the Project and a solar farm with 600,000 photovoltaic solar arrays with a separate capacity of 300 Megawatts. Someva Renewables proposes to develop the solar and wind farm as two separate viable development applications.

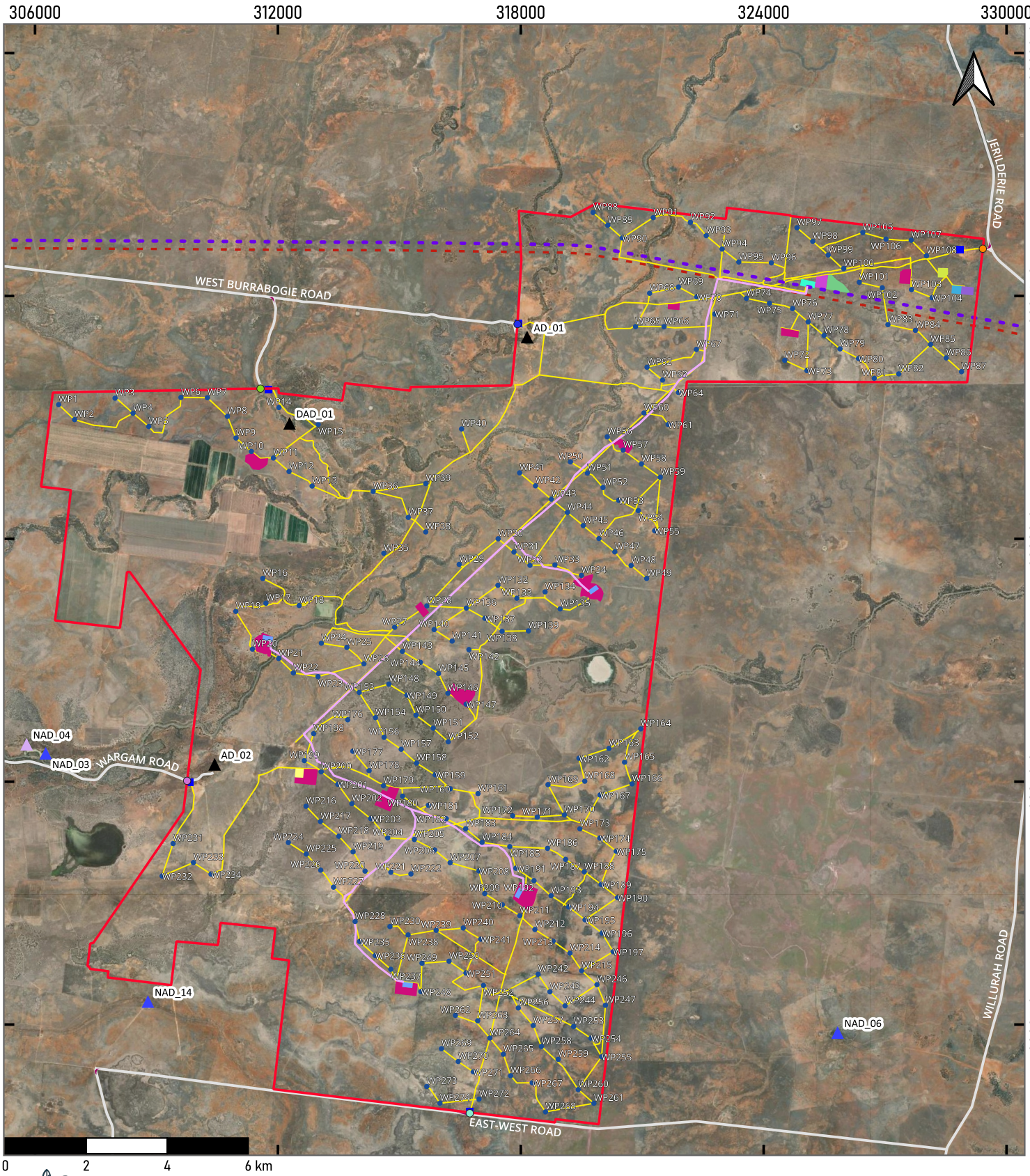
The Project has gone through a comprehensive design process that considered community and stakeholder feedback, as well as the findings of environmental and social studies. This process aims to maximise positive social, economic and environmental outcomes while minimising any negative impacts.

Since inception, amendments include: the removal of 24 wind turbine generators, relocation of 18 wind turbine generators, relocation of battery energy storage system to reduce impacts to receivers, increase of 42.6 hectares from the Project Disturbance Footprint and removal of several access tracks resulting in savings of 16.3 hectares.

The key features of the Project are:

- Up to 247 wind turbine generators;
- Electrical reticulation infrastructure, including substations, transformers, 500 Megawatt Battery Energy Storage Facility, substation and internal electrical reticulation network and infrastructure connecting to the Project EnergyConnect line;
- On-site Permanent Supporting Infrastructure, including:
  - Site access road and entry;
  - Operations and Maintenance facilities and infrastructure including site office, control room, storage facilities, car parking and fencing;
  - Accommodation facilities;
  - Construction and operational compounds;
  - Hardstands for WTGs and other infrastructure;
  - Internal access tracks and road turning head connecting Project infrastructure;
  - Meteorological masts; and
  - Concrete batching plants, crushing facilities, gravel / borrow pits, construction laydown areas.
- Off-site Supporting Infrastructure, including:
  - Waste disposal facilities; and
  - Existing public roads and communication network.
- Access road upgrades at four locations, as well as emergency access;
- Transport of wind farm major components transported via Port of Adelaide; and
- The Project layout overview is provided in **Figure ES0-1.**

During the planning and design phase, the Applicant considered a number of designs which were refined based on community feedback and to minimise environmental, cultural, and social impacts while balancing the technical needs of the Project.



Pottinger Wind Farm

Figure ES0-1 Conceptual Project Layout

SOMEVA RENEWABLES

Date:	21/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3.1
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink

- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Location

Existing Infrastructure

- Main Roads
- Project Energy Connect
- Existing 220kV Transmission

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

Stakeholder Engagement

The Applicant has been actively engaging with the community and stakeholders to inform the design of the Project to ensure potential environmental and social impacts were minimised and benefits to the community and stakeholders were maximised. The Applicant is committed to effective and genuine engagement with stakeholders and the local community to obtain feedback to help inform the Project. Engagement will continue through subsequent phases of the Project.

The range of stakeholders that have been, and will continue to be engaged is extensive, and includes various NSW and Commonwealth government agencies, local councils, host landholders, neighbouring landholders, local community, community groups, Aboriginal parties, and infrastructure owners.

Engagement with stakeholders regarding the Project commenced in 2022 with a focus on establishing long term relationships and gaining insights into the views and requirements of those living around the Project. This targeted engagement involved discussions with local landowners (including adjacent property owners), councils, First Nations groups, local service providers, and government agencies. Engagement with the community continued during the feasibility stages of the Project, and in preparation of the Scoping Report.

Early consultation provided an opportunity to understand key stakeholder sentiment towards the Project and feedback relating to environmental and social aspects required to be addressed as part of the Environmental Impact Statement.

A Stakeholder Engagement Plan was prepared during preparation of the Scoping Report to guide ongoing consultation and engagement throughout the development of the Environmental Impact Statement and subsequent phases of the development of the Project. Engagement for the Project has been led by Communication Specialists Lecroma who are based in the South West Renewable Energy Zone.

All interactions with stakeholders were captured in a stakeholder register including stakeholder details, interaction details and follow up actions. Several tools were used to engage and seek feedback from stakeholders including community pop-up sessions, face to face and virtual meetings, phone and email interactions, community events, community survey, Project website, briefing factsheets, newsletters, social media and site visits. This resulted in over 200 individuals and 55 local organisations (excluding government regulators) being consulted during preparation of the Environmental Impact Statement.

Feedback from stakeholders and the community included both positive and negative views on a range of aspects of the Project. Overall, engagement has demonstrated support by a significant number of the local community in Hay and the surrounds, who have recognised the Project as a source of employment opportunities and generation of clean energy. Stakeholders were interested in understanding how local businesses could be involved with the Project and how benefits could be shared within the community. The Applicant has considered the issues raised and incorporated these where relevant into the Project design.

The Applicant will continue to engage with the community throughout construction, operation and decommissioning of the Project and has committed to developing a community Benefit Sharing Plan with the local community aimed to help build and support local Projects and initiatives; as well as a Voluntary Planning Agreement with each of Hay and Edward River Shire Councils.

Environmental and Social Impact Assessment

The EIS includes a detailed assessment of potential environmental, social and economic outcomes of the Project and proposes, where required, mitigation measures to manage adverse environmental, social and economic aspects.

The Project will be constructed and operated in accordance with all conditions imposed by any Development Consent granted and will implement the mitigation and measures detailed in the Environmental Impact Statement.

Table ES1 provides a summary of the potential positive outcomes and negative impacts that may occur during construction, operation and decommissioning of the Project. Each detailed assessment has been prepared for the EIS in consideration of relevant guidelines, Project's Secretary's Environmental Assessment Requirements and stakeholder engagement.

Table ES1 Environmental Impact Summary

Issue	Potential impacts
Noise	• Noise levels during construction are predicted to comply with noise criteria with the exception of Stage 2 – earthworks which are estimated to be 3 dBA above • Construction traffic noise levels are predicted to be below the road traffic noise criteria • Noise during operation is predicted to comply with noise criteria • Vibration impacts during construction, operation and decommissioning are not expected • A Noise Management Plan will be prepared to manage potential impacts
Landscape and Visual	• Development of the Project will result in some changes to the landscape • Of the seven non-associated dwellings assessed within 8 km from the nearest turbine, only one-non-associated dwelling was identified as having a potential for a high visual impact. However, this dwelling is derelict and uninhabited. Mitigation measures will be implemented in consultation with the owner, should it become habitable. • A low to moderate visual impact is expected from all other viewpoints surrounding the Project • A shadow and flicker blade assessment determined no non-associated dwellings were identified with a potential to exceed shadow flicker criteria
Biodiversity	• The Project layout has been refined to avoid and minimise potential impacts to biodiversity, resulting in avoidance of areas of high biodiversity value to the greatest extent feasible • The Project will result in impacts to 15 native PCTs, three *Biodiversity Conservation Act 2016* listed threatened ecological community (*Acacia melvillei* shrubland, Weeping Myall Woodland and Sandhill Pine Woodland), one *Environment Protection and Biodiversity Conservation Act 1999* listed threatened ecological community (Weeping Myall Woodland) and known habitat for four threatened flora credit species (Chariot Wheels, Slender Darling Pea, Mossgiel Daisy and Silky Swainson-pea) and three fauna credit species (Pink Cockatoo, Plains-wanderer and Southern Bell Frog) • A desktop review of proposed transport route upgrades near Broken Hill determined there will be potential impacts to four native PCTs, including one *Biodiversity Conservation Act 2016* listed threatened ecological community and known habitat for seven threatened flora credit species and 10 fauna credit species. • Relevant mitigation and management will be undertaken with a Biodiversity Management Plan and Bird and Bat Adaptive Management Plan • Biodiversity offsets will be secured in accordance with requirements of the Biodiversity Development Assessment Report and final project layout
Aboriginal Heritage	• Avoidance of Aboriginal cultural heritage values have been considered where possible in the design refinement process • Of the 114 Aboriginal heritage sites within the Survey Area, following project redesign, only 17 will be directly impacted (high impact) by the Project, and 36 will experience a moderate impact • An Aboriginal Cultural Heritage Management Plan will be prepared and will include an unexpected finds procedure
Historic Heritage	• There are no listed historic heritage sites of local, state of national significance in the Project Area • The archaeological potential of the Project Area is low and if any items are uncovered during construction, they will likely comprise remnants of former late nineteenth to early twentieth century residence and hut of Wargam Estate plus associated which will be managed in accordance with the Historic Heritage Unanticipated Finds Protocol
Soils	• Impacts to soils are expected to be minor and largely confined to the Survey Area. Any potential impacts can be effectively managed through the implementation of sediment and erosion controls • The Project Area is characterised by a flat topography and as a result the risk of erosion from surface water flows is considered low
Agriculture	• Agricultural activities will be maintained within the Project Area (as much as possible) for the duration of construction, operation and decommissioning of the Project in consultation with the host landholder • Impacts on agriculture are expected to be temporary, largely confined to the Survey Area, and readily manageable through the implementation of management and mitigation measures

Issue	Potential impacts
Hydrology and Flooding	• Most of the turbines are below the estimated 0.3 m flood depth in an 1% AEP event, 54 WTGs are located above the 0.3 m flood depth with a maximum recorded depth of 0.9 m at WTG 72 • Construction of some Project infrastructure (i.e. access tracks, transmission cables and WTG hardstands) are proposed on waterfront lands (i.e. within 40 m of any watercourses) which may result in some disturbance to minor flow/drainage paths • No impacts on groundwater are anticipated and risks to water quality will be readily manageable through the implementation of management and mitigation measures • Water demand during construction is conservatively estimated up to 623 ML and shall be sourced from various sources in consultation with the landholder and relevant regulators. Water demand during operations will be minimal. • Mitigation and management measures for hydrology and flooding will form part of the Construction Environmental Management Plan, Operational Environmental Management Plan and Decommissioning and Rehabilitation Plan prepared for the Project
Water Resources	• Potential impacts on water resources for the Project Area are related to the increased risk of erosion and sedimentation and spills of wastewater, hydrocarbons or other pollutants because of construction activities, and the disturbance to the Project Area. Due to the flat topography, there is potential for spills to pool and subsequently infiltrate soil. • Potential impacts to water resources will be readily manageable through the implementation of management and mitigation measures • Water use requirements for the Project can be met from local sources
Traffic	• A new site access via Jerilderie Road has been designed for access to the Project Area for all heavy vehicles required for the construction phase • Up to four site access points will be designed for all heavy vehicles required for the construction phase • Nine road upgrades requiring direct disturbance between Port of Adelaide and site have been identified and assessed • Intersection turn treatments will be undertaken to facilitate the Project at: Cobb Highway / West Burrabogie Road, Cobb Highway / Wargam Road / Symons Crescent, Cobb Highway / Warwillah Road and Kidman / Four Corners Road • The transport of plant and equipment required for the Project from the Port of Adelaide will be managed via relevant operating protocols • A Traffic Management Plan will be prepared to mitigate the impacts of site traffic generated along the proposed transport route
Telecommunications	• Project impacts on telecommunication links, transmitters/receivers, point to point links, are not predicted as within the Project Area • No impacts to BOM assets, wireless/satellites, digital radio or mobile towers are also predicted
Aviation	• The blade tip elevation of the highest wind tube generator exceed the 25nm MSA by 534.6 feet • Impact analysis of the surrounding air routes found that two air route LSALTS close to the Project will need to be amended to accommodate the wind turbine generators • No impacts on emergency services form the Project is predicted when standard procedures are adopted including consultation
Hazards	• Risks to the public associated with the operation of the Project (including the battery energy storage system), such as the potential for fire, can be effectively managed by maintaining appropriate separation distances between infrastructure and the Project Area • A comprehensive risk management and emergency response procedure will be implemented through operational management plans
Blade Throw	• With the closest habituated dwelling at 2.2 km, there is a very small likelihood of a blade being thrown a significant distance and as a result the risk associated with a blade throw event is very low
Bushfire	• The Project Area has a low bushfire hazard potential based on the vegetation classification and slope of the land. Areas of isolated woodland vegetation present the greatest bushfire hazard, however this type of vegetation is only found in small areas throughout the Project Area. • Bushfire risk can be effectively managed by implementing appropriate fire prevention and control measures in including maintenance of Asset Protection Zones (which have been incorporated into the Project design), provision of suitable access roads and static water tanks

Issue	Potential impacts
Air Quality	• Potential air quality impacts are expected to the temporary and limited to dust generation during construction. The implementation of management and mitigation measure will minimise potential impacts to air quality. • The Project will improve air quality by reducing emissions that would otherwise be generated through the burning of fossil fuels to generate electricity from traditional coal fired power stations
Waste	• Waste generated during construction operation and decommissioning will be minimised in accordance with statutory requirements • Recycling options will be investigated for the WTG and the lithium-ion batteries when they have reached their end-of-life • A Waste Management Plan will be prepared and will describe the measures to be implemented to manage, reuse, recycle and safely dispose of waste
Socioeconomics	• Potential adverse social impacts may include reduced availability of local accommodation and services during construction due to external workforce moving into the Hay region from other locations • At a state level, the Project is expected to benefit the economy in relation to the transition to renewable energy, and the level of investment. At a local and regional level, positive impacts will include jobs and commercial opportunities (particularly during construction), and additional economic benefit to the area from money being spent in the local economy.
Cumulative	• Cumulative impacts on aspects such as land use, soils, noise and traffic are difficult to predict and quantify due to the uncertain timeframes of other potential developments in the region. However, any impacts will be restricted to the short-term, construction period given the potential for cumulative impacts during operation will be negligible. • Cumulative impact on agriculture for the region is expected to be low, as the changes to agricultural land use and agricultural productivity are anticipated to minor from the Project and each state significant development

Justification and Evaluation

The Project is essential with respect to the national and global response to combatting anthropogenic climate change. It will contribute positively to the energy sector-wide transition from traditional fossil fuel energy generation to wholesale renewable energy generation and will contribute to the NSW and Commonwealth greenhouse gas emission reduction commitments. The Project also aligns with government objectives for energy security and reliability and will contribute to the ongoing growth of renewable energy generation and storage capacity.

The Project is in the South West Renewable Energy Zone (REZ). The South West REZ is one of five REZs created within NSW which will combine wind, solar, hydroelectric and energy storage, together with high-voltage transmission lines, to generate and deliver clean, renewable energy. The location of the South West REZ was selected following detailed statewide geospatial mapping undertaken by the NSW Government which identified areas of strong renewable energy resource potential (i.e. wind speeds) which were in the vicinity of existing transmission infrastructure and compatible with existing land uses.

The Project is consistent with the Ecologically Sustainable Development principles and it is in the public interest. The employment and economic opportunities created by the Project were largely supported by the community during engagement. The Project will:

- Deliver renewable, low-cost energy to the NEM and contribute to Government's net zero emissions targets, providing new power generation capacity to replace coal-fired power stations;
- Will be developed on agricultural land which has been historically disturbed and/or cleared. Wind farms are compatible with existing farming operations as landowners can continue normal surrounding the wind turbines;
- The layout has been designed to maximise the use of existing disturbed areas and refined to avoid or minimise environmental and social impacts, particularly those relating to biodiversity and Aboriginal cultural heritage values;

- Will deliver economic benefits to NSW, region and local communities including (approximately):
  - $250 million in annual direct and indirect output, $91 million in direct and indirect value added, $49 million in direct and indirect household income, and up to 900 FTE jobs in construction;
  - $371 million in direct and indirect output, $318 million in direct and indirect value added, $7 million in direct and indirect household income, and 50 FTE jobs in operations;
  - Providing a diversified income stream through payments to associated landholders; and
  - Provide benefits to regional infrastructure and services though a Community Benefits Fund and Voluntary Planning Agreement.

The Applicant will plan and manage construction to minimise disturbance and impacts through:

- Regular and ongoing communication with the community;
- Working during standard construction hours as described in this Environmental Impact Statement;
- Communicating with affected stakeholders where it may be necessary to work outside standard working hours, or where work is expected to be disruptive;
- A rigorous safety culture; and
- Conducting environmental monitoring and maintain an Environmental Management System.

Through the implementation of all mitigation and management measures, any residual environmental impacts associated with the Project can be appropriately managed. This will also address any potential community concerns and associated social impacts identified during the stakeholder engagement.

Should the Project not proceed, the potential benefits described within this Environmental Impact Statement would not be realised. In addition, it would be more difficult in the short-term for the Commonwealth and NSW Governments to achieve their respective renewable energy and greenhouse gas emission reduction targets, while the future security of electricity supply in NSW would be weakened.

1 INTRODUCTION

This Section provides context for the detailed Project assessment in this Environmental Impact Statement. It includes the Applicant's details, a high-level project description, Project objectives and regional setting. This Section further provides background (including any relevant history), strategies to avoid, minimise or offset the Project's impacts, description of any related or development to be relied upon, and any restrictions or covenants which apply to the Project Area.

1.1 Background

Pottinger Renewables Pty Ltd (Applicant) seeks to construct, operate, maintain and decommission the 1.3 Gigawatt (GW) Pottinger Wind Farm (Project). The Project will form part of the 1.6 Gigawatt (GW) Pottinger Energy Park; with the Pottinger Solar Farm (PSF), subject to a separate development application.

AGL Energy and Someva Pty Ltd (Someva Renewables) are developing the Project. AGL has been proudly Australian for more than 186 years and operates Australia's largest private electricity generation portfolio within the National Electricity Market (NEM). AGL is committed to innovating in energy to enhance the way current and future generations of Australians live. Someva Renewables is 100% Australian-owned and is committed to building the Pottinger Energy Park sustainably and responsibly, working with government agencies, First Nations people, community organisations, and Project landowners who are farming families.

The Project is located 60 km south of Hay and 75 km north of Deniliquin in in NSW in the rural locality of Booroorban and on the lands of the Wiradjuri and Nari Nari people. The Project is strategically located within the South West Renewable Energy Zone which aims to capitalise on economies of scale to deliver affordable, reliable and clean electricity for homes and businesses in NSW. The regional locality of the Project is illustrated in **Figure 1-1.**

The Project is State Significant Development (SSD) pursuant to Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Development consent for the Project is sought under Part 4, Division 4.7 of the *Environmental Planning and Assessment Act 1979* (EP&A Act).

The Application is supported by this Environmental Impact Statement (EIS) which was prepared by RPS AAP Consulting Pty Ltd (RPS) on behalf of the Applicant. A comprehensive Project risk assessment was conducted to focus assessment within this EIS and is provided in **Appendix A.**

The Applicant, RPS and individual technical consultants have provided input to the preparation of this EIS. The Project Team is listed in **Appendix B.**

The EIS has been prepared in accordance with (at least) the following documents:

- *Environmental Planning and Assessment Action 1979* (EP&A Act);
- *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation);
- 'Secretary's Environmental Assessment Requirements SSD-59235464' issued on 10 July 2023, "Supplementary SEARs" issued on 3 April 2024 (SEARs) and as updated 6 May 2024 for Southern Extension Area (Additional SEARs) as reproduced in **Appendix C;**
- 'State Significant Development Guidelines – Preparing an Environmental Impact Statement' (EIS Guidelines) (DPE, 2022);
- 'NSW Wind Energy Guideline for State Significant Wind Energy Development' (DPE, 2016a), including:
  - 'Wind Energy: Visual Assessment Bulletin' (DPE, 2016b) (Visual Bulletin);
  - 'Wind Energy: Noise Assessment Bulletin' (DPE, 2016c) (Noise Bulletin);
- 'Draft Wind Energy Guideline and Technical Supplements' (DPE, 2023);
- 'Cumulative Impact Assessment Guidelines for State Significant Projects' (DPIE, 2022);
- 'Social Impact Assessment Guideline for State Significant Projects' (DPIE, 2023a) (Social Guideline); and
- 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2022c) (Engagement Guideline).



Pottinger Wind Farm

Figure 1-1 Regional Locality

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:1650000
Basemap:	ESRI (2022)
Data Sources:	NSW Spatial Portal (2022) Energy Co (2024)

Prepared By: EL Reviewed by: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

- Project Area
- Pottinger Solar Farm Project Boundary

Government Areas
- Edward River LGA
- Hay LGA
- Murrumbidgee LGA
- State Boundary
- South West REZ

Legend

Existing Infrastructure
- Main Roads
- Railway Lines
- Airports

Transmission Lines
- 132 kV
- 220 kV
- 330 kV
- Project Energy Connect
- VNI West (preferred route)

Surrounding Projects
- BESS
- Energy Hub (EH)
- Energy Park (EP)
- Solar Farm (SF)
- Wind Farm (WF)

Protected Areas
- National Park
- Nature Reserve
- Historic Site
- Regional Park
- Historic Site

This EIS also considers the findings from stakeholder engagement including community, regulators, the Aboriginal community and other interested stakeholders.

The Project was determined as 'Controlled Action 2023/9679' on 6 March 2024 under Section 75 the *Environmental Protection Biodiversity Conservation Act 1999* (EPBC Act) as further discussed in **Section 6.4**. This EIS also supports the EPBC Act Application.

Statutory compliance is established in **Appendix D**. **Appendix E** includes a list of WTGs and infrastructure parameters as required by the SEARs. **Appendix F** provides a schedule of lands to which this EIS applies both within the Project Area (by host landholder) and external to the Project Area (both NSW and South Australian transport routes).

A consolidated summary of management and mitigation measures within this EIS is provided in **Appendix G**. Individual technical studies which support this EIS are included in **Appendix H** to **Appendix U**.

Section 8 includes terminology and acronyms used in this EIS, whilst **Section 9** provides a list of references.

1.2 History

Someva identified the locality as an area of interest for the Project in 2019 due to the Project EnergyConnect transmission line (see **Figure 1-3**), reliable solar and wind resources, significant distances to non-associated dwellings, and suitable grazing pasture, and terrain.

Someva commenced consultation with the Project's first local farming landowner in 2021 and together worked on a range of pre-feasibility activities to progress the Project. A second landholder became a further partner in the Pottinger Energy Park in 2023.

The Pottinger Energy Park has been named after the Pottinger Family and the district windmill prodigy Manny Pottinger, who for over two generations, installed and maintained windmills in the region. Manny started working on windmills in 1903, and continued to work on them almost until the day he died in 1986, at the age of 82.

Manny was invaluable in his work in the Conargo district and surrounds. His early adoption of wind energy during the early 1900s not only revolutionised local agriculture but also contributed to the resilience and prosperity of the community. Terry McGoverne's remark, "Without this vision to embrace a new technology of the time, it would have been little short of murder to turn sheep loose into those paddocks," captures the profound impact of his foresight.

The Pottinger Energy Park embodies a transformative vision that honours Manny Pottinger's pioneering spirit in embracing wind energy during the early 1900s.

Wednesday November 29, 2023 The Riverine Grazier - 11

Blast from the Past

Manny Pottinger honoured in project naming

The information used to create this article was sourced from the website of Liesl Malan Landscape Artists, Edward River Council website, and Someva Website.

Manny Pottinger, an icon of Conargo Shire and surrounding districts, has been honoured in a renewable energy project.

Someva Renewables, a specialist renewable energy developer operating in Australia, has named its local project, Pottinger Energy Park.

Someva quotes on its website interesting views of the time windmills were new technology, 'Without this vision to embrace a new technology of the time it would have been little short of murder to turn sheep loose into those paddocks' - Terry McGoverne, the Wool Barons.

It is a touching connection and acknowledgment of the area in which the project is occurring, to name their local project Pottinger after the Pottinger family and the district windmill prodigy Manny Pottinger, who over two generations, installed and maintained windmills in the region from the early 1900s till 1982.

Pottinger Park in Conargo provides a history of the windmill in the region and its importance to growing the Merino industry.

This strong history demonstrates the importance of Manny Pottinger in supporting livelihoods in the region and how it will continue through the proposed Pottinger Energy Park.

Manny's real name was Lionel, but he preferred to go by Manny.

A quiet modest man, who went about his business with a minimum of fuss, his windmill repair skills were known throughout the Riverina.

Manny was working for the Falkiner family at Zara station, when Les Falkiner said to him, *'You want to get yourself a utility. I'll keep you in work'*. So, Manny bought a Chevrolet in 1927 for 205 pounds.

He remained with the Falkiner family for 20 years, before going out on his own.

Manny started working on windmills in 1903, and continued to work on them almost until the day he died in 1986, at the age of 82.

Manny's great grandparents owned both the original Conargo Inn and the Billabong Hotel. In later years, his father closed the Conargo, and renamed the Billabong, The Conargo Hotel.

The peppercorn trees on the site were planted over a hundred years ago by Manny's mother Flora, outside the original Conargo Inn.

Manny and Jean Pottinger were married in 1927. They lived in the house near the Conargo Church for 58 years.

Manny and Jean were both widely known and respected.

They quietly got on with what was needed. Jean cared for the church most of her life. Manny restored the Drop Log stables, where he and a mate had once earned a shilling a week for rounding up horses for the stage coach journey between Jerilderie and Deniliquin.

Pottinger Park is the centre of Conargo Village, with the Store on one side and the old Conargo Pub site across the road.

The village sits on the crossroads of the original stock routes and has been a familiar intersection for regular travellers on the inland route since early settlement days.

Pottinger Park was the former Conargo Shire Council's last project and Edward River Council's first park.

It is a tribute to the late Manny Pottinger, Conargo's resident windmill repair man.

Pottinger Park was one of the projects outlined in the Village Masterplan completed for the Shire in 2009.

Central to the design is a windmill which pays tribute to one of the village's favourite residents. Pottinger Park is dedicated to the unsung heroes of the wool industry Manny represented.

For over half a century, he climbed the rungs of almost every windmill in the district to ensure a reliable supply of water for stock.

A boulevard of Jacaranda trees was chosen by community members to reference the trees Joyce and Manny planted in their garden, next door to the park.



The erection of this windmill was a project of Edward River Council. Constructed by Williams Contracting, Tim and his father, John put up the windmill at Pottinger Park in Conargo.

Image credit: Tim Williams Contracting



Manny Pottinger, pictured,was invaluable in his work in the Conargo district and surrounds. He was still performing construction and maintenance duties on windmills until shortly before his passing. He was 82 at the time this image was taken.

Image credit: Liesl Malan Landscape Artists.

Figure 1-2 The Riverine Grazier, 'Manny Pottinger honoured in project naming', November 29 2023

1.3 Applicant

The Applicant is Pottinger Renewables Pty Ltd. The Project is a joint venture between AGL Energy and 100% Australian-owned renewable energy company Someva Renewables.

The relevant company information is:

- ABN: 59 656 520 437
- Contact address is Level 8, 16 Spring Street, Sydney NSW 2000

AGL supplies around 4.3 million energy and telecommunications customer services. AGL operates Australia's largest private electricity generation portfolio within the National Electricity Market, comprising renewable energy sources such as wind, hydro and solar, batteries and other firming technology, coal and gas-fired generation, and gas production and storage assets.

AGL is building on their history as one of Australia's leading private investors in renewable energy to now lead the business of transition to a low-emissions, affordable and smart energy future in line with the goals of their Climate Transition Action Plan (CTAP). The CTAP was released in September 2022 and outlines the approach to decarbonisation, including emission reduction targets and their ambitions to invest in new renewable and firming capacity. The CTAP is publicly available via the AGL website: www.agl.com.au/about-agl/sustainability/our-approach-to-the-environment.

AGL support agribusinesses through partnerships which offer innovative and cost-effective renewable energy technology to power operations and achieve greater energy price certainty and reliability. This includes partnering with local business Australian Farming Services to construct the new 4.9 MW solar farm and 5.4 MW/h BESS at Cadell Orchards near Balranald, NSW which will help cut thousands of tonnes (t) of CO2 emissions annually.

Someva Renewables is a 100% Australian-owned, NSW-based renewable energy company that works with landowners, communities, and industry leaders to deliver the clean, affordable and reliable energy that will power Australia's future. Someva is leading the development of over 3,000 MW+ of wind, solar and battery storage power in Australia through its own portfolio and through strategic project partnerships. Someva carefully selects renewable energy projects before working with communities, leading technical advisors and industry partners, to deliver truly industry-leading renewable energy projects.

Someva is deeply committed to implementing a tailored community co-design process that ensures communities share in and benefit from their renewable energy projects. Someva's co-design process means they spend time in regional communities listening to, and working with regional communities to ensure their Projects deliver tailored economic, social, and environmental outcomes. The Someva Team has been actively engaging with communities in Hay and Deniliquin over the last two years.

1.4 Project Overview

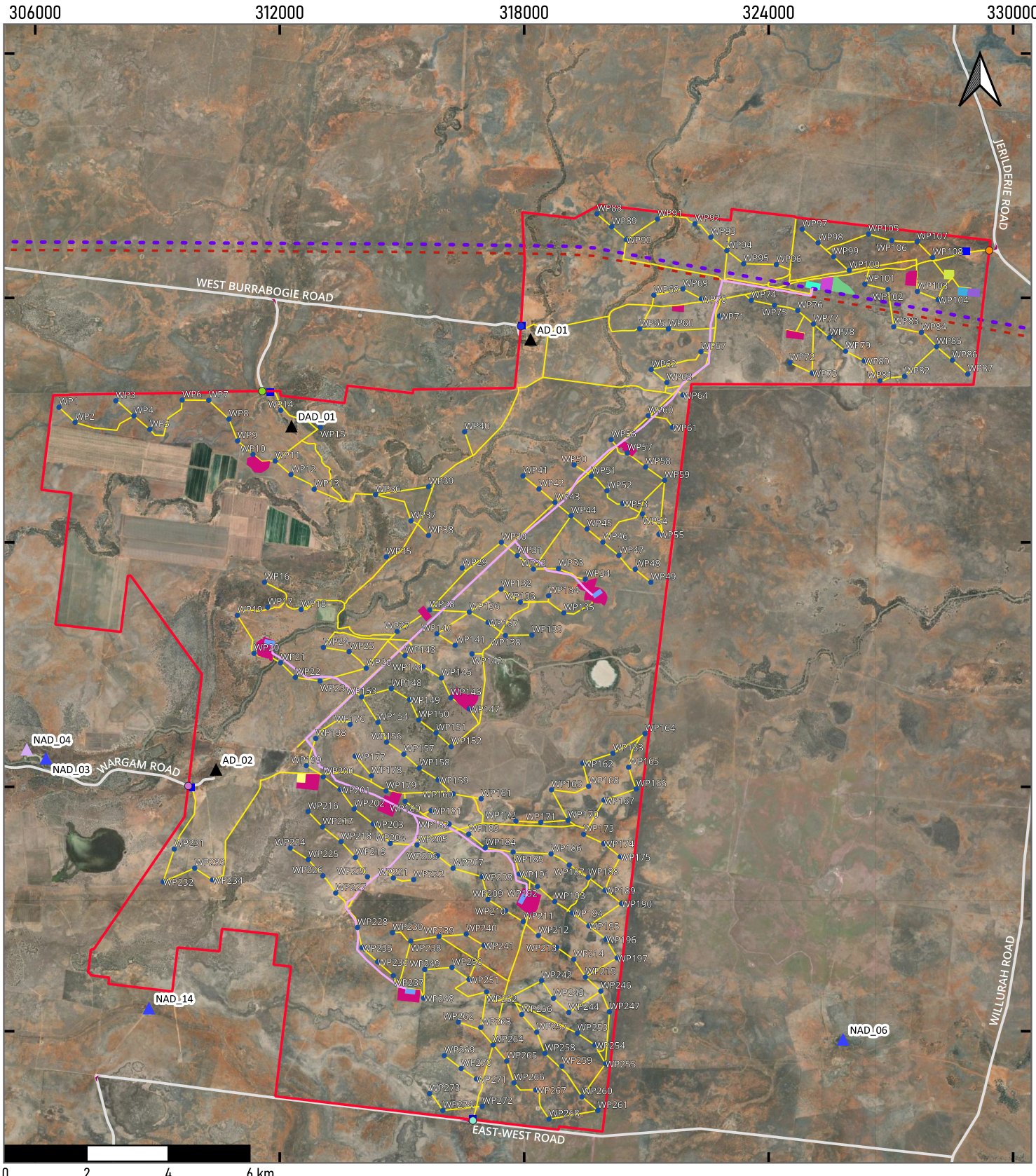
The Project will involve the construction, operation, maintenance and decommissioning of a wind farm and associated infrastructure with a targeted electricity generation capacity of 1.3 Gigawatts (GW). The Project will occur largely within the 26,000 hectares (ha) Project Area as shown on **Figure 1-3** and generally include:

- Operation:
  - Up to 247 wind turbine generators (WTG) with a total capacity of 1.3 GW;
  - Electrical reticulation network:
    - Up to six substations and 13 transformers;
      - One BESS 33/330kV substation with three transformers;
      - Internal 33 kV, 66 kV, 132 kV, or 330 kV electrical reticulation network and infrastructure connecting to the 330 kV Project EnergyConnect line via a switchyard and collector station;
    - Approximately 500 MW / 2 gigawatt hours (GWh) Battery Energy Storage (BESS);

  - Other temporary and permanent infrastructure including:
    - Operations and Maintenance (O&M) facilities and infrastructure including site office, control room, storage facilities, car parking and fencing;
    - Accommodation facilities;
    - Construction and operational compounds;
    - Hardstands for WTGs and other infrastructure;
    - Internal access tracks and road turning head connecting Project infrastructure;
    - Meteorological masts; and
    - Concrete batching plants, crushing facilities, gravel / borrow pits, construction laydown areas;
  - Ancillary activities including sourcing of materials and equipment for construction; sourcing of water for construction; subdivision and boundary adjustments, visual screening and associated ancillary works;
  - Access road use via four locations and Project-required upgrades:
    - Project Area access: via the Cobb Highway from Jerilderie Road in the north-east, from Wargam Road in the west, from East West Road in the south and West Burrabogie Road in the west, as well as emergency access; and
    - Wind farm major components transported via Port of Adelaide;
  - Operational workforce of up to 50 Full Time Equivalent (FTE) in the region and 399 in the NSW economy;
  - Construction generally within standard construction hours and operations 24 hours per day 7 days per week; and
  - Preliminary disturbance footprint of up to 1,066 ha.
- Construction:
  - Up to 55 months including design, procurement, construction and commissioning;
  - Up to 900 FTE personnel;
  - Hours of operation generally between 7 am to 6 pm, Monday to Friday and 8 am to 1 pm, Saturday;
  - Pre-construction activities and site establishment;
  - Civil works and access upgrades;
  - Major components transported via Port of Adelaide;
  - WTG construction utilising external equipment;
  - Installation and use of temporary infrastructure (including office, parking, amenities, laydown, accommodation, waste storage, stockpile, power supply, fencing, communications, services and utilities);
  - Ancillary activities (including importation of gravel, sand and aggregate, and water); and
  - Rehabilitation;
- Decommissioning: individual components are expected to operate for up to 35 years, after which:
  - Replace the existing Project components within the Project description and impacts assessed in this EIS and continue operations in consultation with relevant associated holders; or
  - Seek relevant approvals should technological advances not confirm the viability of Option 1; or
  - Decommission the Project and rehabilitate the site.

No external transmission lines or associated easements are required for the Project.

Some of the Project-associated infrastructure will be shared with the Pottinger Solar Farm (the subject of a separate application).



Pottinger Wind Farm

Figure 1-3 Conceptual Project Layout Overview

SOMEVA RENEWABLES

Date:	20/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3.2
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink

- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Location

Existing Infrastructure

- Main Roads
- Project Energy Connect
- Existing 220kV Transmission

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

1.5 Objectives

The objectives of the Project are to:

- Create new income opportunities for landowners;
- Support communities grow into new industries;
- Provide a significant source of renewable energy to assist in reducing greenhouse gas (GHG) emissions in the REZ and contribute to growing the renewable energy generation and storage capacity;
- Generate electricity from clean energy and provide lower cost electricity for 830,000 homes and the needs of future Australian generations;
- Contribute to renewable energy requirements and consequently NSW and Commonwealth targets for renewable energy;
- Collaborate with communities to allow residents, businesses and local industry to be incorporated into Project design and long term commitments that set up lasting and meaningful contributions locally;
- Provide financial benefits to its neighbours and the community through the Voluntary Planning Agreement (VPA) and Benefit Sharing Plan (BSP);
- Provide employment and education opportunities during all Project phases;
- Engage with First Nations Australians to enhance social and economic outcomes;
- Minimise environmental impacts where possible through the design and placement of Project infrastructure;
- Ensure Project information is available and accessible to community members; and
- Achieve a high level of environment, community and safety standards.

1.6 Strategies to Avoid, Minimise or Offset

Design iterations for the Project were progressed in accordance with the “Avoid-Minimise-Mitigate-Offset” design hierarchy, including:

- Avoid – in the first instance, efforts were made to avoid potential environmental and social impacts;
- Minimise – where potential impacts could not be avoided, design principles aimed to minimise environmental and social impacts, as feasibly possible;
- Mitigate – mitigation strategies implemented to manage the extent and severity of remaining environmental and social impacts; and
- Offset – environmental and social offsets shall be used only as applicable, following all efforts to first avoid, minimise and mitigate environmental impacts.

Significant amendments to the Project layout have been made to avoid and/or minimise environmental impacts (particularly in relation to ecology and heritage). **Section 7.1** provides detail on the key strategies that have been adopted to avoid, minimise and offset the impacts of the Project. An ecological offset is proposed as described in **Section 6.4**

1.7 Related Development

The Pottinger Renewable Energy Park comprises the Project and the PSF and associated infrastructure. The Pottinger Solar Farm includes approximately 600,000 Photovoltaic (PV) solar arrays and a total capacity of 300 MW, and with the Project, will combine to provide a large-scale energy system in the REZ.

The Applicant proposes to develop and progress the wind and solar farms separately. The Projects will progress generally in parallel, but determination timeframes are outside of the control of the Applicant and as such, approval for each is being sought separately.

The Pottinger Solar Farm is the subject of a separate DA (SSD-59254709). It will utilise some elements of the Project and this will be defined in its relevant documentation. The Project will utilise construction, operation, maintenance and decommissioning infrastructure, personnel and access associated with the Pottinger Solar Farm as generally described in **Section 3**.

Other approved accommodation facilities may be utilised as described in **Section 3.5.3**.

Approvals in other state jurisdictions for impacts associated with road transport of Project components will be sought separately as generally indicated in **Section 4**.

The Project will require access to Project EnergyConnect as shown on **Figure 1-3.**

No existing use or continuing use rights are to be relied upon to facilitate the Project.

1.8 Restrictions or Covenants

A title search has been undertaken for the Project Area. Restrictions and covenants that apply to the Project Area include Crown land, and easements for transmission line, flooding, drainage, and access. There are also Conservation Agreements under Part 5, Division 3 of the *Biodiversity Conservation Act 2016* which impact land parcels within the Project. A full list of restrictions and covenants relating to the Project Area can be found in **Table F6** of **Appendix F**.

Relevant easement holders have been consulted by the Applicant as described in **Section 5** and each has been considered in the Project design in **Section 3**.

2 STRATEGIC CONTEXT

This Section identifies the key strategic issues that are relevant to the assessment of the Project. It justifies the Project in relation to Government strategies, policies and plans, including the regional and local land use planning context. It also identifies key features of the Project Area and surround which have a potential to affect or be affected by the Project, including cumulative impacts with other known developments.

Agreements which have been entered into with other parties to mitigate or offset impacts are also described. This Section provides an analysis of feasible alternatives which have been considered in relation to the Project's objectives provided in ***Section 1.5****.*

2.1 Government Strategies, Policies and Plans

2.1.1 International

2.1.1.1 United Nations Sustainable Development Goals

The Sustainable Development Goals (SDGs) are a global call for action to "*promote prosperity while protecting the planet*" (UN, 2015). The SDGs address a range of socioeconomic and environmental issues including education, health, social protection, job opportunities, climate change and environmental protection. The 17 SDGs of the 2030 Agenda for Sustainable Development came into force on 1 January 2016. Australia has been a United Nations (UN) member state since 1945 and adopted the SDGs in its national policymaking.

There are several SDGs that renewable energy infrastructure aligns with, the core goal being Goal 7 – Affordable and Clean Energy. Target 7.A of Goal 7 aims to *"enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology by 2030".*

Other SDGs that the Project indirectly aligns with include:

- SDG 8 – Decent Work and Economic Growth;
- SDG 9 – Industry, Innovation and Infrastructure;
- SDG 11 – Sustainable Cities and Communities; and
- SDG 13 – Climate Action.

The Project is a renewable energy project and will therefore contribute to addressing socio-economic and environmental issues through advancing cleaner fossil-fuel technology and energy efficiency.

2.1.1.2 United Nations COP26 and COP28

A key outcome of the UN Framework Convention on Climate Change Conference of the Parties (COP) held in Glasgow in 2021 (COP26) was the agreement to "*revisit and strengthen… 2030 targets in nationally determined contributions…by the end of 2022"* (UNFCC, 2021).

Nations were also called upon to "*phase down unabated coal power and inefficient subsidies for fossil fuels".* As a result, the Australian Federal Government committed to achieve net zero GHG emissions by 2050.

COP 28 then occurred from 30 November to 12 December 2023 and "*marked the conclusion of the first 'global stocktake of the world's efforts to address climate change under the Paris Agreement*". An agreement to commence the "'*beginning of the end' for the fossil fuel era*" was established and includes aiming to "*triple renewable energy capacity and doubling energy efficiency improvements by 2030*".

The Project will contribute to the reduction of GHG emissions through renewable energy generation.

2.1.1.3 United Nations COP21

The UN Framework Convention on Climate Change COP – COP21' (The Paris Agreement) was an important stepping-stone for international relations on climate change as it brought all nations into a common cause to combat climate change. The core outcome of the Paris Agreement is to limit emissions globally, by holding the increase in the global average temperature to well-below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels (UNFCC, 2015).

The Project will contribute to meeting Australia's commitments under the Paris Agreement through reducing annual GHG emissions by approximately 2.8 million tonnes per annum (Mtpa) through renewable energy generation.

2.1.2 Federal

2.1.2.1 Government's Large-scale Renewable Energy Target

The Renewable Energy Target (RET) is an Australian Government scheme designed to reduce emissions of greenhouse gases in the electricity sector and encourage the additional generation of electricity from sustainable and renewable sources.

The Large-scale Renewable Energy Target (LRET) incentivises the development of renewable energy power stations in Australia through a Renewable Energy Certificate Market for the creation and sale of certificates called large-scale generation certificates (LGCs). LRET-accredited power stations can create LGCs for electricity generated from that power station's renewable energy sources. LGCs can then be sold to:

- Liable entities under the RET (mainly electricity retailers); and
- Companies and individuals looking to support their claims about reducing emissions, using renewable electricity, or by surrendering offsets such as Australian Carbon Credit Units (ACCUs).

The current target under the LRET is for 33,000 GWh of additional renewable energy to be generated annually. The current targets, accreditation of power stations, and creation of LGCs will remain until the end of the scheme in 2030.

Once operational, the Project could generate up to 4,669,000 MWh of electricity annually. The Project will therefore contribute significantly to meeting the LRET target.

2.1.2.2 Climate Change Act 2022

In 2022 the Australian Government passed the *Climate Change Act 2022* (Climate Change Act) which outlines goals to combat climate change through legislative requirements. The Climate Change Act is pivotal in setting requirements for the generation of energy in Australia and targeting GHG emissions. Australia's GHG reduction targets are a 43% reduction in GHG emissions from 2005 levels by 2030 and to achieve net zero by 2050. These GHG emission targets are derived from the Paris Agreement's goals as stated in **Section 2.1.1.3**.

The Climate Change Act also introduces the requirement for the Minister for Climate Change and Energy to prepare an annual climate change statement to be presented in the House of Parliament, as informed by the Climate Change Authority.

The Project aligns with the Climate Change Act's objectives for GHG emission reduction by utilising renewable energy as a source for clean energy to Australia's electricity supply.

2.1.2.3 National Electricity Market

The NEM is a wholesale market through which electricity is traded in Australia. The NEM incorporates 40,000 km of transmission lines and cables in Australia and spans the eastern and south-eastern coasts (including QLD, NSW, ACT, SA, VIC and TAS) (AEMO, 2022). It delivers around 80% of all electricity consumption in Australia (DCCEEW, 2023). The NEM facilitates the exchange of electricity between generators and retailers. Retailers resell the electricity to businesses and households. The Australian Energy Market Operator (AEMO) controls the NEM and is responsible for monitoring electricity consumption and for the security and reliability of the power system.

AEMO recognises the NEM needs to be modernised to accommodate and respond to changes in electricity generation (i.e. retirement of coal-fired power stations) and replacement with renewable energy generation, combined with transmission integration and storage technologies, such as batteries. Replacement with renewable energy ensures there is sufficient capacity in the system to address peak demand events and to ensure price competition in electricity markets. There is also an increasing demand from consumers and financiers for greener energy production.

The coal-fired power stations planned for retirement by around 2040 produce approximately 70,000 gigawatt hours of energy per year. Power reliability in NSW is forecast to deteriorate over the next 10 years due to increasing forced outages as generators age and near retirement (AEMO 2020). With these retirements comes a significant reduction in the energy generation potential which will need to be replaced with alternative renewable energy electricity production.

The Project represents and investment in large scale renewable energy production which will provide essential input into the renewable energy sources needed in the transition from coat fired generation to renewable generation.

2.1.2.4 Draft Integrated System Plan 2024

The 'Draft Integrated System Plan' (AEMO, 2024) (ISP) is an integrated roadmap for the efficient development of the NEM over the next 20 years, in line with government policies to reach a net zero economy by 2050. The primary objective is to optimise value to end consumers by designing the lowest cost, secure and reliable energy system capable of meeting any emissions trajectory determined by policy makers at an acceptable level of risk (AEMO, 2024). The security of the power system is related to its ability to respond quickly and remain stable when unexpected events occur (i.e. transmission line failing) and the reliability is the ability of the system to deliver electricity to meet the demand of energy users.

The ISP is published every two years and serves to inform policymakers, investors and consumers with a clear plan for essential infrastructure to meet future energy needs. It draws on stakeholder engagement and industry expertise in order to maximise the value and benefits to electricity consumers. The ISP provides detail on the network projects within QLD, NSW, ACT, VIC, SA and TAS, and how each will connect as well as outlines the REZs in Australia.

The Project is located within the REZ as shown on **Figure 1-3** and will support the energy transition and provide new infrastructure to ensure a reliable and affordable electricity supply.

2.1.2.5 Project EnergyConnect and the South West REZ

The Project Area is located within the Project EnergyConnect corridor which is a 330 kV transmission line currently under construction between SA and NSW with a total length of 900 km. The NSW component is being undertaken in two sections. The Western Section, which connects the NSW and SA transmission networks and the Eastern Section, which connects the Buronga and Wagga Wagga substation, and includes the construction of the new Dinawan Substation 170 km west of Wagga Wagga.

The REZ was formally declared by the Minister for Energy under section 19(1) of the *Electricity Infrastructure Investment Act 2020* (EII) and published in the NSW Gazette in November 2022.

Figure 1-3 illustrates the proximity of Project EnergyConnect and the REZ. Further discussion in relation to the REZ is provided in **Section 2.5.2.**

2.1.3 NSW Government

2.1.3.1 Net Zero Plan Stage 1: 2020-2030

The 'Net Zero Plan Stage 1: 2020-2030' (DPIE, 2020a) (Net Zero Plan) sets the framework for how the NSW Government will achieve net zero emissions by 2050. In September 2021, the NSW Government announced the reduction of emissions by 50% below 2005 levels by 2030.

The Project will contribute to the Net Zero Plan's goals through the reduction of GHG emissions.

2.1.3.2 NSW Electricity Strategy

The 'NSW Electricity Strategy' (State of NSW and DPIE, 2019) (NSW Strategy) is the NSW Government's plan for a reliable, sustainable and affordable energy. The NSW Strategy aligns with the Net Zero Plan and will respond to current electricity demand challenges in an effort to combat electricity prices and reliability by:

- Delivering Australia's coordinated REZs;
- Saving energy, especially at times of peak demand via the Energy Security Safeguard;
- Supporting the development of new electricity generators;
- Setting a target to bolster the state's energy resilience; and
- Making it easier to do energy business in NSW.

The Project is consistent with the NSW Strategy as it provides renewable energy generation and storage capacity that will ultimately result in lower cost of power in comparison to wholesale prices.

2.1.3.3 NSW Transmission Infrastructure Strategy

The 'NSW Transmission Infrastructure Strategy' (State of NSW and DPIE, 2018) (Transmission Strategy) builds upon the broader objective of making energy more affordable and securing energy supplies.

The Transmission Strategy includes the aims to:

- Boost NSW interconnections with VIC, SA and QLD;
- Increase NSW's energy capacity by prioritising energy; and
- Work with other states and regulators to streamline regulation and improve conditions for investment.

The Project will meet the objectives of the Transmission Strategy as it would increase NSW's connections with neighbouring states through Project EnergyConnect. It will also contribute to the REZ, resulting in an overall increase in NSW's energy capacity.

2.1.3.4 NSW Electricity Infrastructure Roadmap

The 'NSW Electricity Roadmap' (NSW Government, 2023) (Roadmap) is a plan to make the state's electricity system into one that is cheap, clean and reliable.

The Roadmap aims to streamline investment into transmission, generation, storage and the firming of infrastructure as coal-fired generation plants retire and are phased out (e.g. Vales Point proposed in 2029, Mt Piper proposed in 2040, Bayswater in 2033, Eraring proposed in 2025. Liddell closed in April 2023 (AEMO, 2023)).

2.1.3.5 Renewable Energy Zones

REZs combine renewable energy infrastructure, storage and high-voltage transmission infrastructure. Each REZ will contain multiple renewable energy projects and electricity storage, in an effort to capitalise on economies of scale to deliver cheap, reliable and clean electricity for homes and businesses in NSW.

Five REZs have been identified so far in NSW in the NSW Strategy and Roadmap, which include: Central-West Orana, New England, South West, Hunter-Central Coast, and Illawarra. The REZs will help lower electricity costs through increased competition and support new local jobs and business opportunities during construction and operation.

The Project will contribute to the South West REZ by reducing carbon emissions through the delivery of renewable energy to the NEM, and supporting the goals and targets identified in **Section 2**.

2.1.4 Local

Local government strategics, policies and plans are discussed in **Section 2.2**.

2.2 Land Use Planning

The Project Area is located within the Hay Shire Council Local Government Area (LGA) and Edward River Council LGA.

2.2.1 Riverina Murray Regional Plan 2041

The 'Riverina Murray Regional Plan 2041' (DPE, 2023) (Regional Plan) applies to the Project Area and sets a 20-year framework, vision and direction for strategic planning and land use across 20 LGAs in the region. The Regional Plan is prepared under the EP&A Act and draws from the Local Strategic Planning Statements (LSPSs) prepared by each council for the LGA.

The Regional Plan is underpinned by environment values and seeks to protect and harness these values to support ongoing prosperity and growth and to build resilience against natural hazards (DPE, 2023). The Regional Plan supports a transition to net zero emissions region by 2050 and will enable the REZ. The Regional Plan is made up of environment, community and economic objectives. The Project meets the following objectives from the Regional Plan:

- *"Objective 11 – Plan for integrated and resilient utility infrastructure*
  - *Ensuring the region has a sustainable and reliable power source will ensure new residential and economic development can be accommodated.*
- *Objective 13 – Support the transition to net zero by 2050.*
  - *AEMO forecasts a step-change in the transition away from fossil fuels and higher electrical demand. This transition requires fundamental changes in how electricity is generated, transported, stored and used."*

2.2.2 Hay Shire Council Local Strategic Planning Statement 2020

The 'Hay Shire Council Local Strategic Planning Statement 2020' (Hay Shire Council, 2020) (Hay LSPS) sets the framework for Hay Shire's economic, social and environmental land use needs over the next 20 years. The Hay LSPS planning priorities and actions provide the rationale for decisions on land use to achieve the community's broader visions (Hay Shire Council, 2020). The Hay LSPS is informed by the Community Strategic Plan (CSP), and also gives effect to the Regional Plan, implementing the directions and actions at a local level.

The Project directly addresses "*Planning Priority 9: Renewable Energy Encourage the growth of Renewable Energy Installations*". This Priority recognises the opportunity that the Hay Shire presents for renewable energy generation in that it possesses high number of daylight hours and wind resources, level topography, affordable land, and nearby grid connections.

This Priority has been derived from the Regional Plan "*Objective 13 – Support the transition to net zero by 2050"* as referred to in **Section 2.2.1**.

2.2.3 Hay Shire Council Community Strategic Plan 2022-2032

The 'Hay Shire Community Strategic Plan 2022-2032' is a 10-year plan that sets out the strategic direction and community vision and objectives for the community (Hay Shire Council, 2021). The CSP identifies objectives and targets which the CSP is built around of which the Project is consistent with:

- *"Environmental sustainability*
  - *A1.2 – Foster environment of investment for environmental sustainability.*
  - Target: *reduction in non-renewable energy.*
- *Liveable and vibrant community*
  - B3 – Our community has access to a range of employment opportunities.
  - Target: *increase in employment options.*

- *Economic prosperity and sustainability*
  - *C1 – Our community welcomes new and innovative industry to support our future.*
  - Target: *increase in business numbers and opportunities across the community.*
- *Our infrastructure*
  - *E1.1 – Deliver infrastructure and assets that are responsive to community need.*
  - *E1.3 – Provision of sustainable infrastructure that is adaptive to changing, suitable/ betterment and funding levels.*

2.3 Project Justification

This section provides a summary on why the Project has been selected and what the expected benefits and outcomes are. These benefits include long-term strategic benefits to NSW as well as to Australia's renewable energy generation prospects.

2.3.1 Benefits

2.3.1.1 Wind Farm Benefits

The key environmental benefit of wind electricity generation is in relation to reducing greenhouse gas emissions and climate change. Australian renewable energy supplied 39.4% of Australia's total electricity in 2023, with wind power contributing 33.9% (Clean Energy Council, 2023).

Wind farms provide a significant contribution to Australia's transition to greener energy. The Australian Wind Alliance (AWA) prepared the report, 'Building Stronger Communities: Wind's growing role in regional Australia' (AWA, 2019) which outlines the ways in which wind farms deliver financial and social benefits to the surrounding community. Key points from the report are summarised as:

- Wind farm construction has delivered an economic boost of almost $5.1 billion to regional Australia, and new construction projects to provide a further $4.8 billion in economic activity into the regional economy;
- Across the 25-year life span of Australia's existing wind farms and wind farms under construction, an estimated $18.3 billion could be delivered to host communities;
- Up to $18.3 billion could be delivered to host communities across the 25-year life span of wind farm projects, including currently operational wind farms and those currently under construction; and
- From 2021, Community Enhancement Funds will make available $5 million annually for community projects.

The AWA report also notes that wind farms deliver significant local investment and financial contributions to local Councils, which directly support local community projects and services.

2.3.1.2 Project-Specific Benefits

The Project would provide renewable, low-cost energy to the NEM, and will contribute to the Commonwealth and NSW Government's emission reduction targets (refer to **Section 2.1**). This will be achieved by supporting the transition from large fossil fuel generation, towards renewable energy production and assist in GHG emission reduction.

The Project is located in the REZ, which will coordinate with policy in the other NSW REZs to provide up to 12 GW of renewable energy capacity within the state as discussed in **Section 2.5.2.1**. The NSW Government (EnergyCo, 2023) expects the REZs to deliver benefits that include:

- Energy bill savings from reduced wholesale electricity costs;
- Emissions reduction from a cleaner energy sector;
- Reliable energy from significant amounts of new energy supply; and

- Host community benefits through strategic planning and best practice engagement and formalised benefit sharing arrangements.

In addition, the Project will provide benefits to the region and local communities including:

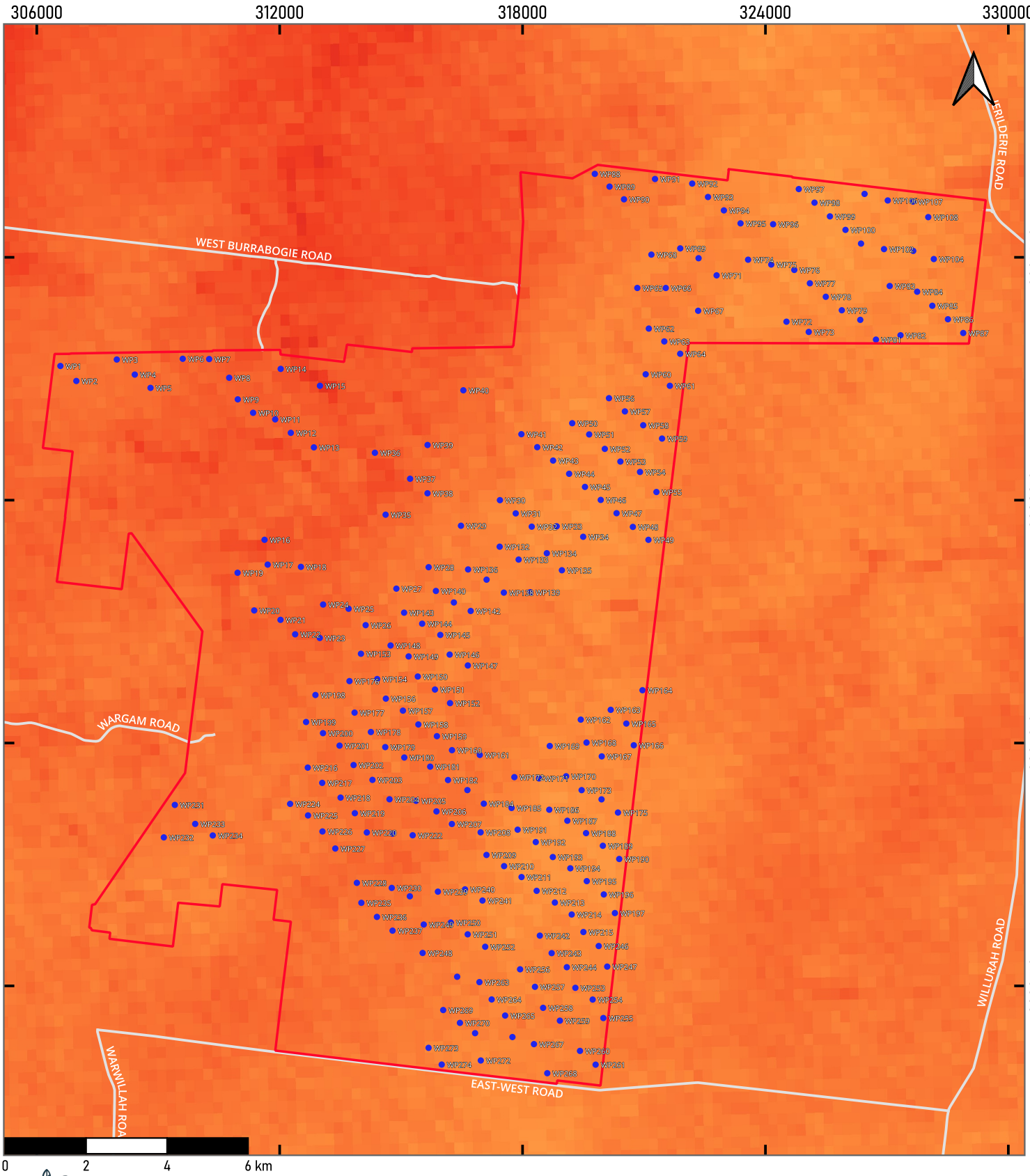
- Contributing to support 900 FTE construction jobs in the REZ region at its peak;
- Direct investment in the Murray River region;
- Opportunities for local contractors and businesses;
- Diversified income stream for rural landholders;
- Economics benefits to the regional economy including:
  - a VPA between the Applicant, Hay Shire Council and Edward River Council to support local community development, economic diversification and infrastructure projects;
  - $250 million in direct and indirect output during construction;
  - $371 million in direct and indirect output during operations;
  - $409 million in direct and indirect value-add during construction and operation; and
  - Further economic benefits described in **Section 7.7.1.2**.
- Social benefits including employment and education opportunities for the local workforce, delivery of Community Enhancement Fund to foster community needs and initiatives; and First Nations Partnerships which aim to result in long-term positive benefits to local Traditional Owners, as further described in **Section 7.7.1.3**;
- Renewable low-cost energy to the national grid; and
- Development of new skilled labour in the region within the growing renewable energy industry.

2.3.2 Site Suitability

The Project Area is considered suitable for development as it is:

- Located within the Project EnergyConnect corridor, which will allow for the renewable energy generated from the Project to be supplied to the NEM;
- Located within the boundaries of the REZ, and the Project will contribute to the future development of the REZ;
- Located within a superior wind resource area consistent with Global Wind Resource (2023) as shown in **Figure 2-1** and demonstrated by on-site wind data monitoring;
- Proximate to a number of other existing and proposed renewable energy projects; and
- Easily accessible via the Cobb Highway.

The Project will therefore contribute to creating greater diversity within the local economy, where land uses have experienced diversification in recent years through a growth in dryland cropping and horticulture, conservation, irrigation and forestry. Current land use is depicted in **Figure 2-2**.



Pottinger Wind Farm

Figure 2-1 Wind Resource Mapping

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Global Wind Atlas (2023)

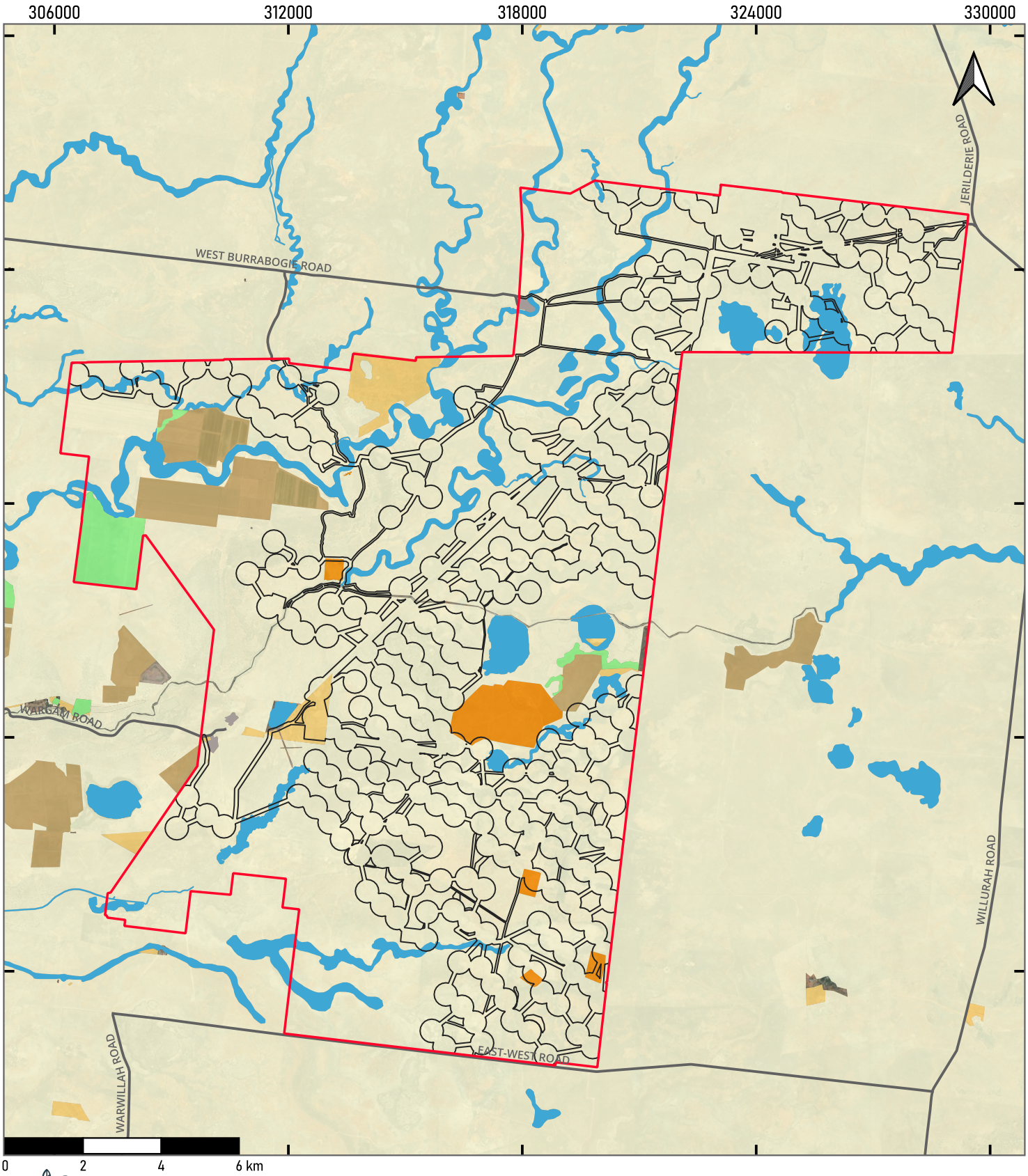
Prepared By: EL Reviewed By: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

- Project Area
- Wind Turbine Location

Existing Infrastructure
- Main Roads

Global Wind Atlas Wind Speed at 100 m (m/s)
Band 1 (Gray)
- 6.5
- 6.7
- 6.9
- 7.0
- 7.2



Pottinger Wind Farm

Figure 2-2 Land Use

SOMEVA RENEWABLES

Legend

- Project Area
- Survey Area
- Main Roads

Land Use

- Dryland Cropping
- Grazing, Modified Pastures
- Grazing, Native Vegetation
- Irrigated Cropping
- Irrigated Pastures
- Infrastructure
- Water/Creek

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:135000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed By: TS
Version: 2.2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

2.4 Key Features of Project Area and Surrounds

2.4.1 Local and Regional Community

2.4.1.1 Regional Community

The regional community relies on the provision of essential services from nearby regional centres, of which Hay / Deniliquin are the closest. The top industries and workforce participation data suggests most workers are in agriculture or related economic fields.

Hay (~2,400 people) is a smaller regional centre than Deniliquin (~7,900 people), with both having (on average) relatively older population groups (averaging >45 years old).

The Hay LGA (closest to the Project Area) has a large population of First Nations peoples in community (of around 8.3%), especially when compared to the national average (around 3.3%). The Nari Nari people of the Lower Murrumbidgee and the Wiradjuri people who inhabit the vast region in central-western island NSW, are two significant recognised groups in the area. The Project Area is within the Hay Local Aboriginal Land Council (LALC) and Deniliquin LALC boundaries. Hay has experienced one of the fastest population declines in regional Australia (nearly 20%), whilst Deniliquin's population has largely been stagnant.

Both community centres appear to have a highly engaged workforces with low unemployment (<4%). The region is heavily dependent on the agriculture, forestry and fishing industry. "Skills and staff shortages" were among the most heard concerns in the area during SIA consultations with local business owners and councils. Other nearby towns to the Project Area are shown on **Figure 2-3** and include:

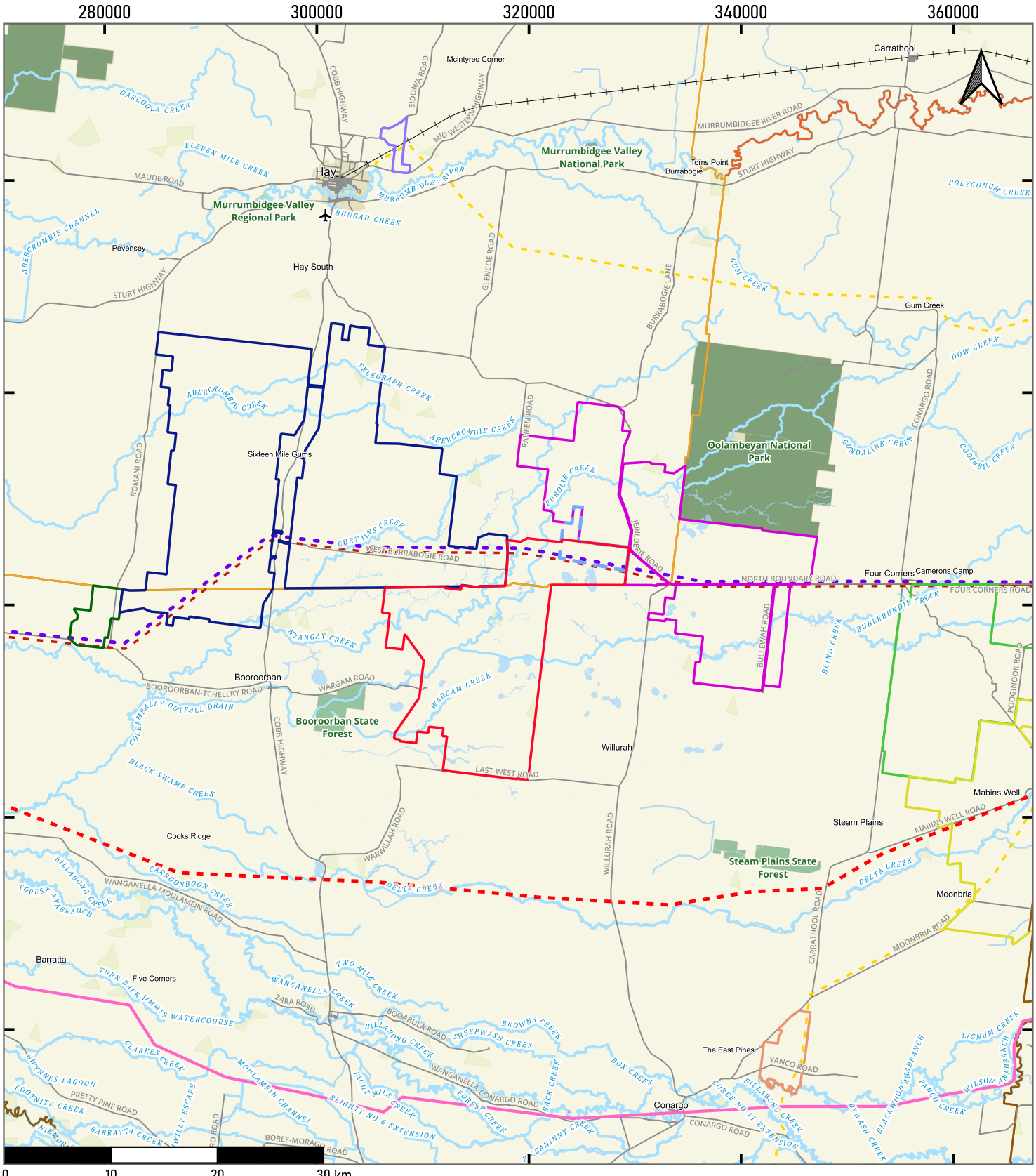
- Wanganella – 69 km south;
- Darlington Point – 80 km north-east;
- Colleambally – 90 km east;
- Conargo – 100 km south;
- Balranald – 120 km west;
- Jerilderie – 125 km south-east; and
- Swan Hill – 191 km south-west.

2.4.1.2 Local Community

Agriculture is central to the narratives, identity and prosperity of the area. Various studies over the years have concluded that most farm businesses in the area do not appear to generate sufficient return to meet both personal needs and business growth – they are "asset-rich, cash-poor" enterprises, based on available data and information obtained through consultations as descried in **Section 5**.

The Project is situated in the rural locality of Booroorban, approximately 60 km south of Hay. Booroorban has around 33 permanent residents, the Booroorban State Forest is located adjacent to the town which includes a hotel and a public hall.

To the south of the Project Area in Edward River LGA is the Wanganella, a remote rural community located along the Cobb Highway. Wanganella has a population of 86 people and has a café, general store, the Wanganella Fisherman Cottage and Creek Camp Park.



Pottinger Wind Farm

Figure 2-3 Project Locality

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:500000
Basemap:	ESRI (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed by: TS
Version: 3.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

- Project Area
- Pottinger Solar Farm Project Boundary

Government Areas
- Edward River LGA
- Hay LGA
- Murrumbidgee LGA
- South West REZ

Existing Infrastructure
- Main Roads
- Railway Lines
- Airports

Transmission Lines
- 132 kV
- 220 kV
- Project Energy Connect
- VNI West (preffered route)

Protected Areas
- National Park
- Nature Reserve
- Regional Park

- Hydro Area

Surrounding Projects
- Bullawah Wind Farm Project Boundary
- Dinawan Energy Hub Project Boundary
- The Plains Renewable Energy Park Project Boundary
- Yanco Delta Wind Farm Project Boundary
- Conargo Wind Farm Project Boundary
- Hay Solar Farm Project Boundary
- Romani Solar Farm Project Boundary

2.4.1.3 Immediate Neighbours

The population (neighbours / dwellings) around the Project Area is low, with seven identified non-associated dwellings and one associated dwelling within 10 km of the Project Area.

The next identified dwellings are between 12 km and 21 km from the Project Area with approximately 10 additional non-associated dwellings identified.

Further discussion is provided in **Section 2.4.5**.

2.4.2 Surrounding Land Use

2.4.2.1 Renewables

The Project is located entirely within the REZ within which there are at least nine renewables' developments in various stages as shown on **Figure 2-4.** A discussion on cumulative impacts is provided in **Section 6.21**.

2.4.2.2 Agriculture

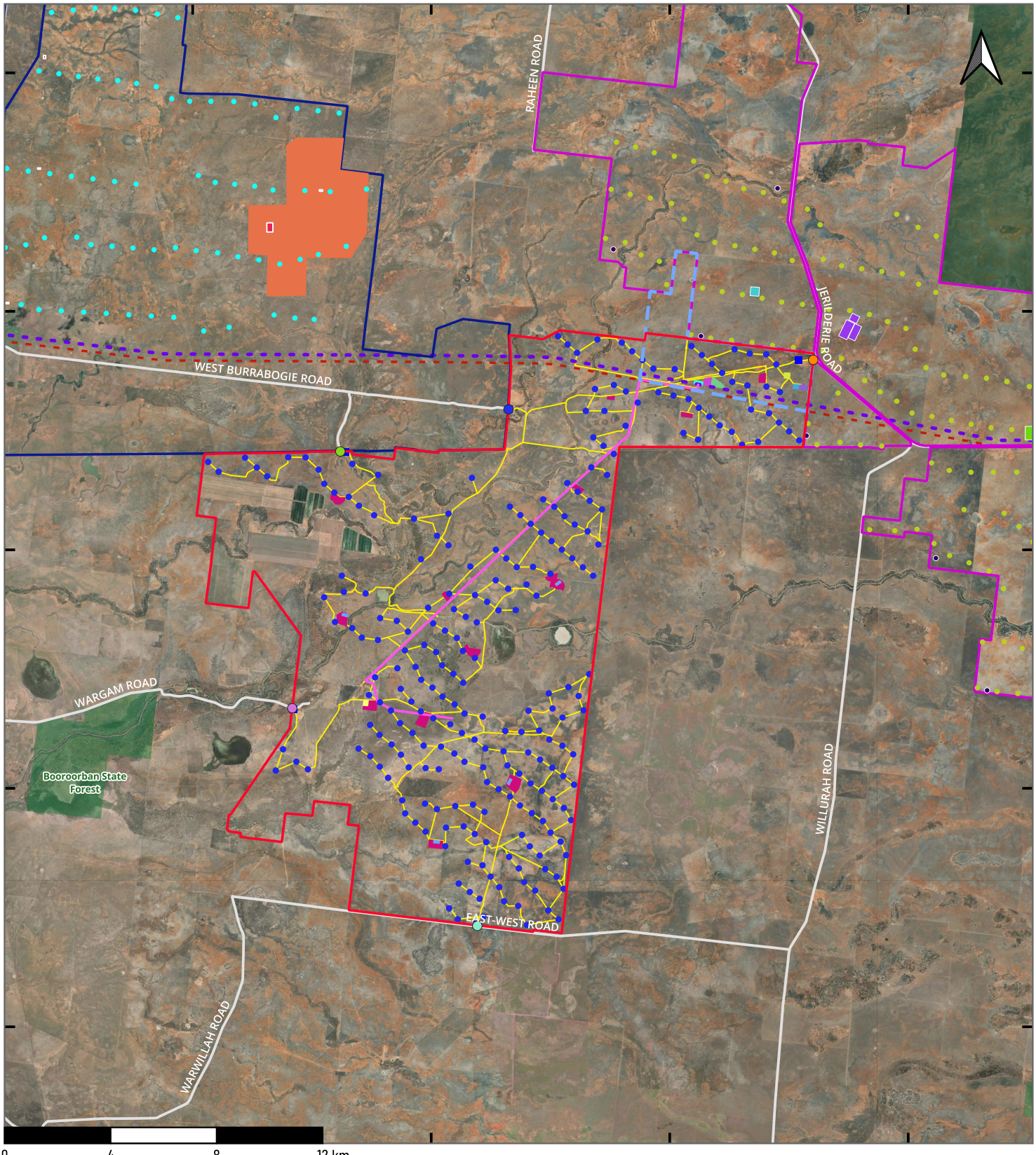
Land use surrounding the Project Area is primarily for agriculture (broadacre farming, including cropping and livestock) with 98% of land in the Hay LGA, and 74% of Edward River LGA used for grazing of livestock. Cropping (i.e. wheat, rice, barley, canola, vegetables, citrus and orchard fruit) and forestry account for the remaining surrounding land uses. The Project Area is located approximately 20% in Hay LGA and 80% in Edward River LGA.

Properties surrounding the Project Area are partially influenced by irrigation and are generally between 3,000 ha to 4,000 ha in size. Some are greater than 7,000 ha which reflect the large-scale grazing enterprises within this region (DPI, 2018).

The Project Area is not subject to fertiliser application and livestock largely graze on native pastures at low stocking rates. General agricultural improvements are present, including stock fences and gates, stock yards, shedding and unsealed access tracks.

2.4.2.3 Other Industry

Other industry in the Hay and Edward River LGA includes construction, retail, manufacturing, accommodation and food services, education, training and health care, transport, postal and warehousing, rental, hiring and real estate services and tourism. Regional communities around the Project Area rely on the provision of essential services from Hay and/or Deniliquin.



Pottinger Wind Farm

Figure 2-4 Cumulative Developments

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:200000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3.1
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Pottinger Solar Farm Project Boundary
- Wind Turbine Location
- Internal Transmission
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Access Tracks
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Location

Existing Infrastructure
- Main Roads
- Existing 220kV Transmission
- Project Energy Connect
- National Park
- Nature Reserve

Surrounding Project Boundaries
- Bullawah Wind Farm Project Boundary
- The Plains Renewable Energy Park Project Boundary

Surrounding Project Infrastructure
- The Plains Renewable Energy Park WTG Locations
- Bullawah Wind Farm WTG Locations
- Bullawah Wind Farm Met Mast Locations
- The Plains Renewable Energy Park Substation
- The Plains Renewable Energy Park Solar Area

Bullawah Wind Farm Infrastructure
- Collector Substation
- Main Substation
- Temporary Infrastructure

2.4.3 Natural Features

2.4.3.1 Vegetation

Vegetation within the Project Area has been subject to long-term grazing and historic pastural clearing, and generally contains grass and shrub layers. Sparse woodland vegetation throughout the Project Area, has been subject to substantial historical clearing and is generally poor ecological condition. Further information on vegetation within the Project Area is provided in **Section 6.4.**

Figure 2-12 illustrates an area of Category 2 – Sensitive regulated land in the south-eastern corner of the Project Area where an "Incentive Property Vegetation Plan" is in place (Approval: 13PVP01081) which lapses 17 June 2025. Category 2 – Sensitive regulated land is land where clearing is not permitted under the *Land Management Code (Native Vegetation) Code 2018*, however a restricted range of allowable activities is permitted. This is however not applicable to SSD Applications under Part 4 of the EP&A Act.

2.4.3.2 Topography

Topography within the Project Area is a predominantly flat with some low sand dunes and drainage lines, ranging from 87 m to 100 m Australian Height Datum (AHD). **Figure 2-5** illustrates the topography of the area.

2.4.3.3 Catchments and Water Resources

The Project is located within the 84,000 km^2 Murrumbidgee Catchment which is part of the broader Murray Darling Basin. A tributary to the Murray River, the Murrumbidgee River flows in a south-westerly direction lying approximately 40 km north of the Project Area. Potential connectivity between the Murrumbidgee River and the Project Area is via numerous diverting anabranches and flood runners, such as Gum Creek.

At its closest point, Gum Creek lies within 25 km of the Project Area. Gum Creek joins Nyangay Creek and Eurolie Creek which flow through Project Area as shown in **Figure 2-5.** Eurolie Creek is a seasonal creek, which runs dry through most of the year and joins an irrigation channel in the south of the Project Area (Coleambally Outfall Drain). Wargam Creek also begins within the Project Area and flows toward the South West Woodland Nature Reserve.

Werkenergal Swamp is located in the middle of the Project Area, adjacent to the Coleambally Outfall Drain.

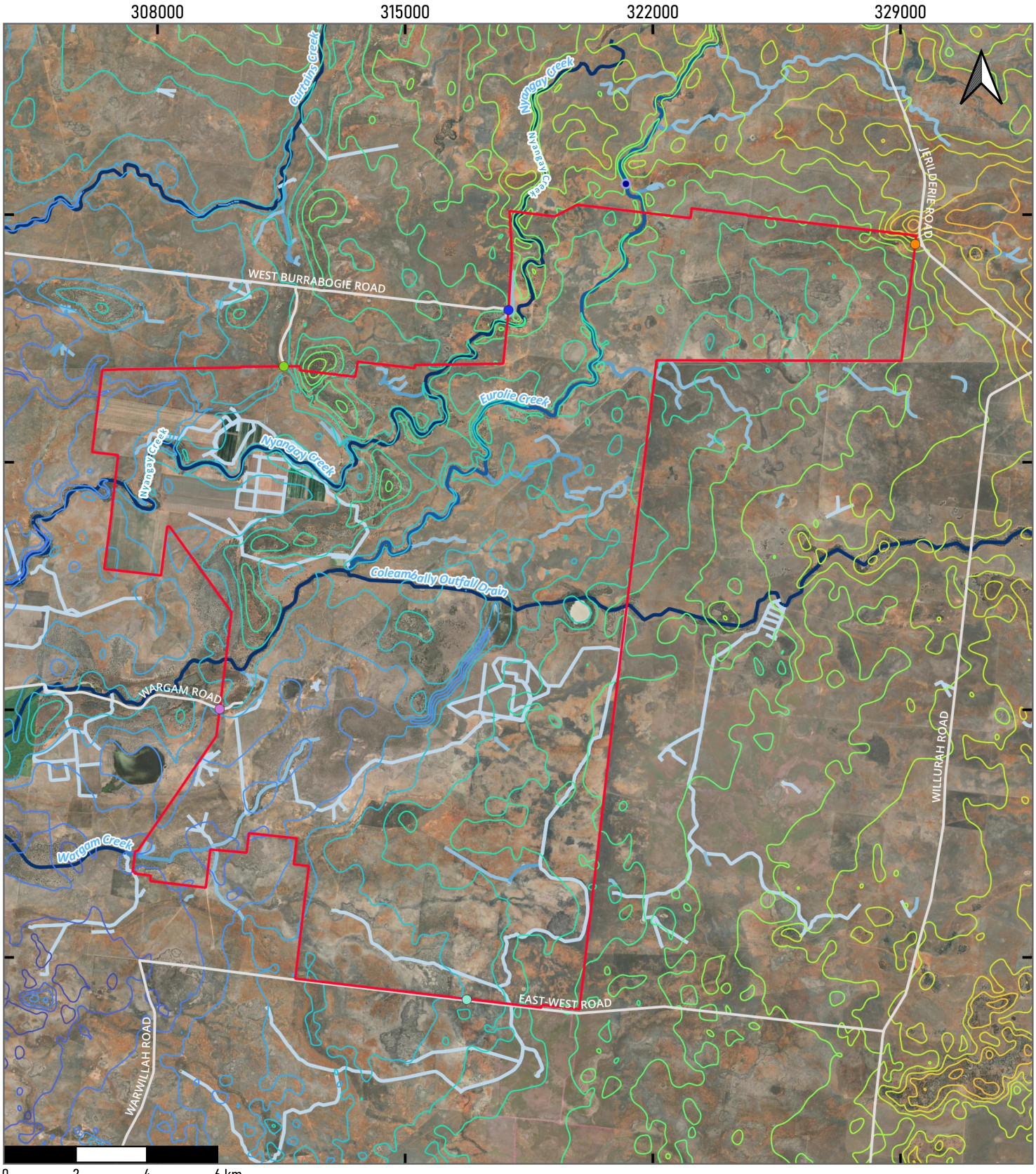
2.4.3.4 Climate

The Bureau of Meteorology (BOM) (BOM, 2023) classify the Riverina in the Hot Dry Zone (with cooler winters). This zone can be very hot in the summer months while in the winter, nights can be considerably cold with cool to mild days.

Rainfall reliability maps for Riverina over the past 30 years show winter rainfall has been moderately reliable across the region, usually changing by about 50 mm from year to year. This is in contrast to spring and summer rainfall, which have been less reliable. Autumn rainfall has been unreliable across the entire region. The Riverina region experiences frost risks to agriculture, which tend to occur through dry winter and spring periods, when soil moisture is low, and cloud cover infrequent.

The closest BOM weather station to the Project Area at Hay Airport (Site No. 075019), 60 km north (BOM, 2023). The annual average rainfall is 354 mm, falling throughout the year over 46 rain days, with the average highest rainfall in the month of October and the lowest in the month of July. The annual average maximum temperature recorded at the Project Area is 25.1°C and the annual average minimum temperature is 10.2°C. The highest average maximum temperature of 35.0°C is recorded in January, while the lowest average maximum temperature of 18.2°C is recorded in July and August.

The wind in the Hay region is most often from the south from September to June, and predominantly from the west from June to September. The average hourly wind speed experiences mild seasonal variation over the course of the year. The windier part of the year is from August to March, with average wind speeds of more than 15.3 km/h, and the calmer time of the year is from mid-March to August, with an average hourly wind speed of 13.3 km/h (Weather Spark, 2023).



Pottinger Wind Farm

Figure 2-5 Existing Natural Environment

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:150000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), ELVIS (2023)

Prepared By: EL Reviewed By: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

- Project Area
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Main Roads
- Nature Reserve
- Dams

1m Contour Lines (ELVIS)

- 85.0
- 86.0
- 87.0
- 88.0
- 89.0
- 90.0
- 91.0
- 92.0
- 93.0
- 94.0
- 95.0
- 96.0
- 97.0
- 98.0
- 99.0
- 100.0

Straher Stream Order

- 0
- 1
- 2
- 3
- 4
- 9

2.4.3.5 Geology and Soils

Soil Types

The NSW regional soil mapping indicates the dominant soil types within the Project Area are Vertosols, Rudosols and Chromosols as per 'Australian Soil Classification' (ASC) (Isbell, R. F.,2021). These soil types have high infiltration potential supporting the well-drained topography characterised by the arid conditions.

The potential for erosion is addressed in **Section 6.7.2.1.**

Inherent Soil Fertility

NSW regional mapping describes soil fertility in NSW according to a five-class system: Low (1), Moderately Low (2), Moderate (3), Moderately High (4), High (5).

The Project Area is dominated by soils with Moderate (3) fertility.

Soils with 'Moderately Low' fertility can generally only support plants suited to grazing; large inputs of fertiliser are required to make the soil suitable for arable purposes. They usually require fertilisers and/or have some physical restrictions for arable use; and have a high level of fertility in their virgin state which is significantly reduced after a few years of cultivation (Murphy et al., 2007). Further detail is provided in **Section 6.7**.

Land and Soil Capability

Land capability is the inherent physical capacity of the land to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources. Failure to manage land in accordance with its capability risks degradation of resources both on- and off-site, leading to a decline in natural ecosystem values, agricultural productivity, and infrastructure functionality.

The NSW regional based maps of Land and Soil Capability (LSC) indicate the Project Area consists of LSC class 3: high capability, class 4: moderate capability land class 5 moderate-low capability land, class 6: low capability land and class 7: very low capability land. Further detail is provided in **Section 6.7.**

Strategic Regional Land Use Policy Mapping

The 'NSW Government's Strategic Regional Land Use Policy' (DPIE 2012) defines and identifies strategic agricultural land across NSW. Strategic agricultural land includes land with unique natural resource characteristics, known as Biophysical Strategic Agricultural Land (BSAL), and significant agricultural industries known as Critical Industry Clusters (CICs).

There is neither BSAL nor CICs mapped within the Project Area. The nearest BSAL is located 200 km east of the Project.

State Significant Agricultural Land

The NSW Department of Primary Industries is undertaking a mapping program to identify State Significant Agricultural Land (SSAL). A map of SSAL is an essential component of agricultural land use planning, enabling clearer local planning with informed prioritisation of future land uses.

SSAL is not mapped within the Project Area.

2.4.3.6 National Parks, Conservation Areas

The nearest national parks and conservation areas are located to the north-east and south-west of the Project Area. The closest conservation area is the South West Woodland Nature Reserve (Reserve) located 4.7 km south-west of the nearest WTG.

Oolambeyan National Park is located within the extents of Murrumbidgee Council as shown on **Figure 2-6.** The nearest WTG is 7 km south-west of the National Park.

The Project is not within the boundaries of or in close proximity to, a national park or conservation area.

Significant ecological, cultural and historic associations (such as Aboriginal sites), along with colonial associations (such as a former merino stud property of the western Riverina) are known within the Oolambeyan National Park which is located north-east of the Project Area. The Park's has a variety of biodiversity and landscape values which make it a unique representation of the Hay Plains character in south-west NSW.

The Reserve is characterised by fragmented parcels of woodlands that are spread across areas closer to Coleambally and Steam Plains. The Reserve protects a number of significant endangered ecological communities and is known for educational and recreational associations such as bushwalking, birdwatching and research (NPWS, 2014b). No known formalised public facilities have been identified within the Reserve.

The objectives of the 'Development adjacent to National Parks and Wildlife Services Lands' (DPIE, 2020) guidelines are to assess potential project impacts on land managed by NPWS in a rigorous manner. **Section 4.2** lists each objective and indicates where each is addressed in this EIS.

The zoning and location of the nearby national parks and conservation areas are provided in **Table 2–1.** It also describes the distance and direction from the nearest WTG, which Local Environmental Plan (LEP) the Park / Area occurs within, and relevant zoning of each.

Table 2–1 Nearby National Parks and Conservation Areas

Park / Area	Nearest WTG	LEP	Zoning
Oolambeyan National Park	7 km south-west	Murrumbidgee LEP 2013	C1 – National Parks and Nature Reserves
South West Woodland Nature Reserve	4.7 km north-east	Conargo LEP 2013	C1 – National Parks and Nature Reserves

2.4.4 Built Features

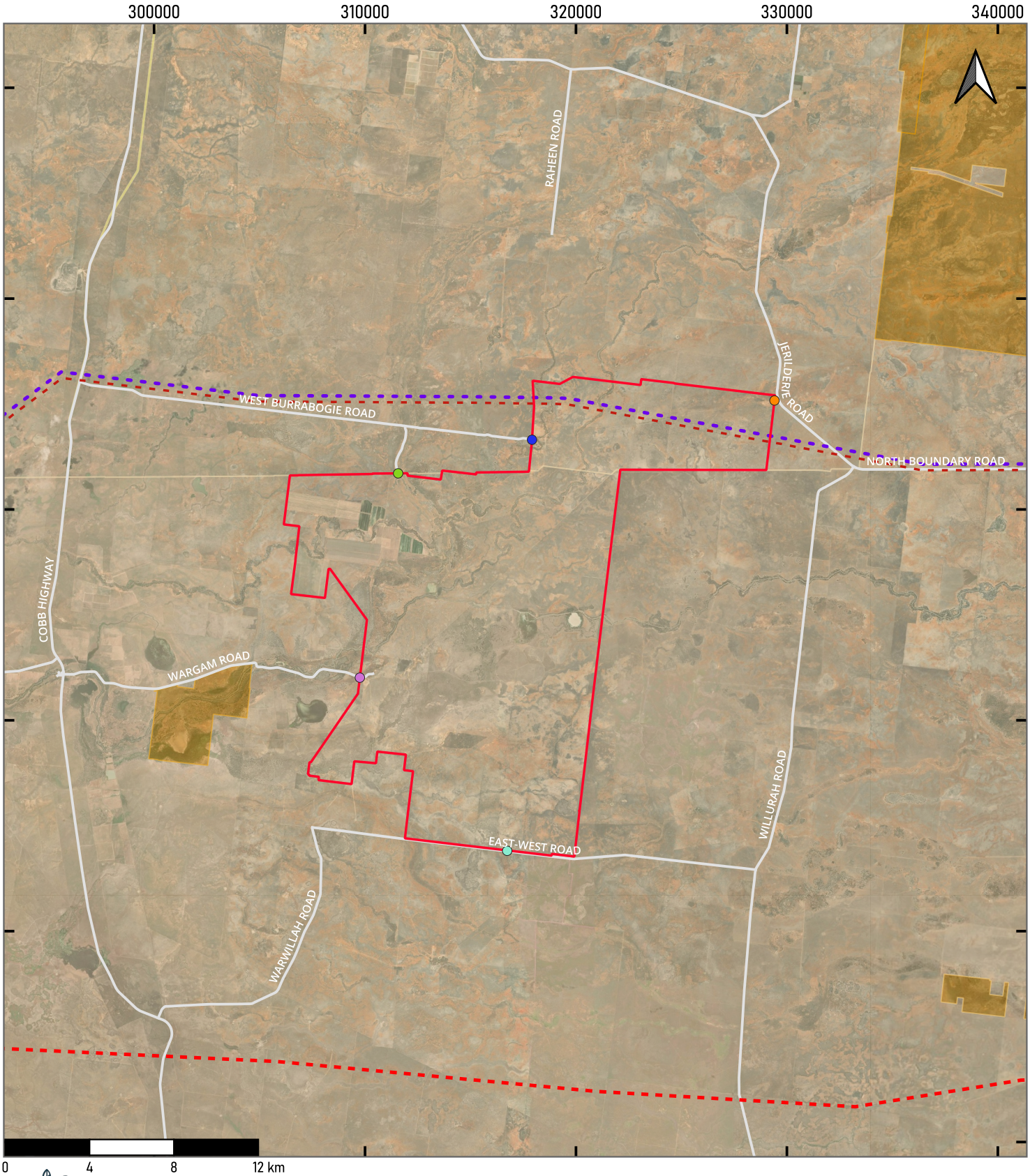
The Cobb Highway and Sturt Highway serve as important commuting corridors as they provide connection to the towns of Balranald, Hay, Wagga Wagga, Deniliquin and others. Minor road connections are provided by Willurah Road, Jerilderie Road and north Boundary Road.

The Project will directly connect to the existing 330 kV transmission line, which crosses the Project Area from west to east.

Recreational associations occur mostly within the extents of Hay and along the Murrumbidgee River to the north of the Project Area. Recreational facilities include campgrounds, ovals, parks and Bidgee Riverside Walk along the Murrumbidgee River.

The Project Area is located within 30 nautical miles (55.56 km) of Hay Airport (YHAY), which is a certified aerodrome operated by HSC. Hay Airport has a published aerodrome elevation of 93 m AHD (305 feet AMSL) and has two runways. The 'Hay Aerodrome Master Plan 2022' (Hay Shire Council 2022), notes the intention that Runway 04/22 will be extended to a length of 2,300 m, and upgraded to a Code 4 non-precision instrument runway.

There are no operational aircraft landing areas (ALA) located within 3 nm of the Project Area. The existing built environment is provided in **Figure 2-7.**



Pottinger Wind Farm

Figure 2-6 Land Zoning

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:250000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

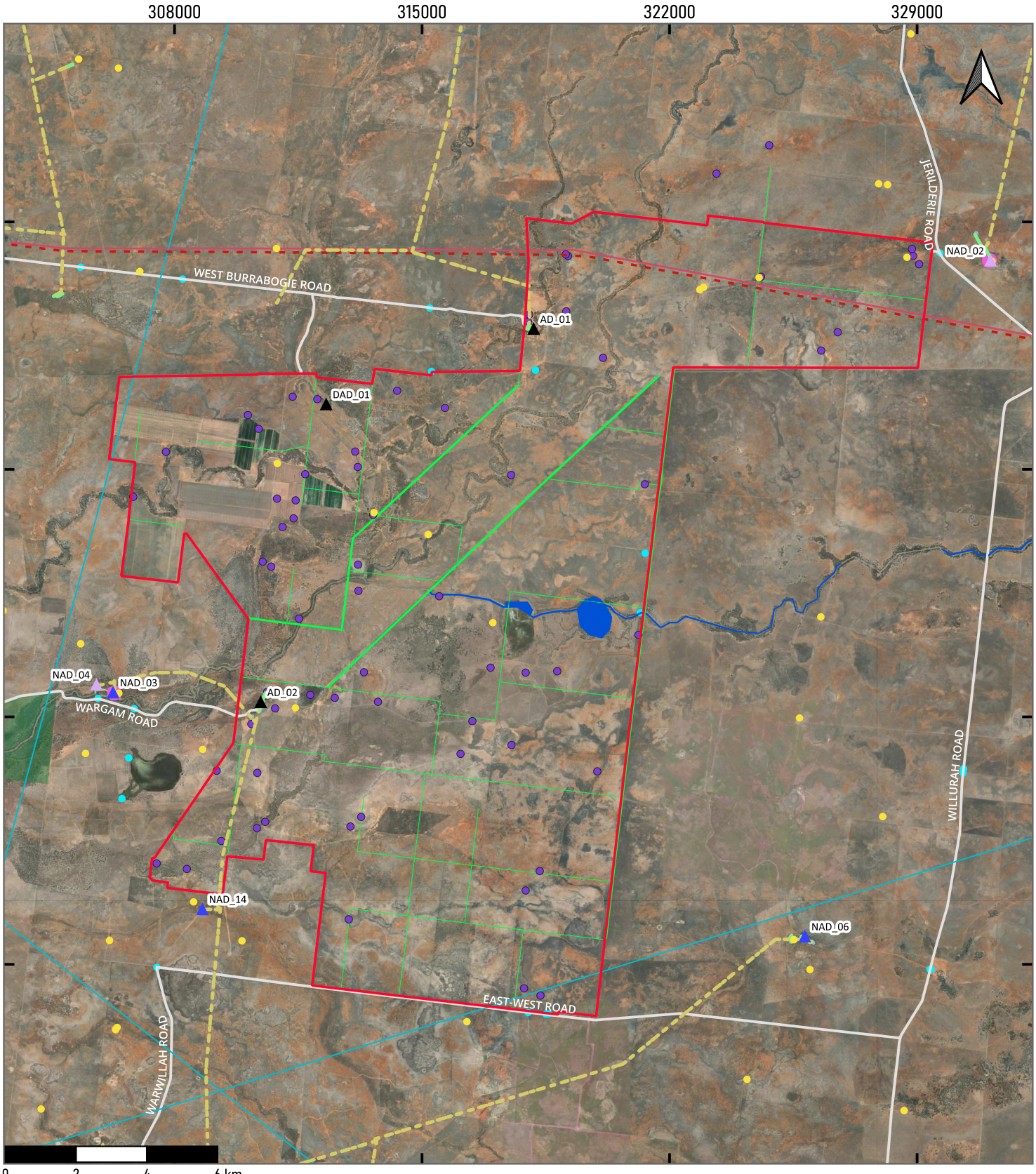
Prepared By: EL Reviewed By: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D

Existing Infrastructure
- Existing 220kV Transmission
- Project Energy Connect
- VNI West (prefered route)
- Main Roads

Land Zoning
- C1 - National Parks and Nature Reserves
- RU1 - Primary Production
- SP2 - Infrastructure



Pottinger Wind Farm

Figure 2-7 Existing Built Environment

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:150000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed By: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

- Project Area
- Noise Monitoring Location

Exisiting Infrastructure

- Main Roads
- Exisiting 220 kV Transmission Line
- 19.1 kV Low Voltage Distribution Line
- Low Voltage Distribution Line
- Distribution Service Line
- ACMA Lines
- Coleambally Outfall Drain Easement
- Transmission Line Easement
- Crown - Paper Roads
- Existing Dam
- Bore
- Triangulation Stations and Survey Marks

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

2.4.5 Land Ownership

2.4.5.1 Associated and Non-Associated Dwellings

Where dwelling owners are hosting Project infrastructure or have entered into an Agreement, they are referred to as 'Associated' dwellings, all other dwellings are referred to as 'non-Associated' dwellings. Where 'non-Associated' dwellings are associated with another renewables development, they are described as 'non-Associated (associated with another Project)'.

Figure 2-8 shows properties and associated (AD) and non-associated dwellings (NAD) in proximity to the Project which were subject to preliminary assessments. All dwellings within the Project Area are associated with the Project.

2.4.5.2 Associated Lot / DPs

Appendix F contains a list of lot/DPs within the Project Area of which this application applies. All within the Project Area are owned by the two associated host landholders. Lots shared between the Project and solar farm applications are identified.

Appendix F also lists relevant lot/DPs of land directly impacted within NSW and South Australia to facilitate the Project's transportation route from Port of Adelaide.

2.4.5.3 Agreements with Associated Landholders

The land where the Project will be located will be appropriately leased through an 'Associated Landholder Agreement'.

Agreements are in place with landholders AD_01, NAD_26 and NAD_02.

2.4.5.4 Other Lodged Development Applications and Dwelling Entitlements

Table 2–2 indicates dwelling entitlements in proximity to the Project within the Edward River LGA as shown on **Figure 2-8.** A review of Edward River LGA website did not reveal any development consent applications within 11 km of the Project other than DAD_01 (i.e. no dwelling exists however a DA is in place).

Table 2–2 Proximate Dwelling Entitlements

MLA Reference	Lot/DP	LGA	Lot size (ha)	Distance to Project Area (km)
WD01	1//DP703764	Hay Shire Council	988.1	1.82
MA01	2//DP703764	Hay Shire Council	2182.8	0.00
TH02	39//DP756315	Edward River Shire Council	262.4	0.00
TH01	342//DP1250435	Edward River Shire Council	539.8	0.00
KA02	341//DP1250435	Edward River Shire Council	224.6	1.09
KA01	54//DP756338	Edward River Shire Council	313.4	0.06
JP18	65//DP756351	Edward River Shire Council	453.0	0.06
JP17	59//DP756351	Edward River Shire Council	710.8	0.06
JP16	54//DP756351	Edward River Shire Council	256.8	3.38
JP15	53//DP756351	Edward River Shire Council	221.1	2.70
JP14	55//DP756351	Edward River Shire Council	720.8	0.78
JP13	52//DP756351	Edward River Shire Council	211.9	0.06
JP12	14//DP756351	Edward River Shire Council	256.1	1.79
JP11	15//DP756351	Edward River Shire Council	228.5	1.53
JP10	36//DP756288	Edward River Shire Council	249.2	3.11
JP09	46//DP756351	Edward River Shire Council	214.7	2.56

MLA Reference	Lot/DP	LGA	Lot size (ha)	Distance to Project Area (km)
JP08	43//DP756351	Edward River Shire Council	253.4	2.15
JP07	34//DP756288	Edward River Shire Council	243.0	1.68
JP06	45//DP756288	Edward River Shire Council	263.3	0.06
JP05	40//DP756288	Edward River Shire Council	242.4	0.06
JP04	51//DP756351	Edward River Shire Council	223.5	0.06
JP03	50//DP756351	Edward River Shire Council	242.6	0.06
JP02	58//DP756351	Edward River Shire Council	252.6	0.06
JP01	57//DP756351	Edward River Shire Council	324.6	0.06

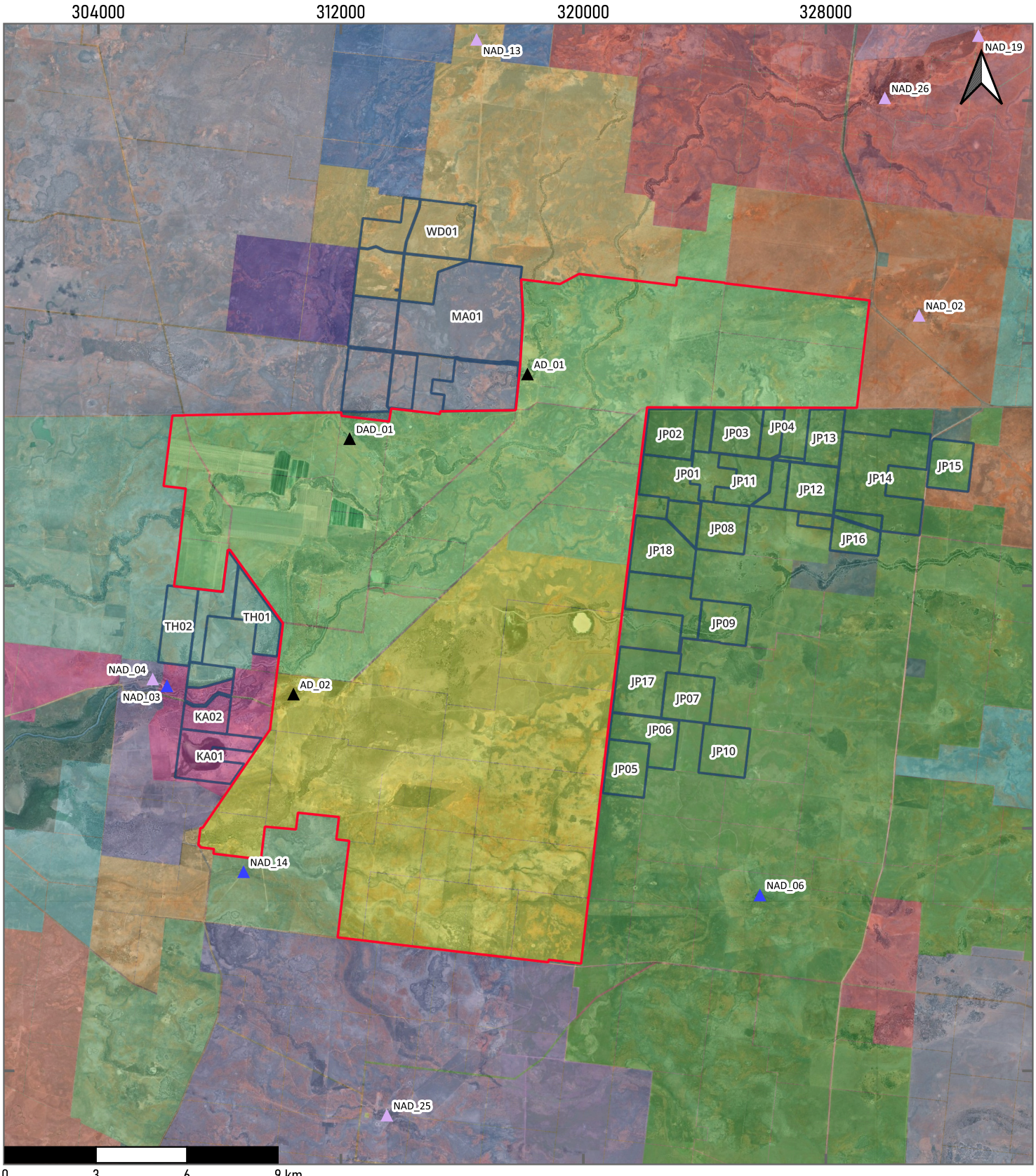
2.4.5.5 Crown Land

No Travelling Stock Reserves are located within the Project Area, however two are located to the east as shown on **Figure 2-9**.

There six survey marks which are used for surveying or distance measuring purposes within 2 km at WTG (refer to **Figure 2-9** and **Section 6.12.3.5**).

Land ownership within the Project Area is predominantly private.

There are multiple (Crown) paper roads within the Project Area as shown on **Figure 2-9**. The landholder is in consultation with Crown lands to close these paper roads. It is expected that these roads will be closed prior to construction, otherwise the Applicant will progress closure or a lease agreement as discussed in **Section 4.2**. There are currently no native title claims for any Crown land within the Project Area.



Pottinger Wind Farm

Figure 2-8 Land Ownership

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:175000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

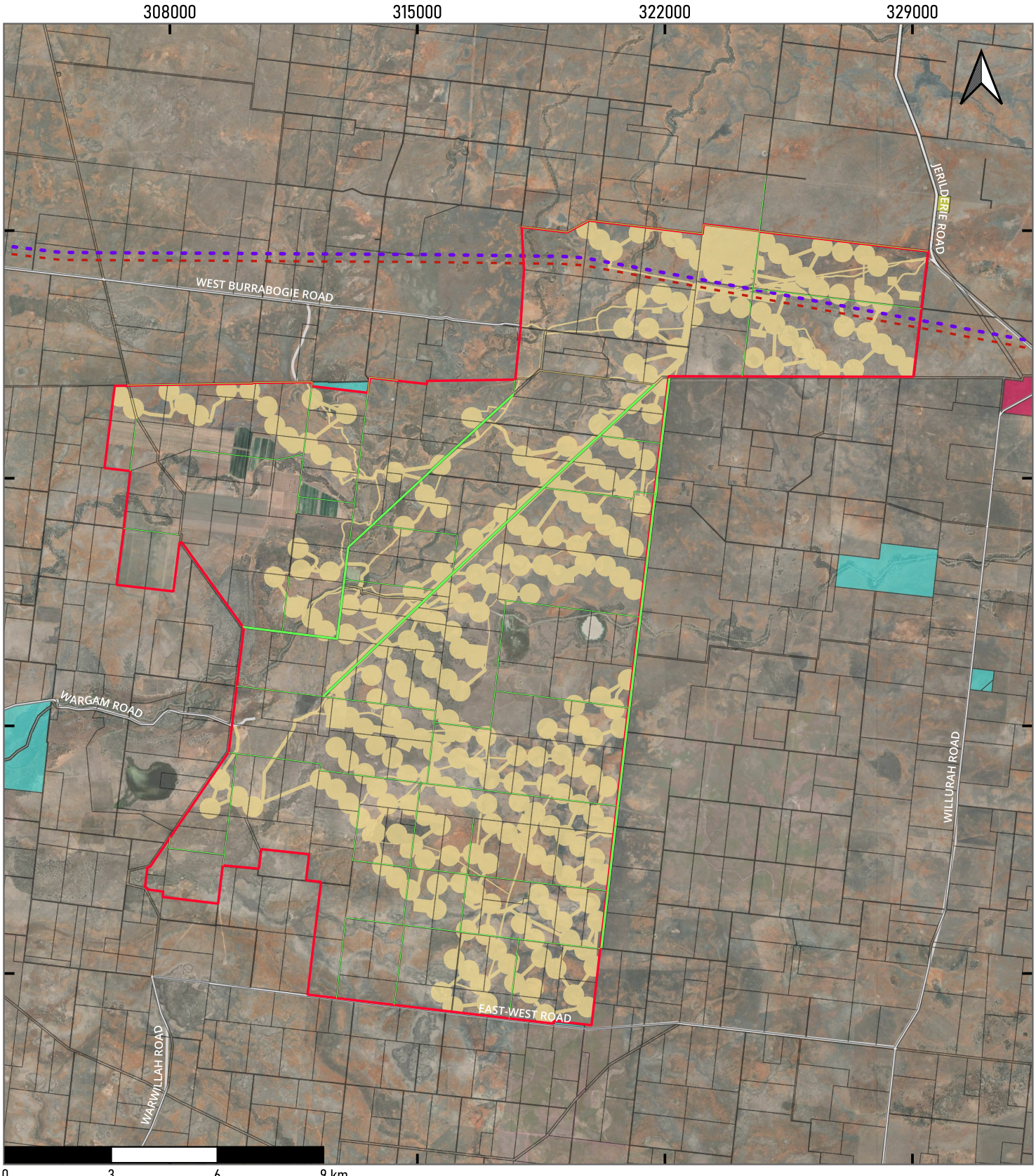
Prepared By: EL Reviewed By: TS
Version: 3.2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)

Land Ownership
- Land Owner 01
- Land Owner 02
- Land Owner 04
- Land Owner 05
- Land Owner 06
- Land Owner 07
- Land Owner 08
- Land Owner 09
- Land Owner 10
- Land Owner 12
- Land Owner 13
- Land Owner 16
- Land Owner 17
- Land Owner 19
- Land Owner 20
- Land Owner 21
- Land Owner 23
- Land Owner 24
- Land Owner 25
- Land Owner 29
- Land Owner 32
- Land Owner 49
- Land Owner 51
- Land Owner 52
- Land Owner 55
- Dwelling Entitlement Lots



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 2-9 Land Ownership - Crown Land

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:150000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Survey Area

Existing Infrastructure
- Main Roads
- Project Energy Connect
- Existing 220kV Transmission

Cadastre and Land Ownership
- Private Land
- The State of New South Wales
- The State Of New South Wales - TSR Category 2
- The State Of New South Wales - TSR Category 3
- Crown - Paper Roads

2.4.6 Risks and Hazards

2.4.6.1 Bushfire Prone Land

The Project Area is located on land which is designated bushfire prone by NSW Rural Fire Service (RFS) bushfire prone land mapping (RFS, 2021) as shown in **Figure 6-12.** Bushfire prone areas are mapped and classified into four categories based on vegetation types and associated buffer zones which influence the intensity and spread of fire. Where mapped, vegetation within the Project Area is largely classified as Vegetation Category 3 which is considered to be a medium bushfire risk. Bushfire risk is further discussed in Section **6.16.**

2.4.6.2 Contamination

A search of the NSW Environment Protection Authority (EPA) "Contaminated Lands Register" was conducted in April 2024. No contaminated land records were found within or proximate to the Project Area.

2.4.6.3 Flooding

Flooding within the Project Area is dominated by flows from Eurolie Creek, Nyangay Creek, Wargam Creek and the Coleambally Outfall Drain and is also prone to significant overland flows due to upstream catchments. Average flood depths across the Project Area are up to 0.3 during a 1% AEP event, with a peak flood depth of up to 4.5 m within ponded areas. The risk of flooding is further discussed in **Section 6.9.**

2.5 Cumulative Impacts

2.5.1 Cumulative Guideline Requirements

The Project has been assessed in accordance with the requirements of the 'Cumulative Impact Assessment Guidelines for State Significant Projects' (Cumulative Guidelines) (DPIE, 2022b) as listed in **Appendix C**. The EIS and its associated technical studies consider relevant construction, industrial and employment generating projects within the locality, and assess potential cumulative impacts.

2.5.2 REZ Status, Proximate Projects and Cumulative Impacts

This section describes the status of the REZ and likely access as relevant to the developments to be included in the cumulative assessment with the Project in this EIS.

2.5.2.1 South West REZ Status

"EnergyConnect" is the construction and operation of a new 900 km electricity interconnector between Wagga Wagga and Robertson, with a spur line to Victoria. It will be the first direction connection between the NSW and SA transmission line networks. Energy Connect is divided into EnergyConnect (West) and EnergyConnect (East). EnergyConnect (East) is most relevant to the Project.

EnergyConnect (East) involves the construction of a new 330 kilovolt (kV) transmission line between the Buronga substation and the proposed new Dinawan substation near Coleambally, and a new 500 kV transmission line between the Dinawan substation and Wagga Wagga (see **Figure 1-1**).

Project EnergyConnect (NSW – Eastern Section) will be undertaken in three stages. Stages 1 and 2 refer to construction and Stage 3 refers to the post-construction period including operation and maintenance of infrastructure, any future upgrades or upgrading and decommissioning.

Once the eastern section of Project EnergyConnect has been upgraded to 500 kV operation, it is anticipated that Project EnergyConnect and HumeLink will unlock around 2.5 GW of transmission capacity in total to support the REZ.

PEC is a new 900 km interconnector under development between Wagga Wagga in NSW and Robertstown in South Australia, roughly bisecting the REZ. It is being jointly delivered by TransGrid and Electranet, with Transgrid delivering the NSW-side works under the National Electricity Market's regulatory framework. It has received regulatory and NSW environmental approvals. PEC includes a section of transmission line between Wagga Wagga and Dinawan that will be constructed so that it can operate at 500 kV (subject to substation upgrades) and link to the eastern edge of the REZ.

In recognition of limitations in other parts of the network that prevent the line operating at 500 kV, this transmission line will initially be operated at 330 kV, until augmented as discussed below. It is expected that this configuration would enable 800 MW of transfer capacity from the REZ, which represents the difference between the new network capacity provided by PEC and the existing network capacity already flowing out of the south-west through Wagga Wagga.

PEC is expected to be complete in late 2026, providing the initial 800 GW of transfer capacity and 1,220 MW of hosting capacity for the access right network.

The delivery of HumeLink and the Dinawan to Wagga Wagga upgrade, which could be delivered as part of VNI West, would increase the transfer capacity to 2.5 GW and the hosting capacity to a potential hosting capacity of 3.2 GW. A REZ Access Scheme was formally declared in April 2024 by the Minister.

2.5.2.2 Proximate Projects' Status

Renewable projects in proximity to the Project are shown on **Figure 2-4** with each at varying approval stages as described in **Table 2–3**. Each has relevantly been included in relevant assessments in **Section 6**.

Of the developments within 25 km of the Project, a total capacity of 8 GW is currently being sought by the applicants (from an available 2.5 GW and future potential 3.2 GW as described in **Section 2.5.1**).

Table 2–3 Projects in Proximity with Cumulative Impact Potential

Project name	Distance to Project Area	Key Dates	Capacity
Pottinger Solar Farm	N/A	• Scoping Report: June 2023 • SEARs: 20 July 2023 • Construction: 2028 • Operations: 2029 • Life: 35 years	300 MW
Project EnergyConnect (NSW – Eastern Section)	<1 km (within Project Area)	• Scoping Report: September 2020 • SEARs: 2 October 2020 • EIS: 13 January 2022 • RTS: 17 February 2022 • Determined: 2 September 2022 • Construction: underway • Operation: 2025	1.2 GW
Bullawah Wind Farm	< 1 km (adjacent)	• Scoping Report: October 2022 • SEARs: 12 December 2022 • Construction: Q3 2025 to Q3 2027 date (24 months) • Operations: 2027 to 2057 date (360 months) • Life: 30 years	1 GW
The Plains Solar Farm	4.5 km	• Scoping Report: 20 December 2022 • SEARs: 23 December 2022 • Construction: 2026 • Operation: 2028	400 MW
The Plains Wind Farm	4,5 km	• Scoping Report: 10 November 2022 • SEARs: 16 December 2022 • Construction: 2026 • Operation: 2028	1.8 GW

Project name	Distance to Project Area	Key Dates	Capacity
Dinawan Wind Farm	25 km	• Scoping Report: November 2022 • SEARs: 14 December 2022 • EIS: November 2023 • RTS: 19 December 2023 • Construction: 2025-2026 (24 months) • Operation: 2027 (300-420 months) • Life: 25 – 30 years	1.5 GW
Dinawan Solar Farm	25 km	• Scoping Report: November 2022 • SEARs: 14 December 2022 • Construction: 2025-2026 (24 months) • Operation: 2027 (300-420 months) • Life: 25 – 35 years	800 MW

2.6 Alternatives Considered

2.6.1 No Project

The Project Boundary is currently used for the grazing of livestock. The “do nothing” scenario will allow for broad acre sheep grazing to continue, however would forgo up to 900 FTE jobs in construction and associated direct and indirect economic inputs to the local and regional economy of approximately $250 million during construction and $371 million during operations. The Project’s capital investment and associated flow on effects would also not be realised.

Proposed community contributions via a VPA and BSP would also not be realised.

The “do nothing” approach does not meet the objectives to develop renewable energy projects in NSW and does support the project objectives.

The Project aims to generate renewable energy and limit production of GHGs. To not progress the Project would not result in savings of 2.8 Mtpa of GHG emissions and powering of 830,000 homes annually. Not developing the Project would be a missed opportunity to contribute to the reduction of Australia’s use of fossil fuels for energy generation.

2.6.2 Alternative Sourcing of Energy

The alternative to using wind energy is the continued use of fossil fuels, including coal and natural gas. These energy sources contribute to the harmful effects of climate change and the release of greenhouse gasses. **Section 2.1** outlines the commitment by Australia and NSW in reducing greenhouse gas emissions and the targets set for increasing the generation of renewable energy.

In consideration of the abundance and reliability of wind energy combined with the sparse population in the area, proximity to the existing road network and planned and existing energy transmission resources, it is considered the use of wind energy is justified.

The Project lies within REZ which (along with the other four REZs) will provide up to 12 GW of renewable energy capacity in NSW. The Project will provide up to 1.3 GW alone, adding significant amounts of renewable energy supply over a 35 year period.

The expected benefits of the NSW REZs are to provide more reliable energy from significant amounts of renewable energy supply, provide energy bill savings, reduce emissions, and create community partnerships (EnergyCo, 2023).

2.6.3 Alternative Site Location

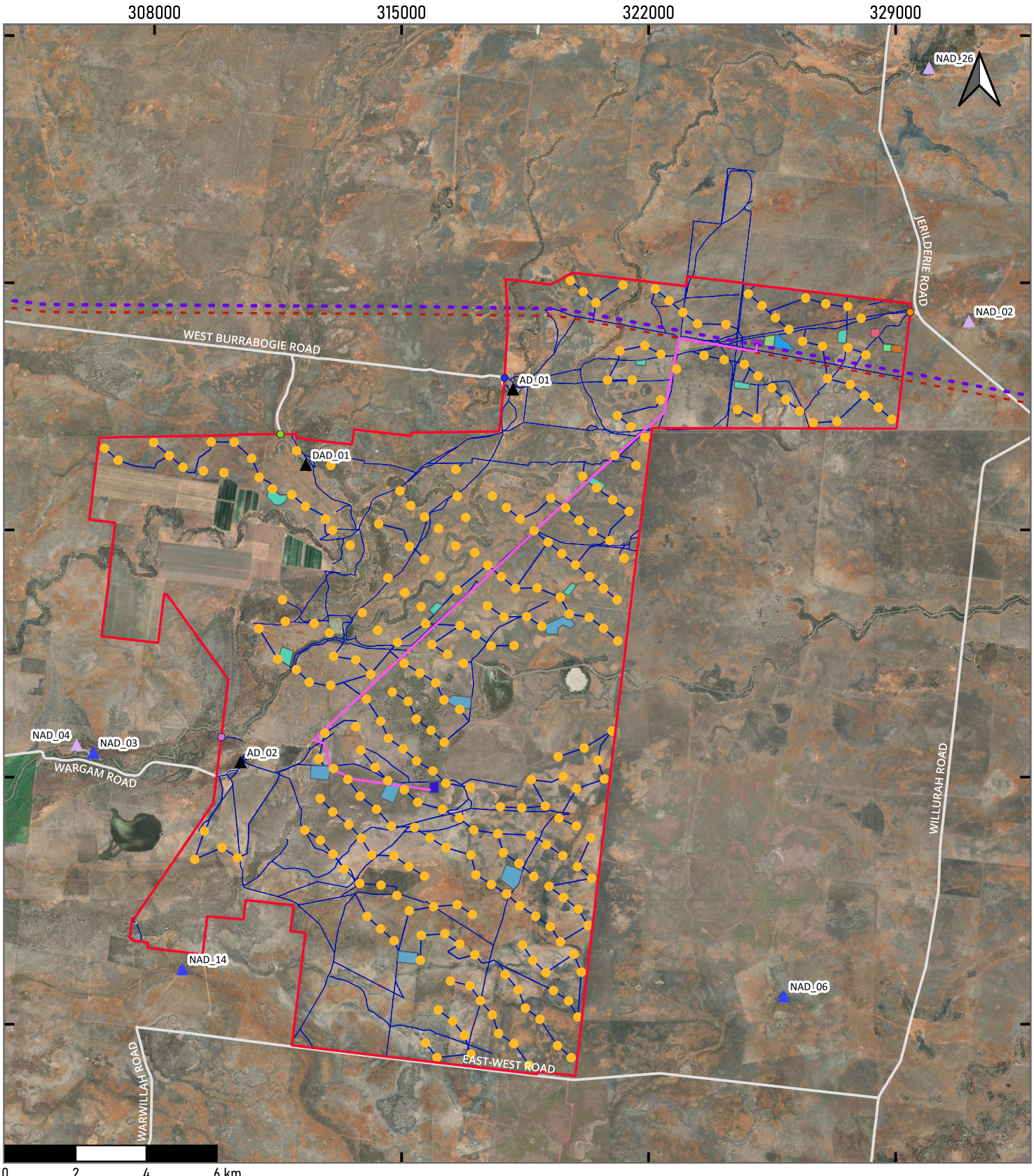
During the Project pre-feasibility stage, the Applicant assessed up to three locations within the REZ. All locations were on flat terrain and considered suitable based on a constructability assessment. All locations have a superior wind resource and appropriate transport access. Primarily for biodiversity constraints reasons, the Project Area was selected as the lowest impact.

2.6.4 Original (Maximum) Site Layout

During pre-feasibility, upon confirmation of the proposed Project location, the Applicant identified a layout which maximised energy output and economic benefits to the State.

The proposed Project Layout is shown on **Figure 2-10** and was proposed to disturb up to 1,066 ha.

An iterative review process was then undertaken to determine the optimum layout in consideration of preliminary environmental impacts and constraints, whilst maintaining project feasibility and includes the Project for which is assessed in this EIS.



Pottinger Wind Farm

Figure 2-10 Original Project Layout

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:150000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Original Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Access Tracks
- High Voltage Transmission Interlink
- BESS
- Main Substation
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Southern Substation
- Southern Temporary Construction, Batching and Laydown

Existing Infrastructure
- Main Roads
- Existing Site Tracks
- Project Energy Connect
- Existing 220kV Transmission
- Nature Reserve

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)

2.7 Benefits of Project Compared to the Original Layout

Table 2–4 describes the amendments made to the Project layout between the original layout as shown in **Figure 2-10** and that for which approval is sought as described in **Section 3**. Amendments include removing WTGs, reduction of the Project Disturbance Footprint and removal of several access tracks.

Table 2–4 lists and **Figure 2-11** shows the environmental benefits achieved from the amendments.

Figure 2-12 illustrates the constraints considered identifying the key environmental and other land use constraints that have informed the final design of the Project. Civil ecology constraints were applied which include Plains Wanderer habitat and threatened flora, and WTG constraints.

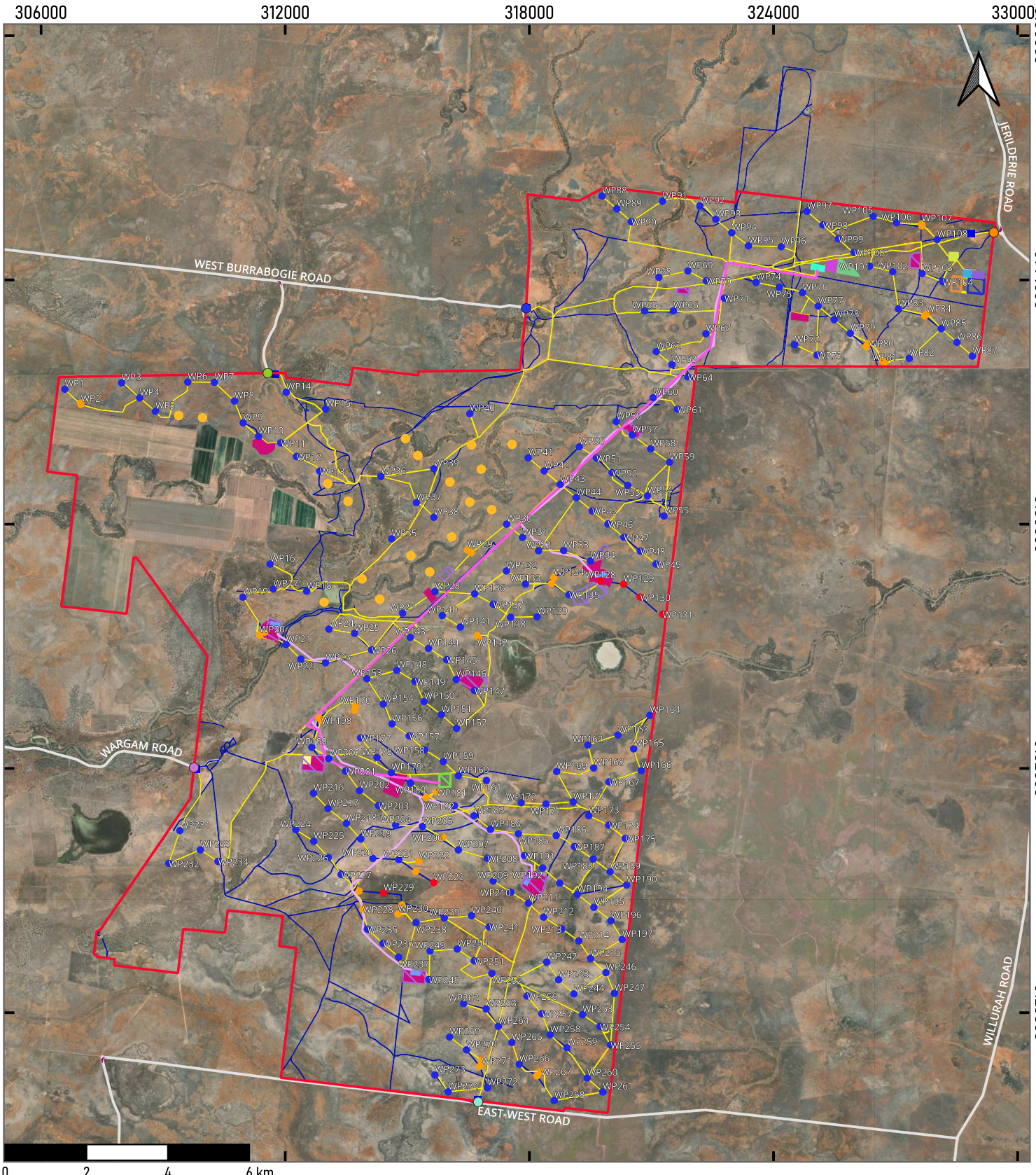
Table 2–4 Project Layout Amendments, Benefits and Outcomes

Infrastructure	Amendment	Outcome (Avoidance of unless stated)	Section
WTG and Associated Infrastructure Summary	Removed WTGs (19) Scoping	PCT • 0.31 ha PCT 28 • 7.41 ha PCT 44 • 0.92 ha PCT 45 • 2.24 ha PCT 46 • 6.91 ha PCT 160 • 15.39 ha PCT 164 Civil Constraint • 1.32 ha Category 4 vegetation • 0.63 ha Category 5 vegetation • 6.46 ha Category 6 vegetation WTG Constraints • 2 WTGs removed from Category 4 vegetation • 5 WTGs removed from Category 5 vegetation • 4 WTGs removed from Category 6 vegetation	**6.4**
	Removed WTGs (6) EIS	PCT • 1.67 ha PCT 28 • 4.1 ha PCT 160 • 1.25 ha PCT 164 Civil Constraint • 4 ha Category 4 vegetation WTG Constraints • 2 WTGs removed from Category 5 vegetation • 4 WTGs removed from Category 6 vegetation	**6.4**
	Relocated WTGs (18) EIS	PCT • 1.55 ha PCT 13 • 0.13 ha PCT 16 • 6 ha PCT 28 (Sandhill Pine Woodland TEC) • 0.06 ha PCT 46 • 0.33 ha PCT 160 • 1.88 ha PCT 164 Civil Constraint • 1.81 ha Category 4 vegetation • 1.59 ha Category 5 vegetation • 0.01 ha Category 6 vegetation WTG Constraints • 2 Relocated from Category 4 vegetation • 2 Relocated from Category 5 vegetation • 3 Relocated from Category 6 vegetation	**6.4**

Infrastructure	Amendment	Outcome (Avoidance of unless stated)	Section
Project Disturbance Footprint	Project wide amendments	Civil Constraint • 30 ha Category 4 vegetation • 6 ha Category 5 vegetation • 0.79 ha Category 6 vegetation	**6.4**
WTG 1-10	T2 – Relocated 34 m	• Category 4 vegetation WTG • Category 3 vegetation Civil	**6.4**
WTG 11 – 20	T20 – Relocated 137 m	Category 5 vegetation WTG	**6.4**
WTG 21 – 30	T29 – Relocated 118 m	Category 5 vegetation Civil	**6.4**
WTG 71 – 80	T80 – Relocated 118 m	Category 4 vegetation Civil and Constructability constraint	**6.4**
WTG 81 – 90	T81 – Relocated 100 m	• Category 5 vegetation WTG • PWF SUB 02 heritage site	**6.4**
	T84 – Relocated 46 m	Category 4 vegetation WTG	**6.4**
WTG 91 – 100	T97 – Hardstand and Track modified	PSF03 heritage site	**6.4**
	T99 – Hardstand and track modified	• PSF04 heritage site • PSF05 heritage site	**6.4**
WTG 101 – 110	T107 – Relocated 46 m	• PSF06 heritage site • Category 4 vegetation Civil	**6.4**
WTG 121 – 130	T128 - Removed	Category 5 vegetation WTG	**6.4**
	T129 - Removed	• Category 5 vegetation WTG • Category 4 vegetation Civil • PWF SUB 12 heritage site	**6.4**
	T130 - Removed	• Category 4 Civil • Category 5 vegetation WTG	**6.4**
WTG 131 – 140	• T131 - Removed	Category 5 vegetation WTG	**6.4**
	• T134 – Relocated 155 m	Category 5 vegetation WTG	**6.4**
WTG 141 – 250	T142 – Relocated 55 m	• Category 4 vegetation Civil • Category 4 vegetation WTG • Category 6 vegetation WTG and Civil • Category 4 vegetation WTG and Civil • Category 6 vegetation WTG and category 4 and 5 Civil • PWF SUG 08-09-10 heritage site • Category 6 WTG, Category 4 Civil • PWF SUG 08-09-10 heritage site • Category 5 WTG and category 4 Civil • PWF SUG 31 heritage site	**6.4** **6.5**
	T176 – Relocated 10m	• PWF SUG 04 heritage site • Category 6 WTG • Category 6 Civil	**6.4** **6.5**
	T181 – Relocated 290 m	Category 6 WTG	**6.4**
	T198 – Relocated 80 m	Allow Clearance from HV overhead Line	**6.4**
	T206 – Relocated 80 m	Wake spacing from T222	**6.4**
	T222 – Relocated 264 m	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site • Cat 6 vegetation WTG	**6.4** **6.5**

Infrastructure	Amendment	Outcome (Avoidance of unless stated)	Section
		• Cat 4 vegetation Civil	
	T223 – Removed	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site • Cat 6 vegetation WTG • Cat 4 vegetation Civil • Cat 5 vegetation Civil	**6.5**
	T228 – Relocated 650 m	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site	**6.5**
	T229 - Removed	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site • Cat 6 vegetation WTG • Cat 4 vegetation Civil	**6.4** **6.5**
	T230 – Relocated 246 m	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site • Cat 5 vegetation WTG • Cat 4 vegetation Civil	**6.5**
	T238 – Modification to Hardstand	PWF SUG 31 heritage site	**6.5**
WTG 250 – 253	T267 – Relocated 148 m	Category 6 vegetation WTG	**6.4**
	T271 – Relocated 160 m	Category 5 vegetation Civil	**6.4**
	T273 – Relocation of track	PWF SUG 32 heritage site	**6.5**
BESS	3.2 km west	Relocated to mitigate noise impacts to NAD_02	**6.2**
Substation / Switching Station	Addition of 4 substations and OHLs to Collector Substation	• Improvements to Internal Reticulation • Improvements to Electrical losses • Reduction to project disturbance through minimising trenching for 33kV reticulation	**3.4.3.2**
Onsite Supporting Infrastructure	Addition of permanent satellite O&M Facility	• Provide improvements to site safety • Provide improvements to site amenities	**3.4.5.1**
	Modification to Temporary Construction, Batching and Laydown location	• PWF SUB 12 heritage site • Category 4 Civil heritage site • Category 5 vegetation Civil	**6.4** **6.5**
	Additional Water Tanks located at site entrances	Bushfire report recommendation	**6.16**
Ancillary Activities	None	None	**N/A**
Access Tracks	Removal of ancillary infrastructure access track at site entrance B	PSF11 heritage site	**6.4** **6.5**
	Relocation of track near T18	• PWF SUD 04 heritage site • Category 6 vegetation Civil	
	Relocation of track between T80 & T81	• PWF SUB 02 heritage site • PWF SUB 03 heritage site	

Infrastructure	Amendment	Outcome (Avoidance of unless stated)	Section
	Removal of EA south parallel access track through creek crossing	PWF SUC04 heritage site	
	Relocation of track south at creek crossing	PWF SUC 10 heritage site	
	Relocation of track south	PWF SUE 12 heritage site	
	Relocation of track between LALC boundary	PWF SUG 17 heritage site	
	Relocation of track	• PWF SUE 05 heritage site • PWF SUG 02 heritage site	
	Removal of tracks	• PWF SUG 08 heritage site • PWF SUG 09 heritage site • PWF SUG10 heritage site	
	Relocation of track to survey boundary	PWF SUG 17 heritage site	
	Removal of track between T258 & T 266	PWF SUG 22, 23, 24 heritage sites	
Transport Route			
T9 and T10	Broken Hill Bypass Route	Avoidance of impacts to Broken Hill township	**6.6**



Pottinger Wind Farm

Figure 2-11 Layout Amendments

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

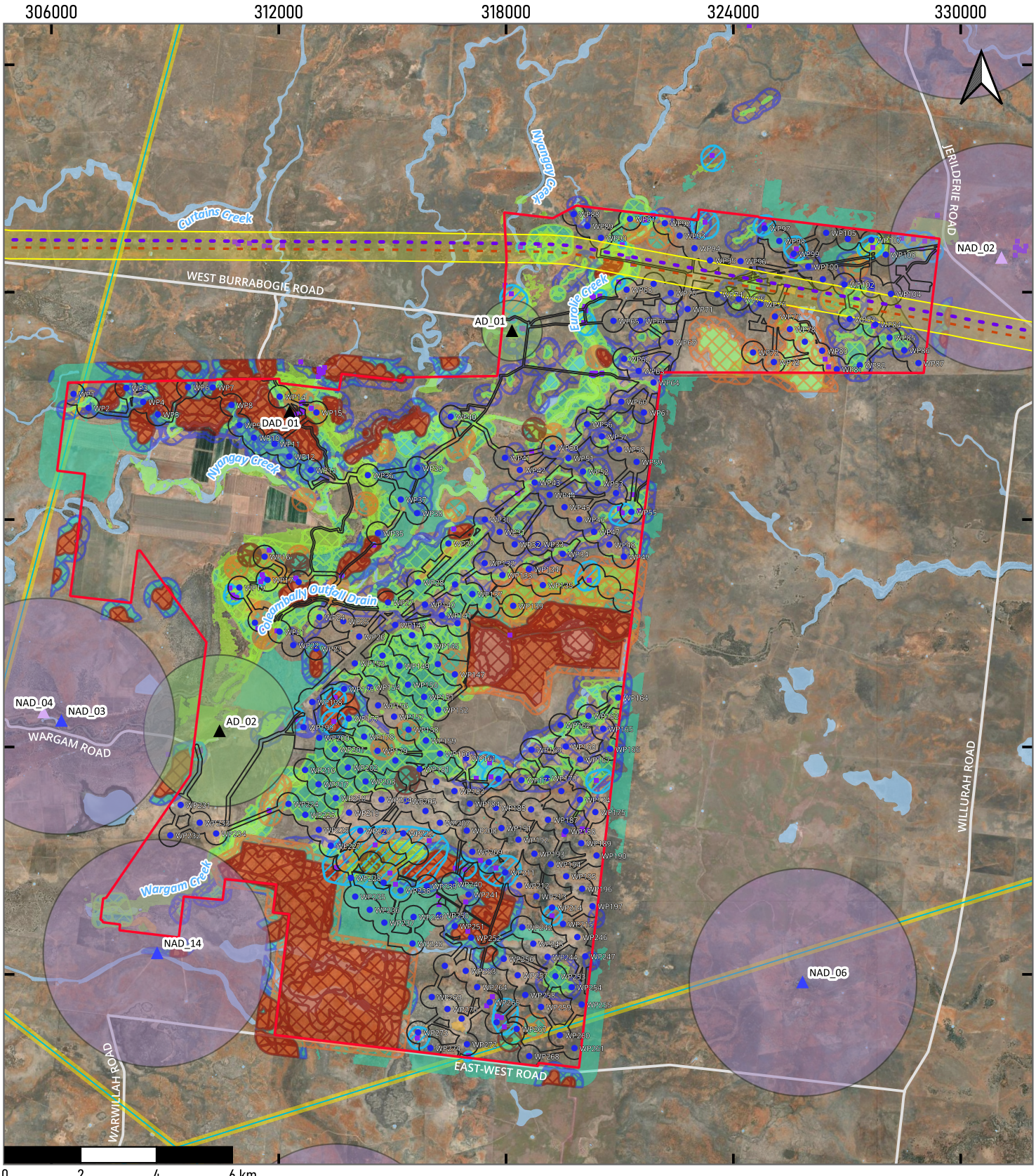
Prepared By: EL Reviewed By: TS
Version: 3.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Proposed Wind Turbine Location
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Additional Site Entrance Disturbance
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Amended Temporary Construction, Batching and Laydown
- Central Substation
- Additional Satellite O&M
- Additional Substation
- Additional Water Tank Location
- HV Transmission
- Access Tracks

Amended Infrastructure
- Relocated Wind Turbine
- Removed Wind Turbine
- Original HV Transmission
- Removed Access Tracks
- Original BESS
- Original Main Substation
- Original Switching Station
- Original Southern Substation
- Original Temporary Construction, Batching and Laydown

Existing Infrastructure
- Main Roads



Pottinger Wind Farm

Figure 2-12 Project Constraints

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:140000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022) Energy Co (2024)

Prepared By: EL Reviewed by: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- WTG Locations
- Survey Area

Existing Infrastructure
- Main Roads
- Existing 220 kV Transmission Line
- Project Energy Connect
- ACMA Lines

Dwellings
- Associated
- Non-Associated
- Non-Associated (Associated with other project)

Constraints
- Hydro Area
- Heritage Site
- Heritage Buffer
- ACMA - 110m Zones
- Associated Dwelling Buffer
- Non-Associated Dwelling Buffer
- Transmission Line Corridor Buffer

Civil Ecology Constraints Category
- 3
- 4
- 5
- 6

WTG Constraints Category
- 3
- 4
- 5
- 6

3 PROJECT DESCRIPTION

This Section provides a comprehensive description of the Project for which approval is sought. It provides an overview and table which summarises the main elements of the Project as well as suitable maps and plans. Where project description flexibility is sought (e.g. for detailed design, micro-siting, technological advancements, demand-driven production or staging), it has been described in this Section.

3.1 Overview

The Project includes the construction, operation and decommissioning of a wind farm and associated infrastructure with a targeted electricity generation capacity of 1.3 GW.

The Project will supply electricity to the national electricity grid via the existing electricity transmission network to power approximately 830,000 homes annually.

Table 3–1 provides a project summary as shown conceptually in **Figure 3-1.** Values are approximate and subject to detailed design.

Table 3–1 Conceptual Project Summary

Project Component	Summary
Key Parameters	
Applicant	Pottinger Renewables Pty Ltd
Project Area	26,000 ha
Survey Area	8,703 ha
Disturbance Footprint	1,066 ha
Estimated Development Cost	$2.152 billion
Project Elements	
WTGs	Up to 247 Tip height up to 280 m Hub height up to 180 m Indicative WTG nameplate capacity: Up to 8 MW Total output of approximately 1.3 GW
BESS	Approximately 500 MW / 2 GWh useable capacity Consisting of up to 2,025 battery units for the BESS, each unit 2.1 m in width, 2.5 m in height 4 hour storage
Substation	Five wind 33/330kV substations and 10 transformers including one collector substation with no transformer One BESS 33/330kV substation and three transformers
Switching Station	One switching station and associated equipment to connect to Project EnergyConnect
Electrical Reticulation Infrastructure	Internal 33 kV, 66 kV, 132 kV, or 330 kV electrical reticulation network
On-Site Permanent Supporting Infrastructure	Site entry and internal access tracks Control room, storage facilities, workshop, parking spaces, septic, water supply utilities, waste management facilities, lighting, fencing, asset protection zones
Off-Site Supporting Infrastructure	Waste disposal facilities Existing public roads and communication network
Subdivisions / other	Option to acquire and subdivide the switching station into Project EnergyConnect and create a separate subdivision for the BESS
Construction	
Construction Duration	55 months including design, procurement, construction and commissioning of the Project
Construction Hours	Standard daytime hours in line with 'Interim Construction Noise Guideline' (Clause 2.2, Recommended standard hours) – unless by exception
Construction Workforce	900 FTE personnel Potential additional specialists as required

Project Component	Summary
On-Site Temporary Infrastructure	Site office, car parking spaces, amenities, stockpile area, laydown areas, fencing, power connection, communication connection, storage, access, construction compound, accommodation facilities
Services and Utilities	Protection or potential relocation of existing utilities as needed
Ancillary Activities	Import of gravel, sand and aggregate for construction activities
Transport Route	Oversize Overmass (OSOM) equipment to be transported from Port of Adelaide Other minor components may be transported from various locations across NSW and Victoria External road upgrades for OSOM route and localised upgrades for access to Project Area from surrounding directions
Operations	
Duration	In perpetuity, Infrastructure life estimated up to 35 years
Hours of Operation	24/7
Operational Workforce	50 FTE

3.2 Interaction with or Reliance on other Developments

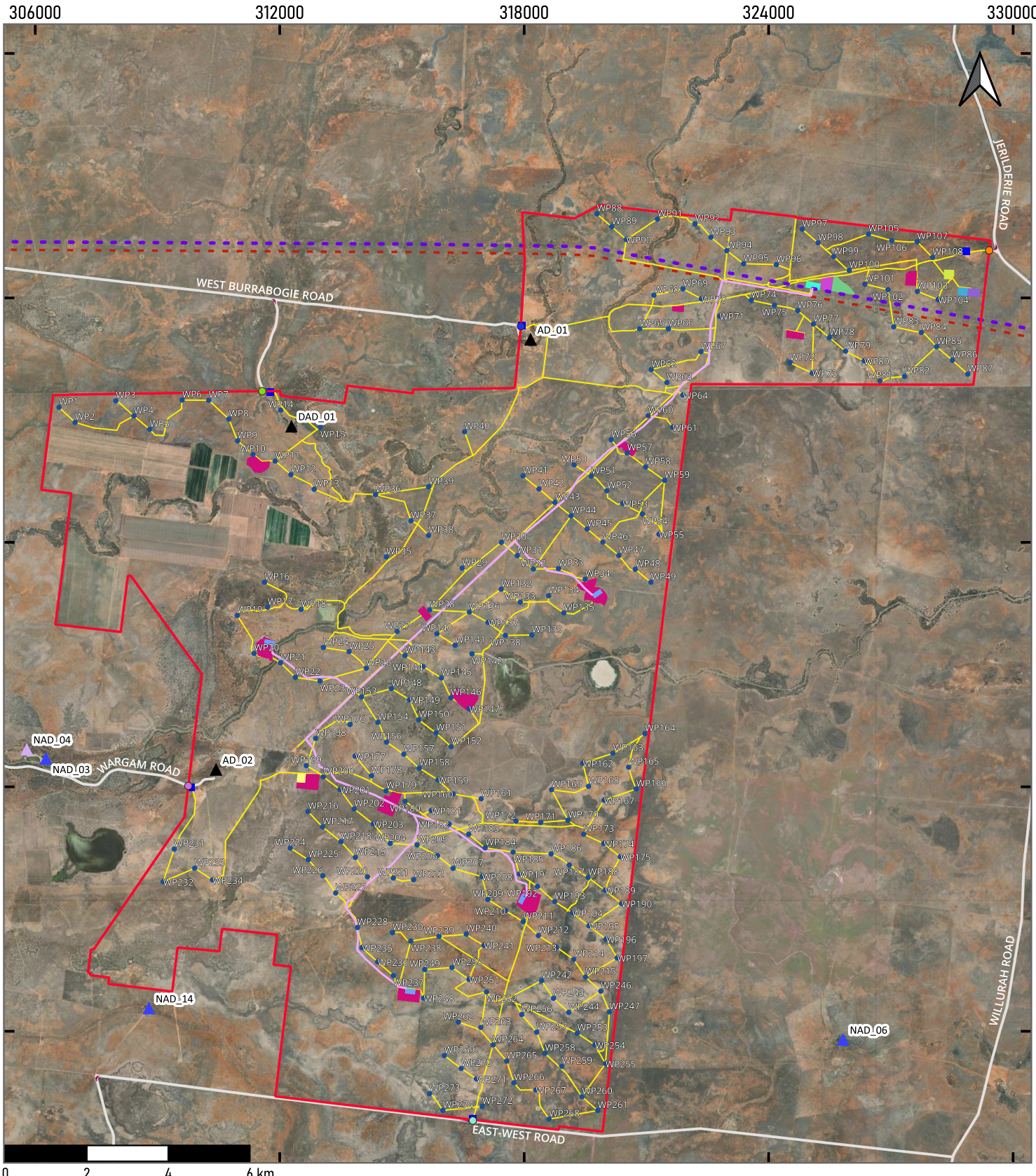
This Project would connect to and therefore relies on Project EnergyConnect (NSW – Eastern Section) which is a 330 kV double circuit transmission line located within the Project Area.

The Project relies on gaining access rights into the South West Renewable Energy Zone (REZ) or future transmission infrastructure such as Victoria to New South Wales Interconnector (VNI) West. Collaborative engagement with successful neighbouring projects within the SW REZ will be offered to provide an opportunity to share costs, particularly in areas such as road infrastructure upgrades which would facilitate the delivery of Project infrastructure from the Port of Adelaide to the Project Area. Neighbouring projects are within 1 km of the Project and include the Plains Wind Farm and Solar Farm, and the Bullawah Wind Farm. Neighbouring projects are further considered in **Section 6.21.**

The PSF (subject of a separate DA) will utilise some elements of the Project as described in the EIS. These are included and assessed in each EIS. This includes (at least): access roads, Operation and Maintenance (O&M) facility, substations and other infrastructure facilitating connection to the NEM, BESS, workforce, switchyards and accesses.

Accommodation facilities from other approved projects may also be utilised.

This EIS covers all Project components, and no additional or separate approvals are required to operate the Project.



Pottinger Wind Farm

Figure 3-1 Conceptual Project Layout

SOMEVA RENEWABLES

Date:	21/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3.1
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink

- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Location

Existing Infrastructure

- Main Roads
- Project Energy Connect
- Existing 220kV Transmission

Dwellings

- Associated
- Non-Associated
- Non-Associated (Associated with other project)

3.3 Project Area

The Project Area covers 26,000 ha and consists of the lots shown in **Table 2–2.** The Project Area is shown as the red boundary on **Figure 3-2.**

The Survey Area covers 8,703 ha and is shown in **Figure 3-2.** It describes the area which was subject to detailed and consistent field survey and impact assessment and includes buffers around Project components to facilitate “micro-siting” and includes the vast majority of the area to be directly impacted by the Project.

A higher-level assessment has been undertaken within the Project Area and outside the Survey Area for constraints and opportunities and used to guide eliminating or minimising impacts.

The Disturbance Footprint is up to 1,066 ha and described in **Section 3.3**.

Some minor infrastructure as described in **Section 3.4** may be installed within the Project Area but outside the Survey Area but would only occur following the Due Diligence procedure described in **Section 3.4.5.3**.

The BDAR Subject Land is defined as an area of 26,000 ha and includes the Disturbance Footprint, and additional areas where indirect and prescribed impacts may occur, and ultimately the areas to which the BAM has been applied.

The BDAR Assessment Area includes the Subject Land and the area of land within a 1,500 m buffer zone surrounding the Subject Land that is determined as per the BAM.

Asset Protection Zones (APZs) have been incorporated as generally described in **Section 6.16**.

Appendix F lists the lot / DPs to which the application applies by Host landowner 1 and 2, the BESS and transport route, respectively.

3.3.1 Micro-siting

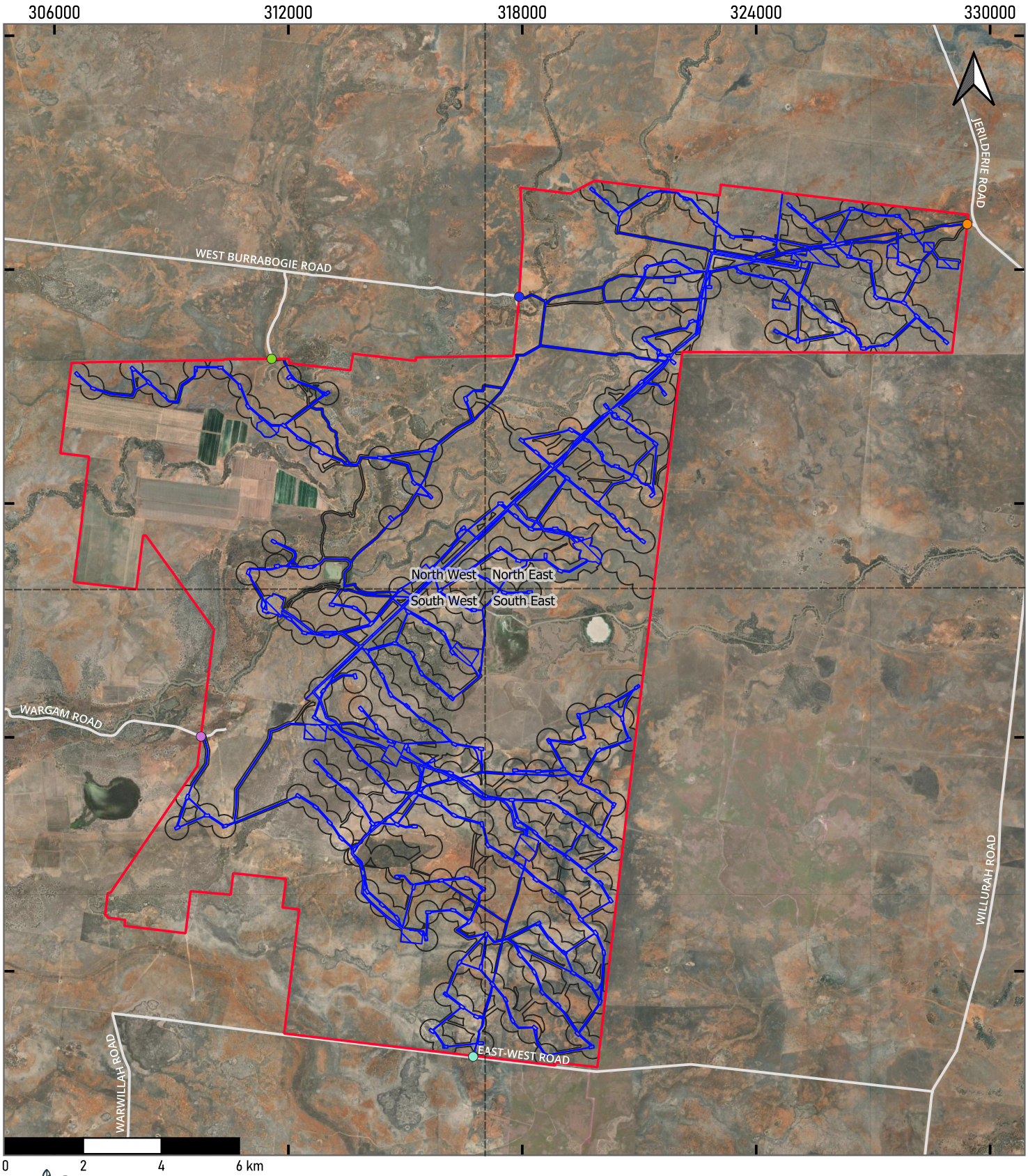
Assessed WTG coordinates are listed in **Appendix E**. WTGs will be micro-sited during detailed design for environmental, geotechnical or other technical requirements within the Survey Area.

The Survey Area includes a 300 m radius of allowable micro-siting area around WTG coordinates to allow for greater construction flexibility of hardstands and associated temporary construction requirements, and 100 m of allowable micro-siting area around roads, 50 m around underground cabling and 200 m around overhead powerlines consistent with assessments in **Section 6**. This is the Survey Area as shown on **Figure 3-2.**

Micro-siting in areas which are potential flyways between local wetlands and between wooded areas will adopt a minimum 500 m spacing between WTGs.

In accordance with the Wind Assessment Guideline:

- Micro-siting will not materially increase the environmental impacts of the Project; and
- Potential variability has been addressed in this EIS; and
- Project Ancillary Infrastructure components must be micro-sited within the Survey Area; and
- Temporary Construction Facilities may be micro-sited outside of the Survey Area so long as they are broadly consistent with this; and
- Meteorological masts may be located outside the Survey Area but within the Project Area.



Pottinger Wind Farm

Figure 3-2 Project Boundaries

SOMEVA RENEWABLES

Legend

- Project Area
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Survey Area
- Disturbance Footprint

Existing Infrastructure

- Main Roads

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:135000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed By: TS
Version: 3.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

3.4 Project Components

This section details the Project for which approval is sought and conceptually shown on **Figure 3-1.** All values are approximate.

Minor changes within the Project Area ("micro-siting") may be made during the detailed design phase and in response to commercial and technical decisions. The changes will be of a scale within the impacts in **Section 6**.

3.4.1 Wind Turbine Generators

The Project comprises up to 247 WTGs with each having a hub height of up to 180 m and a maximum tip height of 280 m (to the top of the vertical blade). Each will have a generating capacity up to 8 MW and a combined maximum installed capacity of 1.3 GW. Each WTG will have a blade length of up to 100 m.

A WTG includes three blades which are attached to the rotor hub. Each tower is a tubular steel or concrete structure that supports the nacelle, the rotor hub and the three blades. The interior of the tower contains the power and control cables, an access ladder and lift (with safety controls).

Each WTG will be situated over gravel hardstands with concrete footings, mounted onto tubular steel or concrete towers. The rotor blades, nacelle and the supporting tower of the WTGs will be painted white.

The expected life of a WTG is up to 30 years at which time decommissioning may occur as described in **Section 3.7**.

WTG 219 will be micro-sited to avoid impacts to the adjacent survey mark or a registered survey will move or remove the survey mark in consultation with relevant regulators.

Where WTGs from the Plains Wind Farm, Bullawah Wind Farm and the Project are approved within 500 m, during the detailed design process the Applicant will consult with the other developers to ensure that constructed WTGs are appropriately spaced.

Figure 3-3 to **Figure 3-6** show amplified aerial views of the north, east, south and west areas of the Project.

Appendix E includes a table with the coordinates in latitude / longitude and maximum AHD heights of WTGs.

3.4.2 Battery Energy Storage System

One BESS with a capacity of up to 500 MW (AC) with four-hour energy storage will be constructed. On-site storage allows for on-demand electricity delivery to the transmission network, assisting to limit price fluctuations. The Project will have a maximum export capacity of 2,000 MWh.

The BESS has a target life of up to 35 years with BESS components anticipated to be replaced or upgraded as required and life may be extended if feasible at the time. It will be comprised of lithium-ion or similar battery technology (likely lithium iron phosphate), bi-directional inverters, transformers, required control and monitoring components such as voltage sensing units and thermal management of power electronics.

The BESS is generally comprised of around 2,025 battery units containing liquid-cooled battery racks, cabinets and other protections and fire management systems to ensure efficient energy output. The BESS will be located within shipping containers (or similar structures) of approximately 2.1 m wide by 3.3 m depth and 2.5 m high and indicative unit weight is approximately 14 t. The BESS will be designed in accordance with relevant standards and codes such as AS/NZS 5139, IEC 62281, IEC 62485-1, IEC 62485-2, IEC 62933, UL 38.3, UL 9540A and more. The indicative fire management system includes fire rated walls between units, NFPA 69 active ventilation and UL 9540A unit-level compliance, smoke and hydrogen detection and fire suppression.

The BESS will be strategically positioned adjacent to the main substation and switching station, optimising its connectivity to the grid and allowing for efficient energy transmission and distribution.

The 500 MW capacity BESS will have a 2 GWh useable energy storage capability and will play a pivotal role in managing variable solar energy production, smoothing out intermittent power generation and ensuring a reliable and stable energy supply to the local community. Its extensive storage capacity provides the ability to store surplus energy during periods of excess production and release it when demand is high, fostering a more resilient and sustainable energy system.

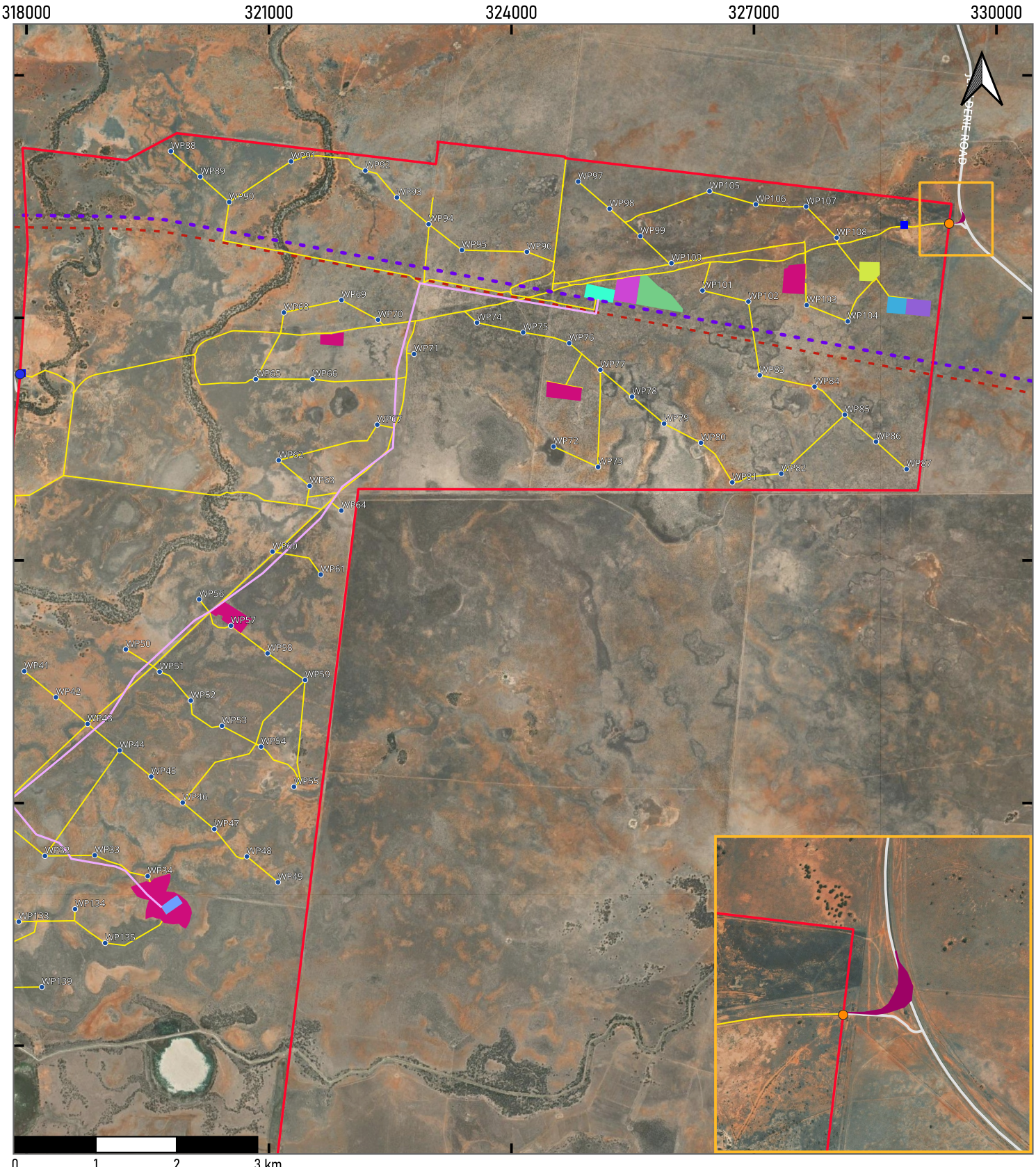
Flood sensitive infrastructure including the BESS, switching station and main substation will be elevated above the Probably Maximum Flood (PMF) level and the location and extent of Project infrastructure within the 1% AEP flood extent will be minimised. Power poles for the proposed transmission line will be located away from flow paths where possible.

The BESS will be installed in accordance with manufacturer and UL9540A report recommended clearances based on testing. It will include fire protection systems specified by the manufacturer and UL9540A report.

Detailed design will validate the system to be installed in the Project Area ensuring recommended clearances are met. UL testing information shall be made available to the certifying authority.

Vent covers shall be constructed of non-combustible material and shall not be located above battery packs within the BESS container.

The vent atop the containers shall be made of metal instead of plastic and covered by a metallic mesh shield and the placement of the fans shall be such that batteries or flammable materials shall not be located directly beneath ventilation openings.



Pottinger Wind Farm

Figure 3-3 Conceptual Project Layout - North East

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:65000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

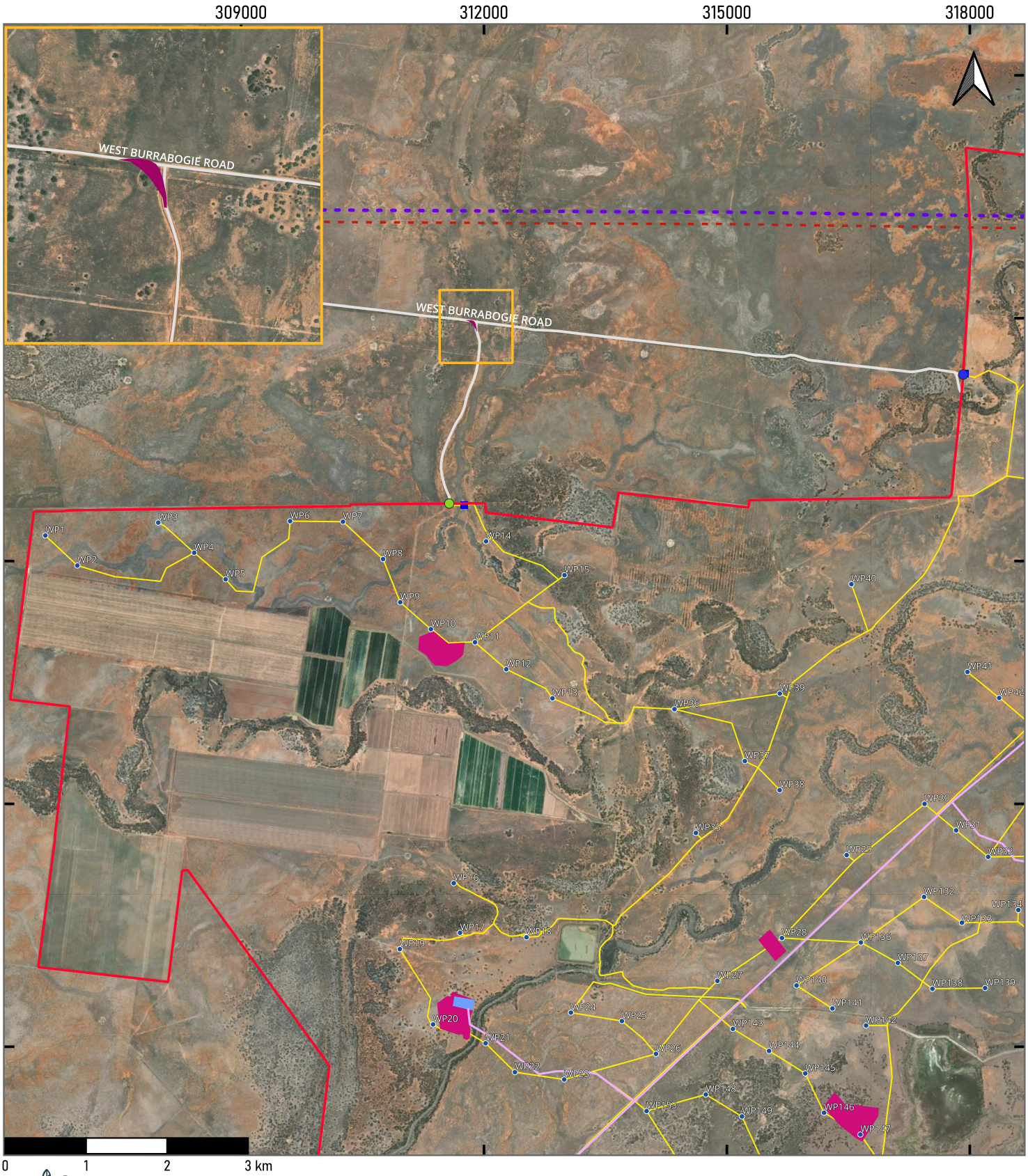
Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance

- Access Tracks
- High Voltage Transmission Interlink
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation

- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Locations

Existing Infrastructure
- Project Energy Connect
- Existing 220kV Transmission
- Main Roads



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 3-4 Conceptual Project Layout - North West

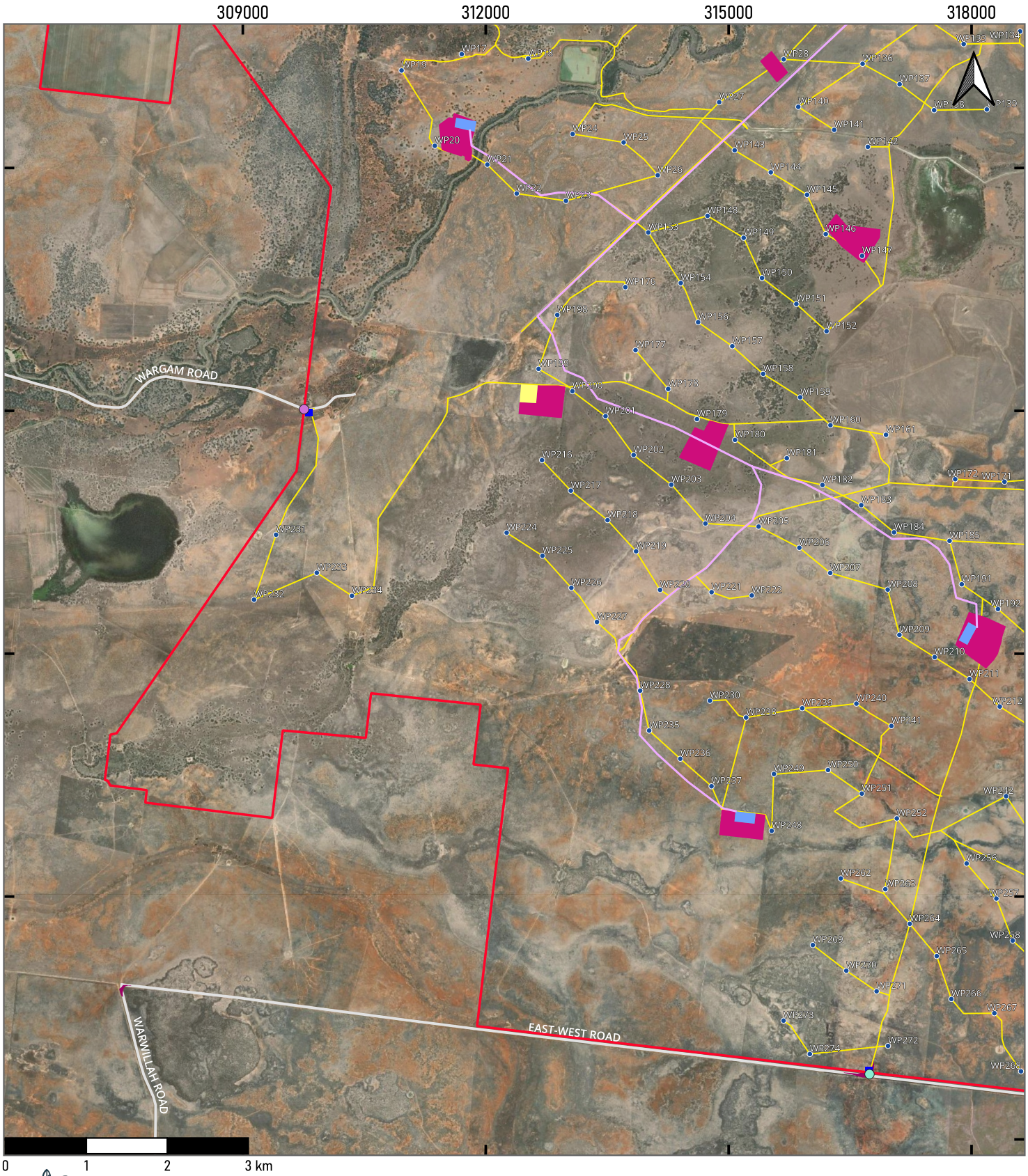
Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:65000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Locations

Existing Infrastructure
- Project Energy Connect
- Existing 220kV Transmission
- Main Roads



Pottinger Wind Farm

3-5 Conceptual Project Layout - South East

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:65000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

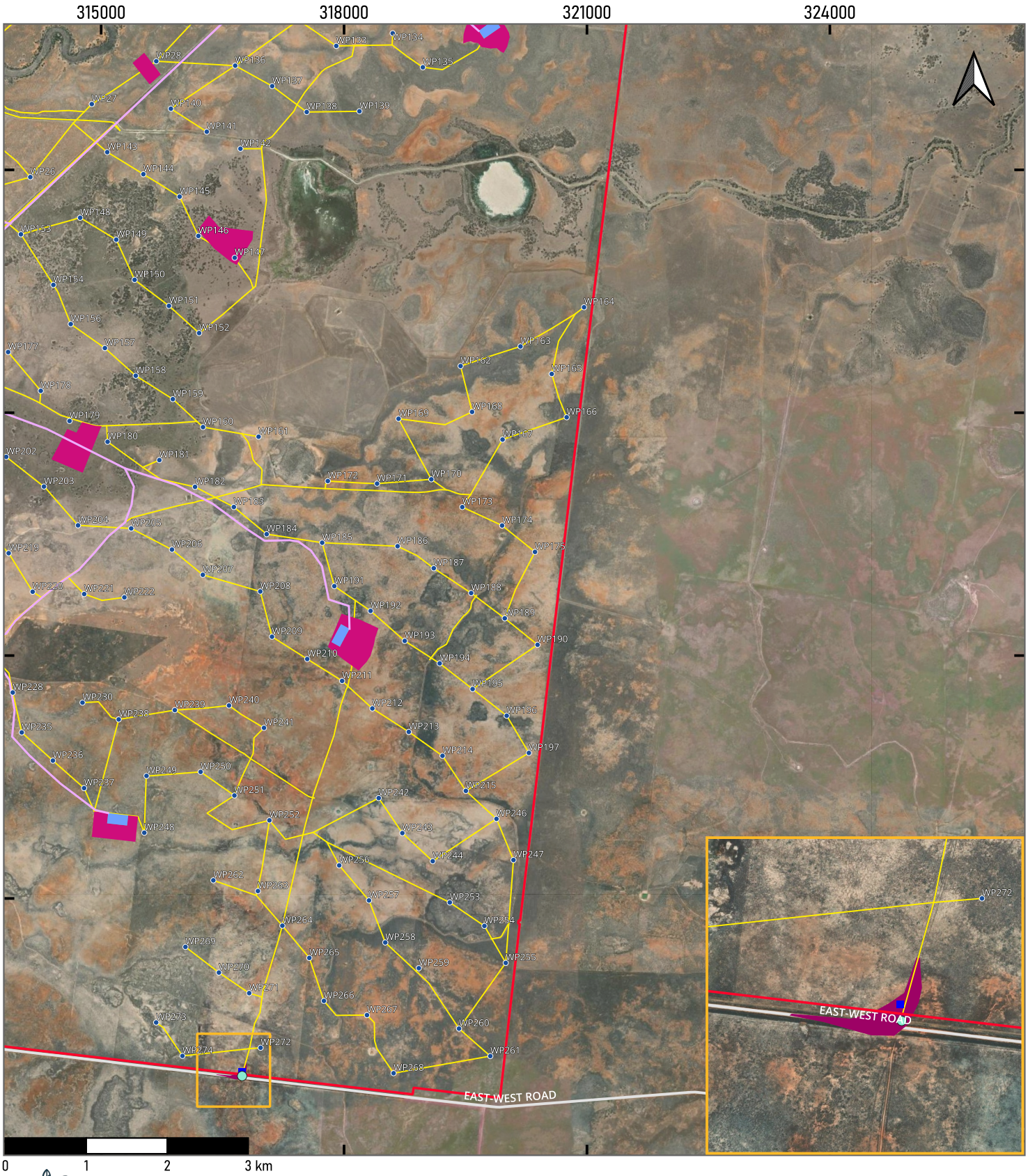
Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Locations

Existing Infrastructure

- Project Energy Connect
- Existing 220kV Transmission
- Main Roads



Pottinger Wind Farm

Figure 3-6 Conceptual Project Layout - South West

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:65000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed By: TS
Version: 3
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- Wind Turbine Locations
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Site Entrance Disturbance
- Access Tracks
- High Voltage Transmission Interlink
- BESS
- O&M
- Switching Station
- Temporary Accommodation Facilities
- Temporary Construction Compound
- Temporary Construction, Batching and Laydown
- Central Substation
- Temporary Construction, Batching and Laydown
- Substation
- Water Tank Locations

Existing Infrastructure

- Project Energy Connect
- Existing 220kV Transmission
- Main Roads

3.4.3 Electrical Infrastructure

3.4.3.1 Connection to Transgrid Transmission Line

The Project will supply electricity to the NEM by connecting on-site to the 330 kV double circuit transmission lines of Project EnergyConnect, which is located within the Project Area. A switching station will be required to connect the 330 kV electricity supply from the connection substations to the Project EnergyConnect transmission line or any future transmission infrastructure developed in the region such as VNI West.

Up to six 33 kV/330 kV on-site connection substations are required to step up the voltage to a suitable level for connection to Project EnergyConnect as shown on **Figure 3-1.** One for the BESS and five for the wind farm. The wind farm substations and BESS substation will collect power generated from the WTGs and BESS through the electrical reticulation network and deliver it to the switching station and/or a centrally located collector substation via a “trunk” overhead high voltage transmission line.

Voltage will be stepped up at each satellite substation through transformers to match the voltage of the transmission network. Each wind farm substation will be comprised of up to two 33/330 kV transformers, high voltage switchgear, metering, protection, and communications infrastructure, while the BESS substation will be comprised of up to three main 33/330kV transformers and associated equipment.

Figure 3-1 indicates the substation, switching station and BESS locations, with the final Project Area selection to be based on technical and engineering requirements.

The switchyards and associated equipment will be designed in accordance with AS2067, AS3000 as well as associated referenced standards. The design must consider the environmental conditions at the Project Area.

The land on which the substation will be situated will be covered in gravel prior to construction to ensure safety for workers and restrict unwanted growth of vegetation.

Internal structures within the fenced substation compounds will generally include:

- Control building / control room, switch room with a height of up to 6 m for the building plus up to 1.5 m for lightning protection rods;
- Up to three 33/330 kV oil-cooled power transformers with a height of up to 10 m;
- Overhead line gantry structures of up to 27 m in height;
- Transformer bunding and associated environmental controls;
- Integrated earthing systems where required for the switching station and the substation as per relevant guidelines;
- Drainage and civil work including footing support for equipment;
- Cable trenching and cable conduits;
- Carpark and access road;
- Ancillary equipment to support the network such as system strength, harmonic or reactive plant.
- Lightning protection masts up to 16 m high. All lightning protection will be in accordance with relevant Australian Standards and guidelines;
- Associated high voltage switchgear including busbars, conductors, post insulator, circuit breakers, and disconnectors, with a height of up to 12 m; and
- Communication infrastructure.

3.4.3.2 Electrical Reticulation and Grid Connection

The electrical reticulation network will contain approximately 545 – 600 km of overhead and underground cabling to the substation(s).

From each WTG, the power voltage is stepped up from the generation voltage to 33 kV, 66 kV or 132 kV (subject to detailed design) for reticulation from each group of WTGs to the connection substations via a combination of underground or overhead cabling.

Typically, underground cabling is used to connect WTGs however depending on ground disturbances, cost and electrical losses, overhead cabling can offer greater benefits. Cable trenches, where practical, will be dug adjacent to onsite access tracks to minimise any related ground disturbances.

High voltage 330 kV overhead lines will connect the wind farm and BESS substations to the switching station. High voltage 330 kV overhead lines will connect the switching station to the 330 kV Project EnergyConnect transmission lines. These will be single circuit or double circuit lines.

To enable operation and control of the WTGs, communications cabling will also be required. Typically, it will be optical fibre cable installed in the same method and route as the power cabling described above. Other communications equipment may also be required such as UHF, VHF or microwave equipment.

3.4.4 Site Access and Transport Route

3.4.4.1 External Transport Route

All OSOM required for the Project will be delivered from the Port of Adelaide. Other required equipment and consumables will be sourced locally within the Hay and Deniliquin LGAs where available. Minor components may come from NSW and Victoria.

Heavy vehicles will transport materials and equipment associated with the Project construction. These will consist of vehicles including articulated vehicles (AV), B-Doubles, truck and dogs and concrete trucks.

On average 11 OSOM deliveries per day will be required due to the relatively large size of some components (e.g. blades, some tower sections, some substation equipment and transformers, and heavy construction machinery/equipment).

Restricted Access Vehicles will be used to facilitate the transport of WTG components from Port Adelaide to the Project Area which involves the route conceptually shown in **Figure 3-12** and listed in **Table 3–2.**

Table 3–2 Indicative OSOM delivery route from Port of Adelaide

Blade Route	Tower Route
Ocean Steamers Road	Ocean Steamers Road
Eastern Parade	Eastern Parade
Port River Expressway	Port River Expressway
North-South Motorway	Port Wakefield/Augusta Highway
Port Wakefield Highway	Wilkins Highway
Angle Vale Road	(Jamestown Bypass)
North-South Motorway	Wilkins Highway
Horrocks Highway	Jamestown – Yarcowie / Whyte Road
Barrier Highway	Barrier Highway
(Burra bypass)	(Broken Hill bypass)
Barrier Highway	Barrier Highway
(Broken Hill bypass)	Cobb Highway
Barrier Highway	Finish – Site
Cobb Highway	
Finish – Site	

Road upgrades were identified through an OSOM Route Study (ARES, 2024). These are conceptually shown on **Figure 3-12** and listed in **Table 3–3.**

Table 3–3 Conceptual External Road Upgrades

Ref	Location	Permanent Impact	Temporary Impact
T01	Ocean Steamers Rd and Eastern Pde	Gate to be widened or fence made removable	One sign to be made removable
T02	Eastern Pde and Port River Expy		Tree trimming One light pole, one traffic light to be relocated
T03	Port Wakefield Hwy and Angle Vale Rd		Temporary gravel hard stands Armco to be removed
T04	Angle Vale Rd and North-South Mwy		Three signs to be made removable
T05	Sturt Hwy and Horrocks Hwy		Hardstand required for eastern embankment and median. Up to four signs to be made removable and one light pole to be relocated
T06	Horrocks Hwy, Tarlee	Tree trimming	
T07	Barrier Hwy and Copperhouse Rd		Two signs to be made removable, hardstand to be laid down
T08	Copperhouse St and West St	Tree trimming or removal Removal of overhead powerline for blade lifter use	Hardstand to be laid down
T09 Option 3 (preferred)	Barrier Hwy at Broken Hill Solar Plant		Construction of new temporary gravel bypass track to Gaffney St (approx. 5.5 km). Track to be wind farm specification, i.e. min 5.5 m width. 1 sign to be moved.
T10A/B	Crystal St and Sturt St/ Chettle St and Barrier Hwy		Temporary gravel tracks to be constructed Sign to be relocated
T11	Cobb Hwy and Sturt Hwy	Tree removal	Number of signs and light poles to be made removable Temporary gravel hard stands and other minor civil works
S01	Left Turn – Cobb Hwy and West Burrabogie Rd		Hardstand to be laid down
S02	Right Turn – West Burrabogie Rd and Private Track	Existing fence to be removed and replaced with gate and temporary fencing	Hardstand to be laid down
S03	Left Turn – Cobb Hwy and Warwillah Rd		Three hardstands to be laid down
S04	Right Turn – Warwillah Rd and East West Rd	Cattle grid and fencing require replacement and realignment	Two hardstands to be laid down
S05	Left Turn – East West Rd and Private Track	Turn-off to be built	
S06	Left Turn – Cobb Hwy and Jerilderie Rd		Two hardstands to be laid down Sign to be relocated
S07	Right Turn – Jerilderie Rd and Site Entrance B		Hardstand to be laid down
S08	Left Turn – Cobb Hwy and Wargam Rd		Hardstand to be laid down
S09	S Turn – Wargam Road, 10 km from Cobb Hwy	Tree removal Cattle grid widening	Sign to be made removeable

3.4.4.2 Site Access

There will be up to four different entrances to access the Project Area as shown on **Figure 3-1.** The surrounding road network would be used during construction of the Project to transport staff, equipment, and materials. The WTG components, and other specialist equipment would be imported from overseas and transported to the Project via OSOM vehicles from the Port of Adelaide. The four site entrances include:

- Site entrance A – West Burrabogie Road;
- Site entrance B – Jerilderie Road;
- Site entrance C – Wargam Road; and
- Site entrance D – East West Road.

An additional emergency access (E) will be provided on West Burrabogie Road. This will only be used if required for emergency purposes.

A range of vehicles will be utilised for the Project, including light personnel vehicles through to OSOM vehicles.

OSOM and heavy vehicles will utilise Site entrance A, B, C and D. Light vehicles will use all site entrances. Any vehicles may use Entrance E in an emergency. The site entrances will comprise a design as conceptually shown in **Figure 3-7** to **Figure 3-10**. Site entrances have been developed based on the results of a site distance assessment completed for each access location to ensure all vehicles are able to safely enter the road network.

The strategic design of the Cobb Highway / Warwillah Road intersection is shown in **Figure 3-11**.

Conceptual plans have been designed for simultaneous B-Double movement and the largest OSOM vehicle expected to access the Project are shown on **Figure 3-12.**

Although there are no bus stops in the immediate vicinity, a school bus travels along Cobb Highway and passes Jerilderie Road. Consideration of travel times to avoid peak bus times will be included in the Traffic Management Plan (TMP) in **Section 6.11.4**.

3.4.4.3 Internal Access Tracks

Approximately 204 km of internal access tracks up to 6.5 m in width with localised widening on curves to support OSOM vehicles. Each will be constructed within the Project Area to facilitate access to the WTGs, substation and other associated infrastructure for construction, servicing, operation, and decommissioning.

Tracks within the Project Area will be constructed with approximately 300 mm of gravel after removal of topsoil and restored to their predevelopment condition during the decommissioning phase. Where feasible, internal access tracks network will be constructed along existing tracks which will also serve as fire trails and buffers.

Existing internal access tracks total 19.7 ha and up to 38.8 ha additionally will be required to develop access roads and/or widen existing tracks. These are indicatively shown on **Figure 3-12.**

The ‘RFS Planning for Bushfire Protection 2019’ (PBP, 2019) requires an access design that enables safe operational access to structures and water supply while facilitating adequate emergency and operational response. Internal access tracks will be constructed in accordance with Table 5.3b and Chapter 7.4a of the NSW RFS Planning for Bushfire Protection (PBP) 2019 guideline, generally as described in **Appendix S**.



Figure 3-7 West Burrabogie Road Conceptual Access Design

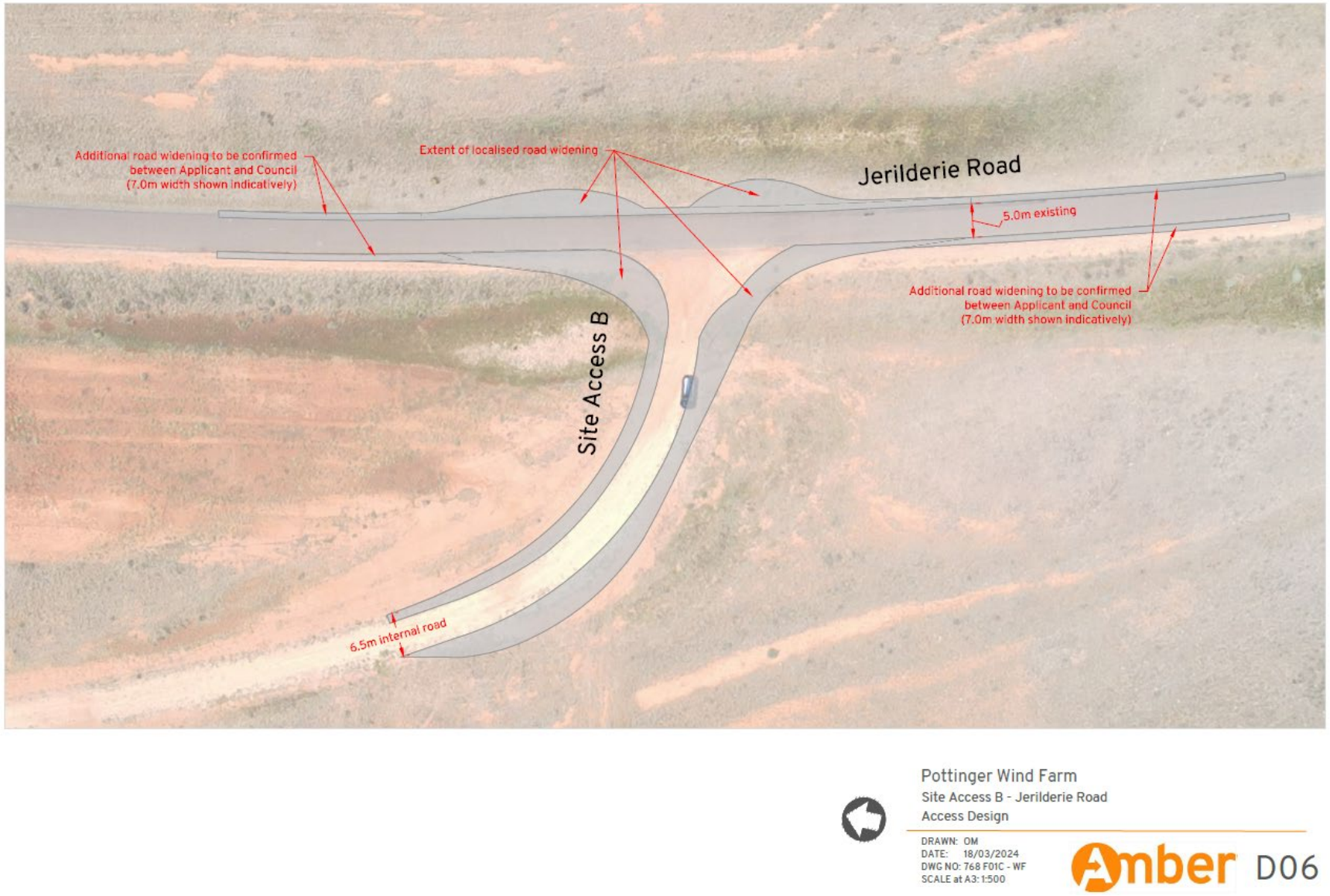


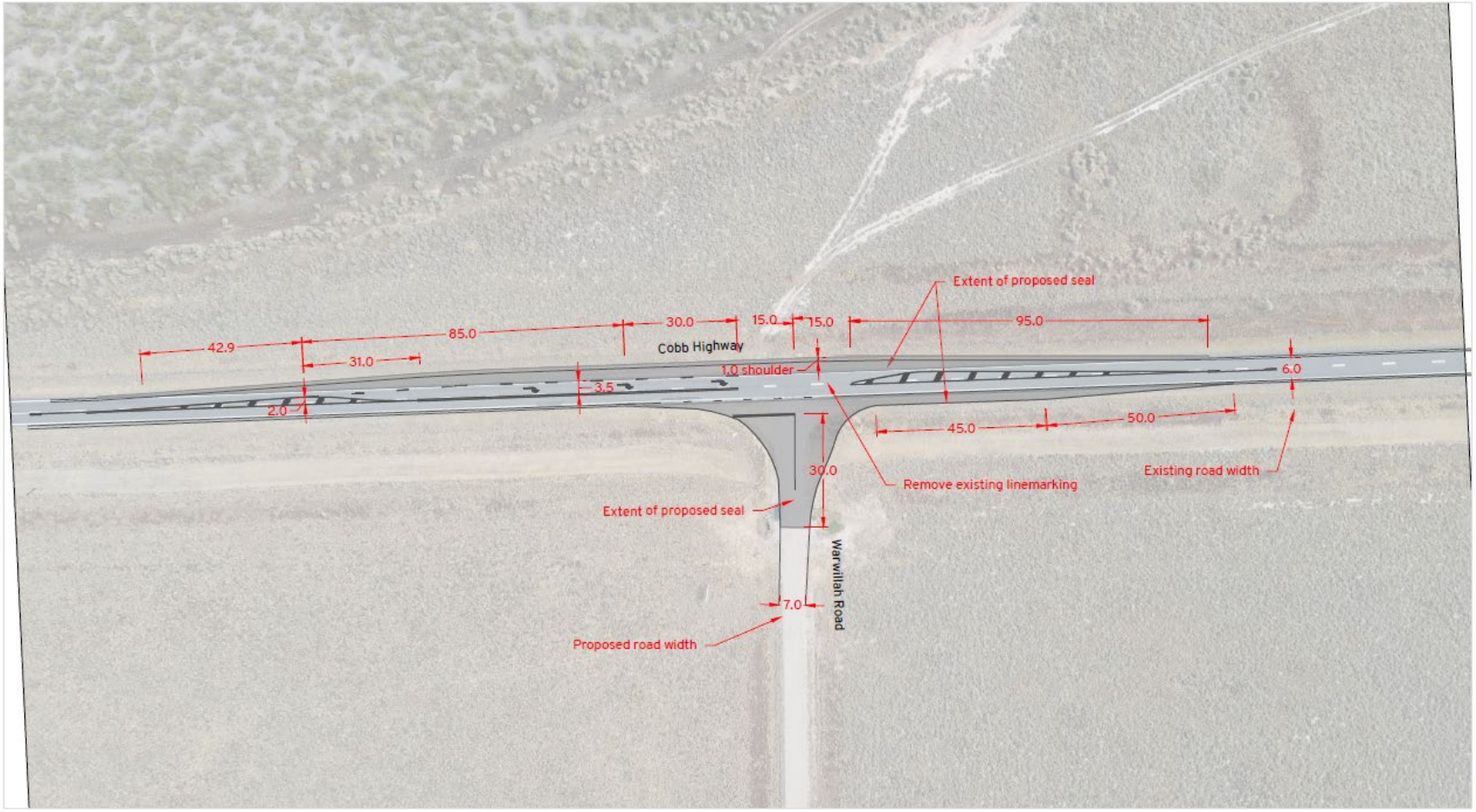
Figure 3-8 Jerilderie Road Conceptual Access Design



Figure 3-9 Wargam Road Conceptual Access Design



Figure 3-10 East-West Road Conceptual Access Design



The following design details have been taken from Austroads Guide to Road Design Part 4A:

Short Channelised Right-turn Treatment [CHR(s)] - Section 7.2.3.
1. Design speed of 110km/h as per Section 5.2.1 of Austroads Guide.
2. Lane widths: 3.0m Cobb Highway through lanes (existing), 3.5m turn lane.
3. Minimum lateral movement (A) is 95m.
4. Desirable radius of 500m has been used.
5. Taper length used is 30m.
6. Storage length is 30m for one B-Double Vehicle.

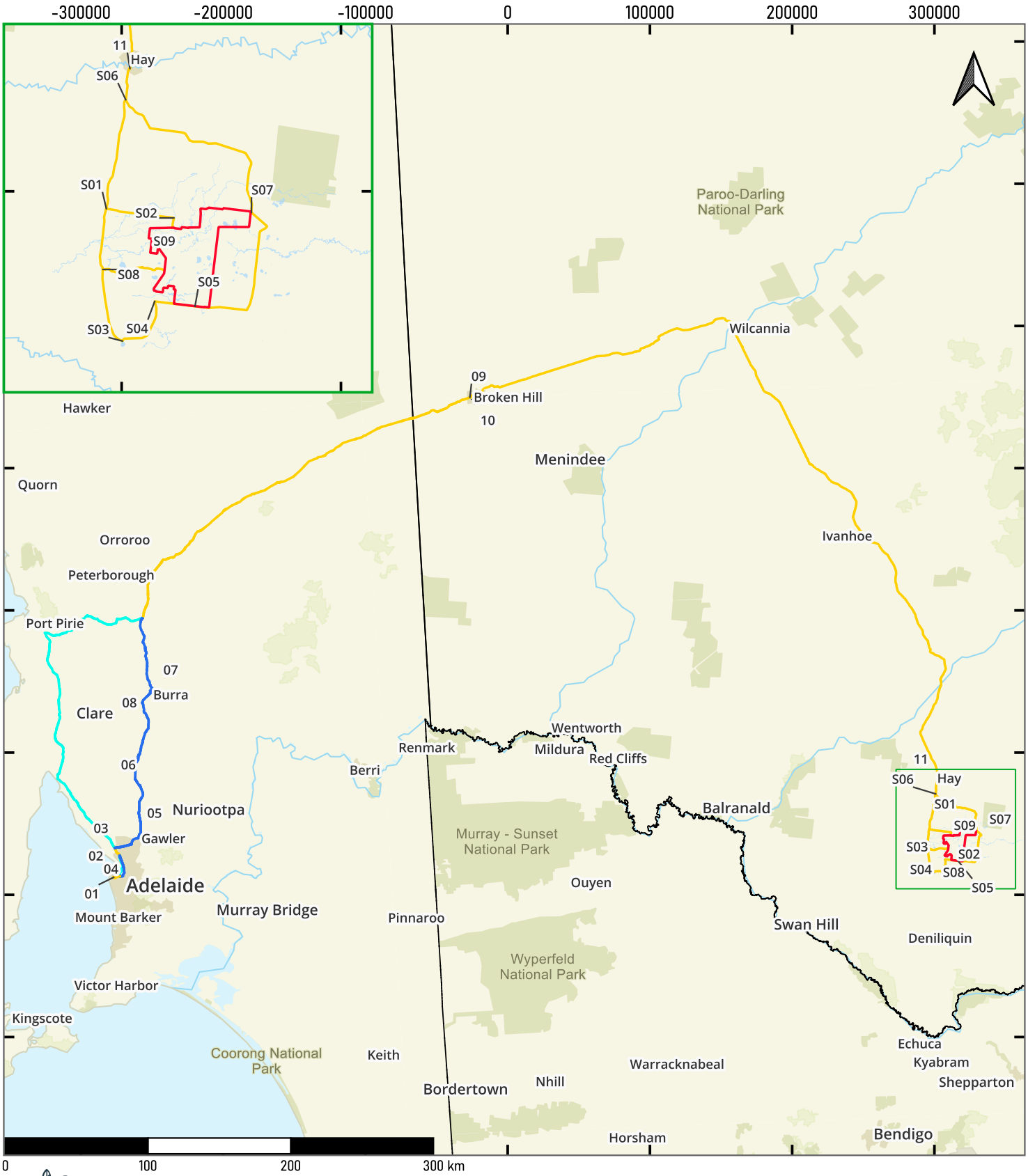
Rural Left-turn Treatment (BAL) - Section 8.2.1.
1: Design speed of 120km/h.
2: Lane widths of 3.0m have been used.
3: Formation/carriageway widening is 3.0m.
4: Taper length calculates to 50m.
5: Minimum length of parallel widened shoulder used from Table 8.1 is 45m.

Pottinger Wind Farm
Cobb Highway / Warwillah Road
Strategic Design - CHR(S) and BAL

DRAWN: OM
DATE: 18/03/2024
DWG NO: 768 F01C - WF
SCALE at A3: 1:1000

Amber D04

Figure 3-11 Cobb Highway / Warwillah Road Strategic Design



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 3-12 Indicative External Transport Route and Road Upgrades

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:3700000
Basemap:	ESRI Basemap (2022)
Data Sources:	NSW Spatial Portal (2024)
	SA Spatial Portal (2024)

Legend

- Project Area
- State Borders

Transport Route

- Blade Transport
- Blade and Tower Transport
- Tower Transport

Prepared By: EL Reviewed by: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

3.4.5 Other Associated Infrastructure

3.4.5.1 Administration Compound

The main administrative compounds are shown on **Figure 3-1.** It will include the O&M Facility and a satellite O&M Facility, temporary accommodation, temporary construction compound, temporary concrete batching, temporary rock crushing (see **Section 3.5** for quarries) and laydown areas.

The O&M Facility will comprise of the control room, site offices, storage shed, staff amenities (including toilets, kitchen and first aid station). Supporting amenities include car parking spaces, security fencing, water tanks, septic system and signage will also be established within the Project Area.

One 20,000 litre static water tank shall be located adjacent to the each of the four site entrance roads. In addition, a water storage tank with a capacity of at least 45,000 litres will be provided at each O&M Facility.

Wastewater from accommodation facilities and/or site office will be managed through an onsite treatment system which will be re-purposed on site for on-potable demands. The design and capacity will be determined at detailed design.

3.4.5.2 Wind Monitoring Masts

Up to 10 permanent and/or temporary wind monitoring masts will be required to control and operate the Project. Typically, they are static guyed masts with remotely operated wind monitoring equipment installed at multiple heights on each mast and powered by nearby WTGs. Masts are expected to be at least 180 m tall.

These wind monitoring masts may be located outside of the Disturbance Footprint but within the Project Area.

3.4.5.3 Additional Infrastructure

Additional minor infrastructure will be required including water management, sediment and erosion control structures, potential firebreaks, pipelines, fencing, geotechnical work and investigations, boreholes, vegetation planting for visual mitigation and habitat enhancement, security fencing and creek crossings.

This additional infrastructure may be installed within the Project Area but outside the Survey Area. These activities would only occur outside the Disturbance Footprint following a Due Diligence procedure which will conduct a risk assessment and consider at least ecology and archaeology.

Water use and waste management is described in **Section 6.10** and **Section 6.18**, respectively.

3.4.6 Ancillary Activities

3.4.6.1 Communications

Communication channels will be developed within the Project Area. The relevant communication infrastructure that will be constructed within the Project Area includes, but is not limited to, UHF radio support, microwave communications equipment and fibre optics with cellular backup. Fibre optic cabling will be installed along with the internal reticulation network within the same footprint.

3.4.6.2 Lighting

Permanent external lighting will be required on each WTG entrance door, the BESS, substations, switching station and O&M Facility.

Security lighting will be installed adjacent to the security fencing. All lighting will be designed, managed and operated in accordance with ‘AS 4282:2023 Control of Obtrusive Effects of Outdoor Lighting’ Council of Standards Australia, 1997) to mitigate any potential light spill.

The Project will not require obstacle lighting on the WTGs or met masts to maintain an acceptable level of aviation safety.

Where practical, air navigation lighting will be spaced around the outer edges of the Project. Lights are not required on every WTG and where possible, consideration will be given to the selection of WTGs which avoid unnecessary impact upon dwellings.

Blades will be treated with a non-reflective coating to mitigate reflection off the rotating blade at night.

The lowest candela intensity allowed by CASA will be utilised.

Light will not be emitted at or below 10° below horizontal.

3.4.6.3 Landscaping

Landscaping will be considered throughout the detailed design process and will be implemented throughout the construction and operational phases of the Project. If landscaping or revegetation of areas within the Project Area are required, they will be located and designed to mitigate the risk of flame contact and radiant heat to both Project infrastructure and other key assets.

Screen planting will be considered to assist in mitigating views of Project infrastructure from residential properties in circumstances where residences are subject to a high level of visual impact from the Project. Should NAD_14 become habitable post-construction, screen planting and/or supplementary planting will be undertaken in accordance with **Appendix I** in consultation with the landowner.

Typical landscaping will include planting of low maintenance, native trees, shrubs and groundcovers.

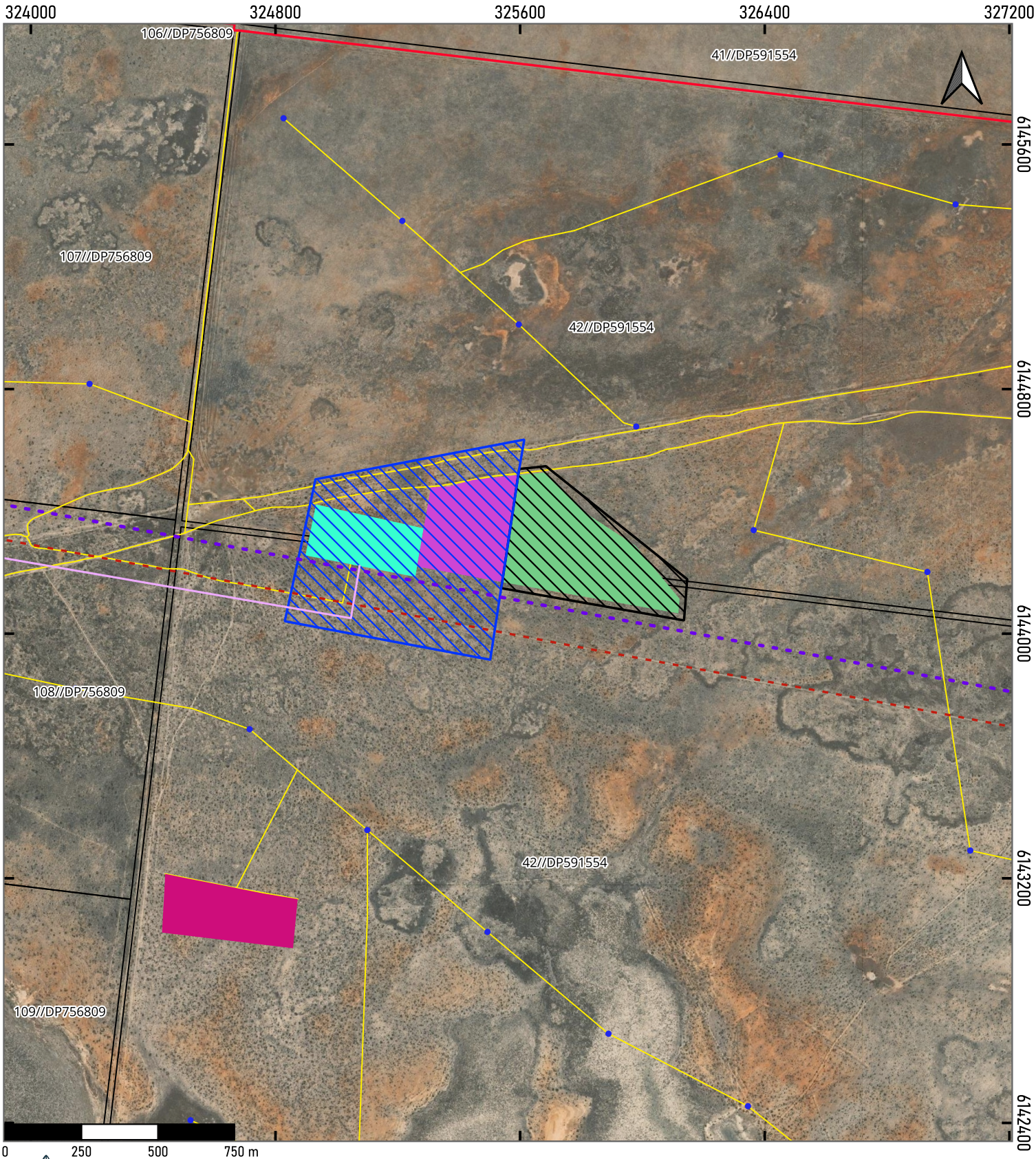
3.4.7 Subdivisions

Subdivisions is proposed for the parcel (Lot 42/DP591554) of land that the switching station will be located, and the Applicant is also seeking the option to further subdivide Lot 42/DP591554 for the land that the BESS will be located.

The new lot created by the subdivisions will be occupied by the switching station and transferred to Transgrid (or other operator) at their request. The subdivision/s are administrative activities that do not involve any physical works. Long term leases or land sales will also be required over the Project Area (see **Section 4.2**).

Figure 3-13 provides indicative switching station subdivision layouts on the Associated landholders' property. Detailed plans will be prepared to accompany applications for subdivision works' certificates (refer to **Section 4.2**).

Subdivisions may also be required following detailed design where it is identified that the physical road does not follow the road easement.



Pottinger Wind Farm

Figure 3-13 Indicative Subdivisions

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:17000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), Energy Co (2024)

Prepared By: EL Reviewed by: TS
Version: 3.2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Wind Turbine Locations
- Access Tracks
- High Voltage Transmission Interlink
- BESS
- Switching Station
- Temporary Construction, Batching and Laydown
- Temporary Accommodation Facilities

Existing Infrastructure
- Project Energy Connect
- 220 kV Transmission
- Exisiting Lots

Subdivision Lots
- BESS - Subdivision Lot
- Switching Station and Substation - Subdivision Lot

3.5 Construction

3.5.1 Indicative program

Project construction will likely occur over approximately 55 months from commencement to commissioning, with the peak period between months 16 to 44 The construction duration can be influenced by factors such as weather and ground conditions, commercial activities, personnel availability, detailed design and delivery of equipment.

Construction may be staged with early works awarded shortly after any development approval to commence design, council approvals, road upgrades and associated works.

Table 3–4 shows the anticipated timing of key Project milestones as well as indicative peak workforce FTEs.

No jobs will be retained as the Project is a “greenfield” project and as such, all FTE are newly created jobs. Based on the Applicant's construction experience, the indicative workforce requirements were calculated by drafting the construction schedule which outlines the construction workstream durations. Then for each month, the number of crews and number of people within each crew were estimated to understand the FTEs required. The resulting FTE was also compared with a sample of similar scaled wind energy projects proposed in Australia. These assumptions have been applied to this EIS and may vary at detailed design.

Table 3–4 Indicative Project Construction Schedule

Stage	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10	M11	M12	M13	M14	M15	M16	M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30	M31	M32	M33	M34	M35	M36	...	M39	M40	M41	...	M44	M45	M46	...	M55
Pre-Construction																																															
Engineering design																																															
Procurement																																														
Site establishment and temporary infrastructure																																														
Construction																																														
Access track and hardstand construction																																														
Excavation and WTG foundation construction																																													
Component delivery																																														
WTG installation																																														
WTG commissioning and testing including grid connection testing																																														
Electrical reticulation construction																																														
Substation and BESS construction																																														
O&M Facility and other commissioning																																														
Decommissioning temporary infrastructure																																														
Rehabilitation																																														
No. of Crews	9	12	12	12	13	13	14	15	15	15	18	17	17	17	17	17	18	18	18	25	30	35	35	31	31	31	25	21	21	21	21	21	21	21	15	5	5	5							
Estimated FTEs	248	330	330	330	368	368	405	518	518	518	585	563	563	518	518	518	525	525	525	683	795	900	900	803	803	803	653	548	548	548	533	518	518	518	368	38	38	38							

3.5.2 Workforce and Construction Hours

A peak construction workforce of up to 900 FTE personnel will be required and will include local workforce, where available. Additional specialist staff and contractors from outside the local region will be required on an as needs basis.

Construction activities will generally be undertaken during standard daytime construction hours consistent with the 'Interim Construction Noise Guideline' (ICNG) (DECC 2009) as follows:

- 7 am to 6 pm, Monday to Friday;
- 8 am to 1 pm Saturday; and
- No construction activities will occur on Sundays or public holidays.

The Project will conduct the following out of hours works: WTG concrete foundation pours, WTG installations (particularly blades), and temporary accommodation facilities use.

Additionally, other works may be undertaken outside these hours where the activity is inaudible at non-associated residences, for emergency works, time critical delivery of materials, to reduce safety risks or where agreement from the Secretary of DPHI has been provided. Examples of these activities include:

- Weather conditions such as high winds during the day necessitate WTG crane lifts at night;
- Temperature conditions requiring concrete pours during the early morning;
- Extended concrete pours into the evening to complete a WTG foundation; and
- To avoid taking outages of existing HV transmission lines during periods of high load.

During operation, approximately 50 FTE permanent staff will be employed.

3.5.3 Workforce Accommodation

As demonstrated in the SIA provided in **Section 6.19**, additional accommodation will be required to facilitate the construction of the Project. A 'Local Housing and Accommodation Strategy' will be confirmed and documented during detailed design considering additional stakeholder engagement and confirmation of the construction timeframes of other developments which have a potential for cumulative impacts (see **Section 6.21**).

To facilitate flexibility in the approach to the actual accommodation required for the Project and to ensure that a reasonable worst case is assessed in this EIS, this project description includes:

- New accommodation facilities to house up to 240 workers at a time. Facilities will include (at least) bedrooms, kitchen and dining facility, gym, offices and car parking spaces as conceptually shown on **Figure 3-1**;
- Continue use of approved accommodation facilities (and associated infrastructure) approved for other developments in the REZ; and
- Relocation of existing temporary accommodation facilities (and associated infrastructure) from other approved developments generally in accordance with **Figure 3-1**.

3.5.4 Pre-Construction Activities

Prior to the commencement of construction, geotechnical site investigations will be undertaken to confirm ground conditions.

A site survey will confirm the Project Area and final infrastructure positioning and placement. Given the Project Area is generally flat, minimal site preparation and civil works are expected to be required prior to construction. Minor earthworks will be required for site preparation and may include clearing, erosion and sediment control, site levelling, access tracks, site drainage works, flood mitigation works, fencing, foundations and hardstands, office and car parking areas.

Prior to the commencement of construction, engineering design, approvals, procurement and site establishment will be undertaken. Site establishment involves the establishment of the Project Area access points, temporary laydowns, temporary accommodation facility and temporary construction compounds.

Most of the infrastructure will be prefabricated off site and delivered to the Project Area, where it will be assembled and installed.

Some quarrying of up to 5 Mt of either gravel or fill materials per annum during construction may be required. These areas are yet to be clearly defined but will be within the Disturbance Footprint. To ensure compliance with construction noise management levels (NMLs) (refer **Section 6.2**) the quarry will be located at least 7 km from the nearest non associated receiver or 12.5 km if noise from the quarry is classified as “particularly annoying” and a dB(A) adjustment is required.

3.5.5 Site Preparation and Construction Activities

Minor site preparation will be required before WTGs and associated infrastructure can be installed. Following set up of the temporary construction compound areas and ancillary facilities, the upgrade of existing internal access tracks and construction of new access tracks, hardstands, foundations and cabling will take place. This will be followed by the phased installation of the Project components in **Section 3.4**.

Construction activities will include (but are not limited to):

- Civil works
  - Upgrading existing access tracks and constructing new access tracks;
  - Grading, levelling and earthworks;
  - Grading for the implementation of sediment/erosion controls and water management structures;
  - Blasting may be required to loosen bedrock in accordance with any EPL granted for the Project and only 9 am – 5 pm Monday to Friday and 9 am – 1 pm Saturday only (excluding public holidays). Any such blasts would be localised and likely of a small scale;
  - Minor earthworks including security fencing holes.
- Road construction
  - Stripping topsoil and stockpiling;
  - Grading and levelling;
  - Drainage works;
  - Preparing the subgrade;
  - Applying the road base layer;
  - Returning the topsoil to suitable batters;
  - Seeding the batters.
- Temporary infrastructure construction
  - Stripping topsoil for the laydown areas and stockpiling;
  - Grading, levelling and drainage works for the laydown areas and carpark;
  - Anchoring pre-assembled buildings housing offices, meeting rooms, lunchrooms and amenities;
  - Anchoring pre-assembled concrete batching plant;
  - Installing utilities to support operation;
  - Adding gravel for the carpark and around the buildings.

- WTGs
  - Preparing hardstand areas including vegetation removal, earthworks and soil compaction;
  - Rock and subsoil removal and earthworks including localised cut and fill areas to achieve more consistent gradients and facilitate drainage.
- WTG foundation construction
  - Excavating and stabilising the excavation (In some cases, blasting may be required);
  - Applying a thin layer of concrete – blinding;
  - Assembling steel reinforced bars and installing electrical conduits;
  - Pouring specialised concrete mix and curing;
  - Installing the earthing;
  - Backfilling and compacting around the foundation.
- Component delivery
- WTG installation
  - Cleaning WTG components;
  - Using a crane, assembling the tower sections one by one on reinforced concrete foundation;
  - Using a larger crane, installing the nacelle, hub and blades.
- WTG commissioning and testing
  - Prior to connection to the electricity grid, mechanical and electrical testing;
  - After connection to the electricity grid, electrical network testing.
- Underground electrical reticulation infrastructure construction
  - Stripping topsoil and stockpiling;
  - Using a cable trenching machine, trenching;
  - Installing power and communication cabling and earthing;
  - Backfilling and compacting the trench;
  - Returning topsoil on the trench line;
  - Seeding the trench line.
- Overhead electrical reticulation infrastructure construction
  - Excavating for tower footings;
  - Pouring concrete mix and curing tower footings;
  - Using a crane, assembling the tower;
  - Feeding and tensioning the power and communication cabling and earthing between towers.
- Substation and switching station construction
  - Stripping topsoil and stockpiling;
  - Grading, levelling and drainage works for the foundation;
  - Installing security fencing around the perimeter;
  - Constructing a bund and potential blast wall for the power transformer;
  - Installing electrical equipment (such as power transformers, switchgear, earthing);
  - Anchoring pre-assembled switch room;

  - Installing utilities to support operation;
  - Adding gravel for the carpark, buildings and electrical equipment.
- BESS construction
  - Stripping topsoil and stockpiling;
  - Grading, levelling and drainage works for the foundation;
  - Installing security fencing around the perimeter;
  - Anchoring pre-assembled electrical equipment;
  - Adding gravel around electrical equipment.
- O&M Facility construction
  - Stripping topsoil and stockpiling;
  - Grading, levelling and drainage works for the foundation;
  - Installing security fencing around the perimeter;
  - Building or anchoring pre-assembled buildings housing offices, meeting rooms, lunchrooms and amenities;
  - Installing utilities to support operation;
  - Adding gravel for the carpark and around the buildings.
- Accommodation compound
  - Accommodation facilities will be required to be constructed to facilitate the Project;
  - The accommodation facility will house up to 240 workers at a time. Facilities will include bedrooms, kitchen and dining facility, gym, offices and car parking spaces.
- Decommissioning temporary infrastructure
  - Decommission utilities;
  - Decommission concrete batching plant, and buildings;
  - Re-use the gravel within the Project Area;
  - Where agreed, return the areas back to pre-construction conditions.
- Rehabilitation
  - Returning topsoil;
  - Seeding areas;
  - Watering as required.

3.5.6 Plant and Equipment

Plant and equipment anticipated to be used during construction include:

- Generators;
- Vibratory roller;
- Concrete pump;
- Concrete truck;
- Mobile crusher;
- Road truck;
- Welder;

- Hand held power tools;
- Cranes, for power lines, for removal of heavy loads from trucks and for WTG installation;
- Rollers;
- Wheeled loaders;
- Dump trucks;
- Excavators of various sizes;
- Graders;
- Bulldozers;
- Cable laying machines;
- Water trucks;
- Telehandlers; and
- Forklifts.

3.5.7 Traffic Movements

During peak construction the Project will generate up to 1,210 light and 750 heavy vehicles per day (VPD). Construction of the Project is expected to generate approximately 675 vehicles per hour in the morning and evening peak hours during the peak construction period, which would reduce to 450 vehicles per hour during the average construction periods.

WTG components and towers are expected to be imported via the Port of Adelaide and will follow a designated route which can accommodate oversize and overmass (OSOM) vehicles to the Project Area. Other minor components may be transported from various locations across NSW and Victoria. Plant and equipment will follow a designated route which can accommodate B-Double vehicles.

Traffic movements associated with the construction, operation and decommissioning of the Project is further discussed in **Section 6.11**.

3.5.8 Temporary infrastructure

Up to fourteen temporary construction compounds will be maintained during works and include:

- Site offices, car parking spaces and amenity facilities for employees;
- A temporary laydown area for storage of construction materials, plant, WTG components and other relevant components;
- A short-term waste storage area;
- Stockpile area for materials;
- Power supply for construction purposes; and
- Security fencing up to 3 m high and CCTV.

Parking will be provided for up to 605 light vehicles. The potential option for shuttle buses across the various compounds and car-pooling arrangements will be further considered in the TMP.

All temporary infrastructure will be located within the Survey Area as shown on **Figure 3-1.**

3.5.9 Ancillary activities and materials

The following ancillary activities will require, at minimum, the materials listed below for the construction of the Project:

- Roads and hardstands: gravel, fill and water;
- Temporary infrastructure: gravel and potable water;
- Concrete batching plant: sand, cement, water and aggregate;
- WTG foundations: gravel;
- Underground cabling, cabling bedding: sand;
- Overhead line: sand, cement, aggregate and water; and
- Substations, switching station and BESS: gravel, sand, cement and aggregate.

Table 3–5 provides indicative construction material volumes. Some material related product is expected to be sourced on site through local borrow pits that will be located within the disturbance footprint. The remaining materials are expected to be sourced externally.

There are at least three indicative quarries or source locations which have the types and availability of materials required for the Project as indicatively listed in **Table 3–6**. Other sources may be utilised as they become available through engagement as part of detailed design.

Table 3–5 Indicative Construction Materials

Material	Approximate quantity
Cement	64,000 m^3
Aggregate	1,400,000 m^3
Sand	182,000 m^3
Cable bedding sand	95,300 ton
Standard fill	3,240,000 m^3

Table 3–6 Indicative Quarries to be utilised for the Project

Quarry name	Location	Materials available	Distance to Project
Carlons Pit	Bringagee Rod, Tabbita	Gravel	138 km
Darlington Point Sand	Kidman Way, Darlington Point	Sand	138 km
Fuzzards Pit	Old Cobram Road, Barooga	Aggregate, Fill	155 km

3.5.10 Services and Utilities

3.5.10.1 Water Supply

The construction of the Project will require an estimated 622.6 ML of water required for dust suppression, concrete works, road and compaction, vehicle washdown and potable water as indicatively shown in **Table 3–7.**

Volumes are approximate for the purposes of assessment only and subject to weather conditions. No unregulated discharge of water from the Project's activities will occur.

This water may be sourced from existing dams and creek lines, groundwater bores (subject to water licence permissions). Water supply agreements, if required will be secured in consultation with Council and/or local water suppliers to ensure adequate water supply is secured for construction and operation.

Water that does not need to be of potable quality may be sourced from host landholders' farm dams in consultation with the landholder or from water storages in the region where pumping stations are available and transported to the Project Area using road registered water trucks.

The Applicant does not own the land within the Project Boundary and as such, is limited in its harvestable rights. However, there are farm dams and channels located within the Project Area that may be consistent with the relevant harvestable rights order. The Applicant may enter into agreements with the host landowner if it is necessary to use water captured in these farm dams or channels.

Extraction from the Coleambally Irrigation Cooperative Limited (CICL) scheme under Agreement with host landholders may also be utilised.

Water sources and licensing will be finalised during detailed design.

A small amount of potable (drinking) water (estimated at 23.8 ML per annum in an average year) will be collected in rainwater tanks or imported during the construction period on an as-needs basis to top up the water tanks.

No water network upgrade will be required for the Project construction and operation.

A rainwater capture and reuse system will offset water usage on site during the operation phase for top up of equipment reservoirs, washdown, toilet flushing and bushfire suppression.

Table 3–7 Estimated Project Water Requirements

Water Quality	Requirements (ML)
Dust Suppression	7.2
Concrete works / hardstands	424.1
Road construction / compaction	162
Washdown	5.3
Potable water	23.8
WTG Cleaning	0.2

3.5.10.2 Power Supply

Power used during construction may be supplied via extensions to existing 11 kV powerlines which run nearby the Project Area.

Agreements with the local network operator will be sought and made before any connection or usage occurs.

Diesel generators will be utilised in the construction phase and in remote parts of the Project Area. Where the opportunity arises, temporary site compounds may use solar PV systems with BESS.

3.5.10.3 Waste Management

All construction waste and any potential operational waste will be stored in designated waste storage locations within the Project Area. The waste storage areas will provide space for sorting, recycling and reuse of materials. **Section 6.18** details waste management strategies during the various phases of the Project. It also describes the key waste streams and volumes expected to be generated during construction, operation, and decommissioning.

3.5.11 Rehabilitation

Rehabilitation will occur throughout the construction phase as the option to rehabilitate becomes feasible. Plant and machinery will be relocated once the Project moves into the operation phase, allowing for further rehabilitation. Once machinery is removed, all disturbed areas that are not in use for operation will be revegetated following consultation with the landowners of the Project Area.

Sedimentation and soil erosion controls will be placed generally in accordance with 'Managing Urban Stormwater: Soils and Construction - Volume 1' (Blue Book) (Landcom, 2004).

3.6 Operations

3.6.1 Commissioning

The Project components in **Section 3.4** will be commissioned with a staged approach to allow partial commissioning of chosen plant during the construction phase.

Commissioning will be generally in accordance with the schedule in **Figure 3-1.** Authorisation will be required for high voltage equipment to be used before the Project is connected to the proposed Project EnergyConnect 330 kV line on-site.

All components in **Section 3.4** may continue to be utilised for operations, except where specifically described as temporary.

3.6.2 Maintenance

Key project components will require routine maintenance and servicing on an as-needed basis which will be generally identified via remote monitoring. Maintenance activities include (but are not limited to):

- WTG servicing (such as through scheduled replacement of consumable components or unscheduled components replacement if required);
- Electrical reticulation network servicing and component replacement (if required);
- Access road maintenance;
- Substation and associated equipment maintenance and component replacement (if required);
- Transmission line servicing and component replacement (if required);
- BESS servicing and component replacement (if required);
- Stormwater and wastewater management;
- Groundcover management;
- Landscaping giving preference to low flammability, low litter drop, smooth barked species, as well as using discontinuous gaps in vegetation to break fire progress. Any visual screens to dwellings shall be greater than 100 m away; and
- Land rehabilitation activities.

3.6.3 Workforce and Hours of Operation

Project operations will occur 24 hours a day, 7 days a week. The Project will be monitored and controlled through a supervisory control and data acquisition (SCADA) from trained staff at an onsite O&M Facility indicated in **Figure 3-1,** as well as remotely by the project owners or equipment manufacturer.

Routine maintenance works described above will generally be carried out during standard working hours, however unexpected equipment failure will be undertaken 24 hours a day, 7 days a week. Work such as component replacement requiring particular weather conditions may be required outside standard working hours in accordance with **Section 4**.

Operations will require up to 50 FTE personnel. Some additional contractors will be required from time to time. The workforce will generally be made up of a range of skills including engineering, and trades, including electrical, mechanical, plumbing and construction, health and safety professionals and administrative staff.

Maintenance will require some additional FTE personnel to that indicated in **Section 3.1** and there may be occasional tour groups from local educational institutions or other interest groups who visit the Project.

3.7 Decommissioning and Rehabilitation

Key project components of the wind farm will require replacement over time, at which time one of the following options will be implemented:

1. Replacement of existing Project components within the project description and impacts assessed in this EIS and continue operations in consultation with relevant associated landholders;
2. If Option 1 is not viable or preferred at the time, seek relevant approvals should technological advances provide new WTGs options that require changes to the existing approval; or
3. Decommission the Project, removing the WTGs and ancillary infrastructure, rehabilitating the Project Area in accordance with the Decommissioning and Rehabilitation Management Plan (part of the Environmental Management Strategy).

A Decommissioning and Rehabilitation Plan (DRP) will be prepared for the Project no less than five years prior to decommissioning and / or in accordance with any project approval requirements. It is anticipated that the decommissioning and rehabilitation phase would take up to 36 months to complete, with the Project Area being returned, as far as practicable, to its condition prior to the commencement of construction. Relevant stakeholders will be consulted in relation to the above options and process of establishing a DRP (if preferred).

Should decommissioning be preferred it will be entirely funded by the Applicant. Activities will include (but not be limited to):

- Removal of all above ground structures (including but not limited to the WTGs, operations and maintenance facility, BESS and substations, overhead line towers;
- Progressive rehabilitation of land as agreed with the host landowner to enable progressive agricultural use of the Project Area during decommissioning works;
- Infrastructure may be retained as desired by the landowner (e.g. internal access tracks);
- Below ground infrastructure at a depth of 0.5 m or greater will be retained to avoid further environmental disturbance and minimise impact to revegetate areas, unless removal is requested by the landowner;
- Where possible, decommissioned infrastructure will be recycled or reused in accordance with a waste hierarchy; and
- Any general waste that cannot be recycled will be removed and taken to a licensed waste management facility.

3.8 Staging

Table 3–8 provides an indicative timeline for the various phases of the Project.

The construction of the Project may be staged. This would be determined following the detailed design phase and following resolution of the REZ Access Process described at **Section 2.5.2.** Any staging would be undertaken in consultation with relevant regulators and in accordance with any conditions of Development Consent.

Project timelines are subject to various factors including approvals timeframes, market conditions, policy change and other factors outside the Applicant's control. Any additional staging will be confirmed during detailed design.

Table 3–8 Indicative Project Development Timeline

Stage	Estimated Commencement	Estimated Duration (months)
Engineering Design	Q1 2026	12
Procurement	Q1 2026	18
Construction of WTGs	Q4 2026	37
Construction of WTG ancillary facilities including BESS and on-site substation	Q1 2027	12
Installation of electrical reticulation infrastructure	Q4 2027	25
Testing/commissioning completion	Q3 2027	36
Decommissioning	As per **Section 3.7**	36

3.9 Community Benefit and VPA

Hay Shire Council (HSC) and Edward River Council (ERC) have agreed to share the community benefits split equally across both the Project and associated PSF.

Letters of Intent for the VPAs were signed with both Council's on 11 April 2024.

The VPA's are generally in accordance with the Draft Benefit Sharing Guideline (DPE, 2023). Throughout the estimated 30-year life of the Project a contribution of $1,050/MW per annum (shared equally between HSC and ERC) will be provided and administered through a Community Enhancement Fund (CEF). From this funding contribution, a 15% allocation has been agreed to be allocated to a dedicated First Nations Fund to support First Nations initiatives to be administered by Pottinger Renewables.

3.10 Environmental Management System

An Environmental Management Strategy (EMS) will be developed for the Project. Opportunities for continuous improvement will be implemented where practical. The EMS will be developed generally in accordance with the principles of 'ISO14001 Environmental Management Systems' and include management plans, procedures and protocols required as per conditions of any Development Consent granted and/or identified through the risk assessment process.

The EMS will guide all environmental management activities throughout construction, operation, maintenance and decommissioning. Environmental risks will be identified, and mitigation measures determined to minimise environmental impacts from the Project.

The EMS will describe measures to monitor and publicly report via the Project website on the environmental performance of the Project and will generally include a summary of monitoring results in accordance with development consent required approved management plans and programs.

4 STATUTORY CONTEXT

This section identifies the relevant statutory requirements for both NSW and Commonwealth legislation for in relation to all aspects of the Project. It identifies all relevant statutory requirements that must be considered before the development application is determined. A discussion on how each is relevant to the justification and evaluation of the Project is included. It includes a grouped and tabulated summary of requirements.

4.1 Power to Grant Development Consent

Development consent for the Project will be sought under Part 4, Division 4.7 of the EP&A Act, which outlines the planning assessment pathway in NSW for development that is SSD.

Section 4.36(2) of the EP&A Act states:

> *(2) A State environmental planning policy may declare any development, or any class or description of development, to be State significant development.*

Relevant SEPPs include the Planning Systems SEPP and the State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP).

Under section 2.6(1) of the Planning Systems SEPP, a development is classified as SSD if:

> (*a) the development on the land concerned is, by the operation of an environmental planning instrument, not permissible without development consent under Part 4 of the Act, and (b) the development is specified in Schedule 1 or 2…*

Schedule 1, section 20 in Chapter 2 of the Planning Systems SEPP determines “electricity generating works” to be SSD if it meets the following applicable criteria:

> *Development for the purpose of electricity generating works or heat or their co-generation (using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power) that: (a) has an estimated development cost of more than $30 million…*

The definition of “estimated development cost” in the Planning Systems SEPP has the same meaning as given to it under the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation). Section 6 of the EP&A Regulation defines “estimated development cost” to mean:

> *(1) … the estimated cost of carrying out the development, including the following –*
>
> *(a) the design and erection of a building and associated infrastructure,*
>
> *(b) the carrying out of a work,*
>
> *(c) the demolition of a building or work,*
>
> *(d) fixed or mobile plant and equipment.*
>
> *(2) The estimated development cost does not include –*
>
> *(a) amounts payable, or the cost of land dedicated or other benefit provided, under a condition imposed under the Act, Division 7.1 or 8.2 or a planning agreement,*
>
> *(b) costs relating to a part of the development that is the subject of a separate development consent or approval,*
>
> *(c) land costs, including costs of marketing and selling land,*
>
> *(d) costs of the ongoing maintenance or use of the development,*
>
> *(e) GST.*

The term “electricity generating works” is not specifically defined in the Planning Systems SEPP. However, Clause 2.2(3) of the Planning System SEPP provides that language used in Chapter 2 of the Planning Systems SEPP has the same meaning as per the standard local environmental planning instrument prescribed by the *Standard Instrument (Local Environmental Plans) Order 2006*, which defines “electricity generating works” as follows:

> *electricity generating works means a building or place used for the purpose of—*
>
> *(a) making or generating electricity, or*
>
> *(b) electricity storage.”*

As the Project involves development for the purpose of “electricity generating works” using wind power and will have an estimated development cost of more than $30 million, the Project is SSD and subject to the planning assessment pathway under Part 4 of the EP&A Act.

Accordingly, under section 4.5 of the EP&A Act and section 27 of the Planning Systems SEPP, the consent authority for the SSD development application is the Minister for Planning and Public Spaces or, if any of the circumstances under clause 2.7(1) of the Planning Systems SEPP apply, the Independent Planning Commission (IPCN).

4.1.1 T&I SEPP

The permissibility of wind farm developments in NSW is determined by the T&I SEPP.

The Project Area is zoned RU1 Primary Production within the Hay LEP 2011 and Conargo LEP 2013. Development for the purpose of “electricity generating works” is prohibited within zone RU1 under each LEP. However, clause 2.36(1)(b) of the T&I SEPP states that development for the purpose of “electricity generating works” may be carried out by any person with consent on any land in a “prescribed non-residential zone”. Clause 2.35 of the T&I SEPP defines “prescribed non-residential zone” to include zone RU1 Primary Production.

Under clause 2.7(1) of the T&I SEPP, the provisions of the T&I SEPP prevail where there are inconsistencies with any other Environmental Planning Instruments (EPIs), including LEPs. Therefore, the Project is permissible with development consent.

4.1.2 EII Act

The South West REZ was formally declared by the Minister for Energy under section 23(1) of the EII Act and published in the NSW Gazette (NSW Government, 2022) on 4 November 2022. The South West REZ has an intended network capacity of 2.5 GW of additional transmission capacity.

The Project is located entirely within the South West REZ as shown in **Figure 1-3.**

4.2 Other Approvals

Table 4–1 identifies other approvals and pre-conditions required for exercising the power to grant approval for the Project and justifies each in relation to sections 4.42 of the EP&A Act, including Commonwealth approvals and other NSW approvals. It also describes approvals that do not apply to SSD in accordance with section 4.41 of the EP&A Act.

Appendix D describes mandatory considerations that must be satisfied before the relevant consent authority may determine the Project. Pre-conditions to exercising the power to grant development consent (including mandatory conditions) are also identified and references to where each matter is addressed in the EIS is included.

Table 4–1 Other Approvals

Approval Category	Legislation	Requirement
Approvals that cannot be refused and must be applied substantially consistent with the SSD development consent (Section 4.42 of the EP&A Act)	*Roads Act 1993* (NSW) (Roads Act)	Consent from the appropriate roads' authority under section 138 of the Roads Act is required for any works undertaken on or under public roads. **Public road network upgrades are identified as a direct result of the Project in Section 3.4.4**.
	Crown Land Management Act 2016 (NSW) (CL Act)	The CL Act provides for the administration and management of Crown land in NSW. Crown land may not be occupied, used, sold, leased, licensed, dedicated, reserved, or otherwise dealt with unless authorised by the CL Act. **Crown "paper roads" exist in the Project Area. The landholder is in consultation with Crown Lands to close these paper roads. It is expected that these roads will be closed prior to construction. However, if roads continue to exist at the commencement of construction, an appropriate licence or another form of access rights will be sought**.
	Protection of the Environment Operations Act 1997 (NSW) (POEO Act)	Under the provisions of Schedule 1, clause 17 of the POEO Act, "electricity works (wind farms)" and associated activities require an Environment Protection Licence (EPL). **An EPL will be sought for the operation of the Project**. **The Project may also require an EPL during construction for crushing, grinding or separating concrete if the activity has the capacity to process more than 150 t of materials per day or 30,000 t of materials per year**. **If operated with the separate Solar Farm, the Project may require a combined EPL for the Pottinger Energy Park**.
	Coal Mine Subsidence Compensation Act 2017 (NSW) (CMS Act)	Part 3 clause 22 of the CMS Act specifies that an application for approval to alter or erect improvements, or to subdivide land, within a mine subsidence district is to be made. **As the Project Area is not located on or adjacent to mine subsidence land, no engagement or approvals in this regard are required**.
	Mining Act 1992 (NSW)	The *Mining Act 1992* (NSW) aims to encourage and facilitate the discovery and development of mineral resources in NSW. A review of MinView (MinView, 2023) indicates there are no exploration licences or leases within the Project Area. **As the Project Area is not located on or adjacent to any lands where an exploration licence exists, no engagement or approvals in this regard are required**.
	Petroleum (Onshore) Act 1991 (NSW)	The *Petroleum (Onshore) Act 1991* aims to encourage and facilitate the discovery and development of petroleum resources in NSW. A review of MinView (MinView, 2023) indicates there are no existing petroleum production leases within the Project Area. **As the Project Area is not located on or adjacent to any lands where a petroleum production lease exists, no engagement approvals in this regard are required**.
	Pipelines Act 1967 (NSW)	The *Pipelines Act 1967* (NSW) controls pipeline construction, operation, and licensing in NSW. Part 3 section 11 of the *Pipelines Act 1967* (NSW) requires a person to be a registered holder of a licence before any construction of a pipeline commences. **The Project does not involve the construction and operation of water pipelines and as such, no approvals in this regard are required.**
Native Title (Cwlth)	*Native Title Act 1993 (Cth)* (NT Act)	For any Crown land within the Project Area where native title has not been extinguished under the NT Act a strategy should be developed. No current claims under the NT Act exist within the Project Area. **Crown land and associated NT Act issues are described further in Section 2.4.5**.

Approval Category	Legislation	Requirement
EPBC Act Approval (Cwlth)	EPBC Act	Approval from the Commonwealth Minister for the Environment and Water for the is required for any action that will or is likely to have a significant impact on one or more Matters of National Environmental Significance (MNES) under the EPBC Act. The Project will be assessed in the manner specified in Schedule 1 to that Agreement including addressing the matters outlined in Schedule 4 of the Environment Protection and Biodiversity Conservation Regulation 2000. **The Project has been determined to be a "controlled action" under EPBC 2023/09679 on 6 March 2024. An approval under Part 9 of the EPBC Act will be required as discussed in Section 6.4.**
	'Amending Agreement – No.1 - New South Wales Assessment Bilateral Agreement' (Bilateral Agreement)	Where a NSW SSD Project is deemed "Controlled" it is assessed in accordance with the 'Bilateral Agreement' (Commonwealth of Australia & NSW, 2020). Under the Bilateral Agreement, the NSW determining authority's Assessment Report will be provided to the Federal DCCEEW inclusive of a recommendation as to whether the Project should be approved and conditions that may be applied to any EPBC Act approval. **Biodiversity is further discussed in Section 6.4.**
Civil Aviation (Cwlth)	*Civil Aviation Regulations 1988- (Cth)*	The *Civil Aviation Regulations 1998* require any potential aviation obstacles and hazards be assessed under the 'National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft' (NASAG 2012). **The Project may be considered an aviation obstacle. An Aviation Impact Assessment (AIA) has been undertaken to support the Project which is further discussed in Section 6.13**.
Other Approvals (NSW)	*Aboriginal Land Rights Act 1983* (NSW) (ALR Act)	The ALR Act establishes Aboriginal Land Councils at State and local levels. These Land Councils have a statutory obligation under the ALR Act to take action to protect the culture and heritage of Aboriginal persons in the council's area, subject to any other law, and promote awareness in the community of the culture and heritage of Aboriginal persons in the council's area. Under the ALR Act, Aboriginal Land Councils can claim Crown land which is not lawfully used or occupied and that are not needed, nor likely to be needed, for an essential public purpose. The Project Area is located within the Hay and Deniliquin Local Aboriginal Land Council (LALC) boundaries. No current claims under the AL Act exist within the Project Area. **Aboriginal heritage is described further at Section 6.5**.
	Water Management Act 2000 (NSW) (WM Act)	Any person or organisation, including a local water utility, taking water from a water source must be authorised to take water by a water access licence and a water supply work approval under section 60A of the WM Act unless an exemption applies. **WM Act licences may be required to facilitate the Project as described in Section 6.10.**
	Conveyancing Act 1919 (NSW) (Conveyancing Act)	The Project Area will require lease of premises under the Conveyancing Act. Subdivision consent is generally not required under section 23G of the Conveyancing Act, may apply if subdivision for the purpose of construction, operation and maintenance of a substation is required. **Subdivision is required to facilitate the Project as described in Section 3.4.7**.

Approval Category	Legislation	Requirement
	BC Act	Part 7, Division 2 of the BC Act specifies the requirements for a biodiversity assessment depending on the planning pathway under the EP&A Act. If an activity is likely to have a significant impact or will be carried out in a declared area of outstanding biodiversity value, the proponent must apply the Biodiversity Assessment Method (BAM) and a Biodiversity Development Assessment Report (BDAR). **A BDAR has been prepared for the Project and provides a discussion of the management and protection of listed threatened species of native flora and fauna and Threatened Ecological Communities (TECs) and assess biodiversity offsets consistent with the Biodiversity Offset Scheme (BOS). Biodiversity is discussed at Section 6.4.**
	Local Land Services Act 2013 (NSW) (LLS Act)	Under Division 5 clause 60S of the LLS Act, clearing of native vegetation in a regulated rural area is authorised without any approval or other authority under this Part if it is clearing carried out by or on behalf of the landholder in accordance with a land management (native vegetation) code under this Division. **The Project will impact upon approximately 30 ha of land that does not contain native vegetation, and approximately 35.15 ha on native vegetation that occurs on Category 1 – Exempt land.** **Biodiversity is further discussed in Section 6.4.**
Approvals that do not apply (Section 4.41 of the EP&A Act)	*Fisheries Management Act 1994* (NSW) (FM Act)	Section 201, 205 and 219 of the FM Act require a permit for the purpose of dredging works, any harm to marine vegetation, or for any activities that block the passage of fish, respectively. **Section 4.41 of the EP&A Act provides that these authorisations do not apply to SSD. In any case, the Project will not involve dredging works, impact marine vegetation or block the passage of fish and as such, no approvals in this regard are required**.
	Heritage Act 1977 (NSW) (Heritage Act)	Approval is required to carry out an act, matter or thing referred to in section 57(1), or an excavation permit under section 139 of the Heritage Act. **Section 4.41 of the EP&A Act provides that these authorisations do not apply to SSD.**
	National Parks and Wildlife Act 1974 (NSW) (NPW Act)	Sections 86, 87 and 90 of the NPW Act require approval for any works which may impact an item of Aboriginal heritage. **Section 4.41 of the EP&A Act provides that these authorisations do not apply to SSD.** **The methodology of the Aboriginal Cultural Heritage Assessment Report (ACHAR) assessment is discussed at Section 6.5**.
	Rural Fires Act 1997 (NSW) (RF Act)	Where a project requires subdivision for residential or rural residential development, a bush fire safety authority under section 100B of the RF Act is required. **Section 4.41 of the EP&A Act provides that these authorisations do not apply to SSD.** **The methodology of the Bushfire assessment is discussed at Section 6.16**.
	Water Management Act 2000 (NSW) (WM Act)	A water use approval under section 89, a water management work approval under section 90 or an activity approval (other than an aquifer interference approval) under section 91 of the WM Act is required where impacts are predicted. **Section 4.41 of the EP&A Act provides that these authorisations do not apply to SSD. In any case, any water use approvals required to facilitate the Project will be sought, as applicable.** **The methodology of the water assessment is discussed at Section 6.9 and Section 6.10**.

5 STAKEHOLDER ENGAGEMENT

This section summarises the findings of stakeholder engagement completed for the Project during the preparation of the EIS and describes any further stakeholder engagement which will be carried out during construction, operation and decommissioning of the Project.

Engagement for the Project has been (and will continue to be) undertaken in accordance with the community participation objectives in the 'Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2021) and in accordance with the stakeholder engagement requirements in the SEARs.

Further details on the issues raised by the stakeholders during engagement for the Project, and where these issues have been addressed in the EIS, is provided in ***Appendix T****.*

5.1 Introduction

The Applicant has implemented a tailored community co-design process to ensure that the local community benefit from the Project and tailored economic, social, and environmental outcomes are delivered.

The Applicant has prioritised direct engagement and has undertaken 12 in-region visits since late-2022 to engage with key stakeholders at important Project stages.

This has included spending significant time listening to and working with 130 individuals and 55 local organisations which comprise the key stakeholder groups in the community Project neighbours, local landowners, councils, First Nations groups, local service providers, and government agencies as identified in **Table 5-1**.

Over 2,000 interactions with these stakeholders have been recorded by the Applicant, and approximately 173 companies have registered interest to become future local suppliers for the Project. The feedback gathered has shaped the Project's design and proposed delivery approach.

Ongoing stakeholder engagement is guided by the Project's Stakeholder Engagement Plan (SEP). The Applicant will continue to modify its consultation methods in response to stakeholder feedback, as additional stakeholders are identified and as monitoring data is captured, providing a more comprehensive understanding of the impact of each engagement tool.

HSC led a significant number of community and business consultations from October to December 2023. The purpose of this effort was to reduce local stakeholder consultation fatigue from many Applicants seeking engagement and EIS inputs, and to produce a consultation outcomes report for all Applicants along the REZ to inform impact mitigation strategies.

Table 5–1 Key Stakeholder Groups in the Community

Host landowners	Project neighbours (within 10 km of the Project Area)	First Nations groups and/or Traditional Owners
Local industry	**Key Stakeholder Groups Consulted**	Local councils and elected representatives
Local media	Community members and special interest groups	Local business

5.2 Social Locality

The Project's social locality was determined in accordance with the Social Impact Assessment Guideline for State Significant Projects (DPIE 2023) (SIA Guidelines) and enabled the Applicant to consider multiple and overlapping impacts. The Applicant conducted a desktop review of publicly available data sources to help define the social locality. These sources include the Australian Bureau of Statistics (ABS) Census data, local and state government policies, council websites for Hay and Edward River LGA, and broader technical studies undertaken for the EIS. **Table 5–2** provides a summary of engagement tools prioritised in response to stakeholder feedback in the social locality.

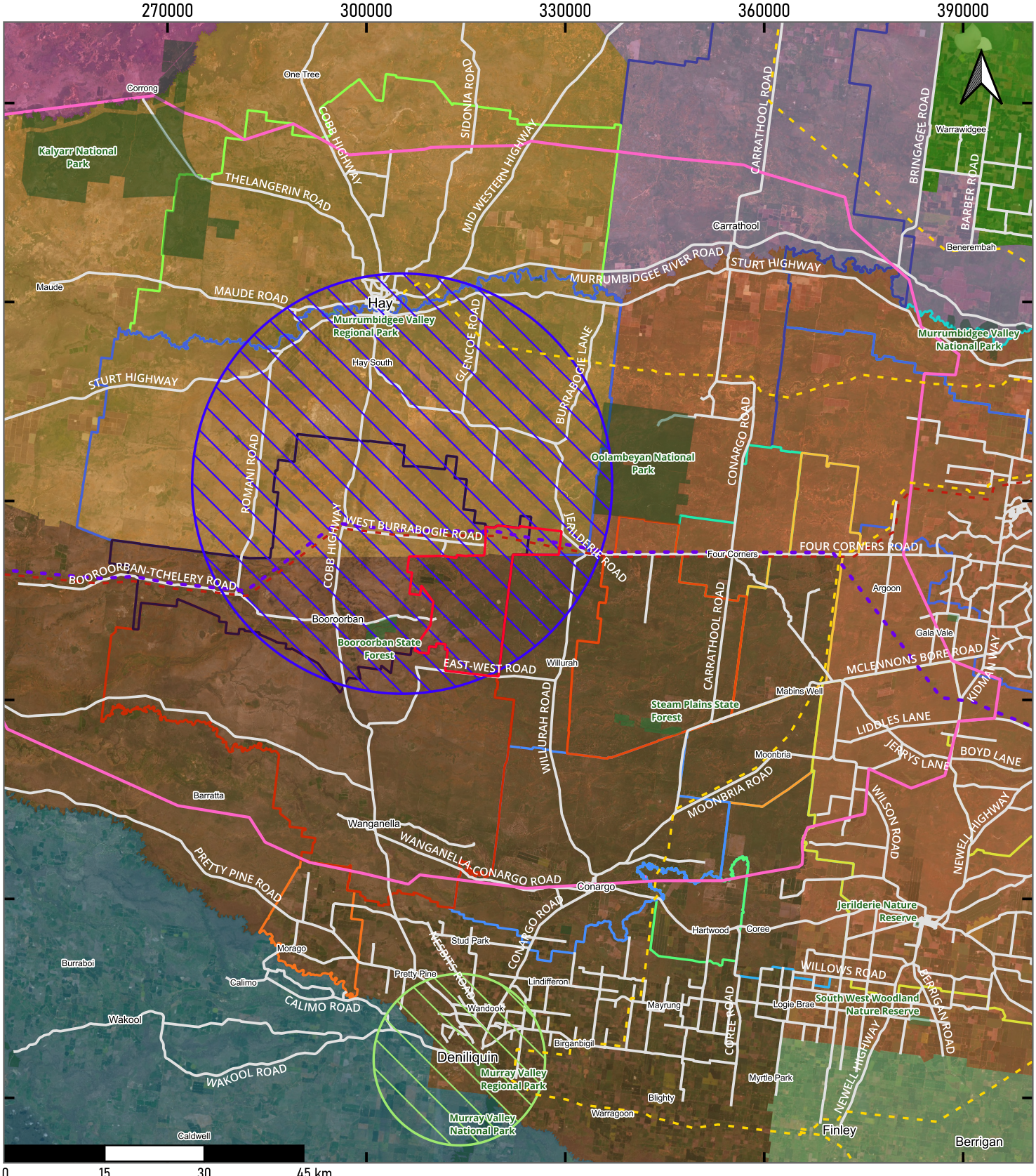
In-region consultations with relevant stakeholders helped refine the Project's 'area of social influence'. The Applicant also administered qualitative and quantitative surveys. All data was examined and analysed, exposing trends and key themes to consider.

The Project's area of social influence may change over time. The social locality will evolve to reflect this and will be captured in ongoing monitoring, evaluation and reporting efforts, as well as live strategic documentation relevant for the Project throughout the Project lifecycle.

Figure 5-1 illustrates the Project's social locality in relation to significant landmarks and boundaries, including primary and secondary study areas. **Section 6.19** provides background information on the LGA and existing land ownership settings.

Table 5–2 Priority Engagement Tools

Tool	Stakeholder Preference	Timing/Frequency	Anticipated Use and Outcome
Stakeholder identification and mapping	N/A	As part of baseline study and revisited throughout the Project lifecycle	Helps ensure all relevant stakeholders are engaged at the appropriate time, in the appropriate way, and their potential concerns can be anticipated and addressed appropriately to optimise relationships and Project impacts
One-on-one briefings with groups and individuals	High	As early as feasible, and then at key Project milestones and/or upon request. Also, where specific inputs are required from community members including in the development of the Project Community Enhancement Fund and the First Nations Fund.	Important relationship-building tool. Can address specific concerns/misinformation without the peer pressure of larger groups. Can deep dive into intricate issues as well as gather data to be used for baseline and other research efforts relevant to the Project.
Written communication	Medium	As early as feasible and then bi-monthly, or as required throughout the Project lifecycle	Helps stakeholders feel informed and enables change in the community to be anticipated. Clear guidance on how concerns can be effectively communicated minimises community disharmony, mitigates the likelihood of anti-social behaviour, while optimising effective problem solving and positive community impacts.
Project website	Medium	As early as feasible (live since September 2022), review and update bi-monthly or as required throughout Project lifecycle	Helps stakeholders feel informed, anticipate change and provide avenues to engage with the Applicant. Also used to gather input from visitors to the site to inform Project decision making.
Media releases	Medium	Throughout the Project lifecycle at key milestones/Project updates/to rectify misinformation	Keeps stakeholders informed on Project progress and address misinformation and tensions in the community



Pottinger Wind Farm

Figure 5-1 Social Locality

SOMEVA RENEWABLES

Date:	13/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:800000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022) Energy Co (2024)

Prepared By: EL Reviewed by: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Area
- Project Area

Existing Infrastructure
- Main Roads

Transmission Lines
- 132 kV
- 220 kV
- Project Energy Connect

- National Park
- Nature Reserve
- Regional Park
- Edward River LGA
- Hay LGA
- Balranald LGA
- Berrigan LGA
- Carrathool LGA
- Griffith LGA
- Murray River LGA
- Murrumbidgee LGA
- South West REZ

Suburbs
- Booroorban
- Carrathool
- Coleambally
- Conargo
- Coree
- Darlington Point
- Four Corners
- Hartwood
- Hay
- Hay South
- Jerilderie
- Mabins Well
- Moonbria
- Morago
- Steam Plains
- Wanganella
- Willurah

Study Area
- Primary (Hay Project Site)
- Secondary (Deniliquin)

5.3 Community Stakeholder Identification and Feedback Received

Stakeholder identification is important throughout all stages of the Project. The Applicant has conducted early and proactive engagement with stakeholders to reduce uncertainty and to establish a relationship with various stakeholder groups. An initial environment assessment was completed during the Project feasibility stage.

Stakeholders were identified by:

- Compiling land ownership information;
- Considering the local and wider community, industry and service providers;
- Networking with different individuals and community organisations;
- Reviewing media advertisements;
- Accessing newsletter distribution and community information sessions;
- Consultation with Government regulators; and
- Including all stakeholders referenced in the SEARs.

This initial assessment identified eight distinct stakeholder groups and assessed their anticipated level of interest in the Project. The Applicant then devised an engagement strategy to follow throughout the life of the Project as per the International Association for Public Participation (IAP2) Spectrum of Participation. Where possible, the Applicant seeks to 'involve', collaborate' and 'empower' (IAP2, 2022) stakeholders.

The Project website was launched in March 2023 at https://www.somevarenewables.com.au/Project-pottinger and includes access to the online community survey, Project Fact Sheet, Frequently Asked Questions, and key points of contact to engage directly and discuss the Project.

The Applicant's community engagement revealed stakeholder groups had a broad suite of interests regarding all aspects of the Project including in the planning and assessment, environmental and social impacts, opportunities for economic and other social benefits and the Project's interaction with other large developments in the region.

- **Table 5–3** summarises community stakeholder group feedback received, identified level of interest, and issues raised. Stakeholders will be regularly updated in response to ongoing engagement and as additional stakeholders are identified.
- **Table 5–4** shows the stakeholders identified within each of the eight stakeholder groups and provides detail about the type and frequency of the Applicant's engagement with each of these groups.
- **Table 5–5** provides a summary of 20 social impact themes identified through the consultation process, and their evaluated significance. It also shows the corresponding category/s from the SIA Guideline.

Appendix T provides detail about specific community stakeholders who have participated in the Project's planning and assessment process to date and whose feedback and input has informed the EIS.

Table 5–3 Conducted Stakeholder Engagement – Community

Stakeholder	Details	Date/s	Consultation Activity
Host landowners	Associated Dwellings (AD): WP Pastoral and Wargam Station	Continuous since Project inception (2020)	• Provided Project updates >three times per month, including the proposed planning and development schedules • Regular updates regarding stakeholder engagement, ecological, visual, noise and other survey work. Received favourable responses
Project neighbours	Non-associated dwellings (NADs) within 10 km of the Project Area East Loddon Merinos Burraburoon Farm Stay Raheen Rams Spring Plains Pastoral Company John Lamb Pastoral	12 Dec 2022 onwards	• Conducted 12 in-region consultations coupled with remote consultations to directly engage with stakeholders and to 'ground-truth' desktop assessments • >200 interactions via phone calls, emails, text messages and face-to-face meetings with all identified landowners of the NADs • Provided overview of the Project, sought feedback, and co-designed the BSP • The Applicant is in direct contact with all nine of the NADs, and all nine support the Project. 2 neighbours have signed Neighbour Agreements, with 5 neighbours having signed neighbour benefits sharing offers (short-form Neighbour Agreements) at the time of developing this EIS. Six of the nine NADs are also associated with other renewable energy Project developments
First Nations groups and/or Traditional Owners	Hay Local Aboriginal Land Council (LALC) and Nari Nari Tribal Council	5 Dec 2022 onwards	• 100+ interactions (mixed methodology approach) to sustain engagement, coordinate schedules, finalise cultural heritage assessment guidance, progress partnership and benefits sharing arrangements. Favourable response and support received • Engagement and Project information provided mainly via email, face-to-face meetings and phone calls. Ongoing efforts to ensure the Applicant is engaging with Registered Aboriginal Parties
	Deniliquin LALC	5 Dec 2022 onwards	• 90+ interactions (mixed methodology approach) to sustain engagement, coordinate schedules, finalise cultural heritage assessment guidance, progress partnership and BSP arrangements. Favourable response and support received • Engagement and Project information provided mainly via email, face-to-face meetings and phone calls. Ongoing efforts to ensure the Applicant is engaging with Registered Aboriginal Parties
	Yarkuwa Indigenous Knowledge Centre	13 Oct 2023 onwards	• 20+ interactions (mixed methodology approach) to sustain engagement, coordinate cultural heritage survey support, finalise cultural heritage assessment guidance, progress partnership and benefits sharing arrangements. Favourable response and support received • Engagement and Project information provided mainly via email, face-to-face meetings and phone calls. Ongoing engagement to ensure the Applicant is engaging with Registered Aboriginal Parties authorised to engage with the Project on behalf of their communities
Local industry	Supply Nation Industry Capability Network (ICN) NSW Indigenous Chamber of Commerce Business NSW EnergyCo Transgrid Elecnor Australia (Secure Energy)	July 2023 onwards	• 80+ interactions (mixed methodology approach) across local industry groups. Project information provided and feedback received by all groups regarding key considerations, concerns, and expectations of communications from the Project. Applicant committed to frequent updates as Project development progresses. • Industry Capability Network (ICN): including support to launch expressions of interest process for local and regional business/industry for future work on the Project. Ongoing support from ICN to the Project to establish the Project's Local Content Strategy. • Business NSW: context setting and key business stakeholder identification support to understand challenges facing development in the region and to assist with future local content strategy development of addressing potential Project impacts • Supply Nation: industry context setting from First Nations group perspective. Support to launch expressions of interest process for local and regional business/industry for future work on the Project. • NSW Indigenous Chamber of Commerce: industry context setting from First Nations group perspective. Support to launch expressions of interest process for local and regional business/industry for future work on the Project. EOI process forecasted to go live in March/ April 2024. • EnergyCo: ongoing consultation on Project Energy Connect via the industry reference group on SW-REZ. Project contribution to Project Energy Connect Public Submissions to inform approach to future decisions about SW-REZ Tender Access Rights process. • Transgrid and Elecnor Australia: industry context setting and experience sharing about challenges and potential impact management strategies regarding Project Energy Connect in the region which the Project may also encounter. Lessons shared. • Ongoing participation in the HSC facilitated 'Industry Roundtable' events (which commenced on 21/02/24). All Applicants identified for ongoing engagement and discussions about cumulative impact management and benefits sharing.
Local council and elected representatives (non-regulators)	Sussan Ley, MP (Federal Government, Member for Farrer)	29 Nov 2022 onwards	• Emails and phone calls to coordinate meetings and introduce the Project and the Applicant • 2 February 2023: face-to-face meeting to brief on the Project. Received supportive response. Applicant committed to frequent updates as Project development progresses
	Helen Dalton, MP (State Government, Member for Murray)	29 Nov 2022 onwards	• Seven emails and four phone calls to introduce the Project and the Applicant. Received acknowledgement of communication effort • 31 Jan 2023: MP Dalton's office advised via phone call the earliest they could meet would be end of March 2023. MP Dalton's staff noted extensive calendar commitments and requested the Applicant send through Project-significant updates via email to ensure MP Dalton's office is kept updated.
Local media	Riverina Grazier Deniliquin Pastoral Times ABC Riverina	February 2023 onwards	• 50+ interactions (mainly phone, email, face-to-face meetings). Project information provided and feedback received by all groups regarding key considerations, concerns, and expectations of communications from the Project. Applicant committed to frequent updates as Project development progresses. Supportive response received. • Project communications support sought through Riverine Grazier and Deniliquin Pastoral Times (local papers and social media channels) to promote Project at key stages during its development, including promotion of online survey for community response. Positive community responses received
Community members and special interest groups	Hay Inc First Nations Clean Energy Network RE-Alliance	July 2023 onwards	• 50+ interactions (mixed methodology approach). Project information provided and feedback received by all groups regarding key considerations, concerns, and expectations of communications from the Project. Supportive responses received • HSC led community consultation process to mitigate community engagement fatigue included direct consultation with 45 local community members and all local councillors. Report produced and made publicly available on 23/12/24 listing key concerns, opportunities and expectations for 'successful renewable energy development in Hay LGA'. Ongoing supportive response being received, though some concerns remain that the Project will seek to address.

Stakeholder	Details	Date/s	Consultation Activity
Local businesses	Coleambally Irrigation Cooperative Limited Deniliquin Chamber of Commerce Milbrae Concrete, Quarries & Mining Services AGFlite (Hay NSW) Australian Food & Fibre Cotton Australia Ricegrowers Association of Australia 173 other additional local businesses engaged (via Industry Capability Network)	July 2023 onwards	• 200+ interactions across local and regional businesses (mixed methodology approach). Project information provided and feedback received by all groups regarding key considerations, concerns, and expectations of communications from the Project. Applicant committed to frequent updates as Project development progresses. Supportive response received from all groups consulted, noting general range of concerns raised for Project to address. • Key local growers' associations across cotton, grains and rice were contacted and given Project information via phone and email for feedback. Peak production periods identified for Project consideration. • Local concrete, quarries and mining services company and affiliates were contacted and given Project information via phone and email for feedback. Feedback received and businesses registered interest to supply future goods/services to Project. • All agribusiness within 12 km of the Project Area were contacted. All key issues identified, including peak activity periods. • 173 businesses in the region have responded to the 'expressions of interest' process being run through Industry Capability Network portal since October 2023

Table 5–4 Stakeholder Identification, Level of Interest and Issues Raised

Stakeholder Group	Details / Key Areas of Interest / Risk Responses	Level of Interest	Engagement Strategy	Issue Raised	Relevant SIA Category/s	Section
Host landowners	Project hosts are major financial beneficiaries. They have direct impacts from construction, operational and decommissioning activities. One landholder will host the Project.	High	Empower	Environmental impacts (ecology and biodiversity)	Surroundings and Social Amenity	**6.4**
				Agricultural goods production, and land productivity	Livelihoods; Way of life	**6.7** **6.8**
				Aboriginal and cultural heritage	Culture	**6.5**
				Road and traffic, including on stock and agricultural produce movements	Accessibility	**6.11**
Project neighbours	Within 10 km of the Project, they have direct impacts from construction, operational and decommissioning activities. Visual impacts from the Project and other infrastructure are likely. Potential offset / community benefits program opportunities. 9 neighbours within around 10 km from the Project area.	High	Collaborate	Bush and grassfires resulting from Project construction and operations	Surroundings and Social Amenity	**6.16**
				Visual amenity and landscape character	Surroundings and Social Amenity; Way of life	**6.3**
				Road and traffic, including on stock and agricultural produce movements	Accessibility	**6.11**
				Local infrastructure (including energy supply, roads, social infrastructure)	Accessibility; Health and Wellbeing	**6.19**
				Equitable benefits sharing	Livelihoods; Way of life	**6.19**
				Mental health concerns, for if Project does and/or does not proceed	Health and Wellbeing; Livelihoods	**6.19**
First Nations groups and/or Traditional Owners	Registered Aboriginal Parties (RAPs) and Aboriginal groups, including Local Aboriginal Land Councils: Hay LALC, Deniliquin LALC. Interest in Project cultural heritage service support and longer-term partnership engagement. Nari Nari People: lower Murrumbidgee River region, from the junction with the Lachlan River to the approximate vicinity of the Hay township, south to about Booroorban.	High	Collaborate	Preservation of identified aboriginal cultural heritage and artefacts found on-site	Culture; Way of life	**6.5**
	Wiradjuri people: their range located north and east of the Nari Nari and Yitha Yitha people, stretching approximately to the township of Hay. Yitha Yitha people: inhabited the area north-west of the lower Lachlan River, between the vicinity of Booligal township and the junction with the Murrumbidgee.			Environmental impacts (ecology and biodiversity)	Surroundings and Social Amenity	**6.5**
	Nari Nari Tribal Council, interest in Project cultural heritage service support and longer-term partnership engagement.			Employment and equitable benefits sharing	Livelihoods; Way of life	**6.19**
	Yarkuwa Indigenous Knowledge Centre (Deniliquin), interest in Project cultural heritage service support and longer-term partnership engagement	High	Collaborate	As above (same three key issues)	Livelihoods; Way of life	**6.19** **6.20**
	Southern West Yiradyuri Clans, interest in Project cultural heritage service support and longer-term partnership engagement	High	Involve	As above (same three key issues)	Livelihoods; Way of life	**6.19** **6.20**

Stakeholder Group	Details / Key Areas of Interest / Risk Responses	Level of Interest	Engagement Strategy	Issue Raised	Relevant SIA Category/s	Section
Local industry	Industry reference group for the REZ (EnergyCo), including Project Energy Connect	High	Engage	Worker accommodation and housing	Livelihoods; Way of life	**6.19**
	Proactive engagement with all surrounding largescale renewable energy Project developers, following the submission of their Scoping Reports, via the HSC industry roundtable discussions. Future interest in goods and service provision to the Project (local content strategy).			Avoiding a local boom/bust cycle in renewables	Livelihoods; Way of life	**6.20**
	Transgrid (Project Energy Connect). Elecnor Australia. Electricity / utility network service providers - Essential Energy; Endeavour Energy; Ausgrid; Telstra; Optus; NBNCo.			Appropriate local content target setting	Livelihoods; Way of life	**6.19**
Local councils and elected representatives (non-regulators) **Politically Elected Representatives**	MP Sussan Ley (Liberal Party Member) Federal Member for Farrer. Deputy Leader of the Opposition. Stated interest in developing economic growth and enhancing renewable energy industry in her electorate.	High	Inform	Community consultation and communication, including consultation fatigue and overwhelm	Stakeholder Participation and Decision-Making systems	**5**
	MP Helen Jennifer Dalton (Independent), Member for Murray. Member of the Legislative Assembly, NSW. Strong advocate for regional development. Strong supporter of agriculture and farming, operates a family farm business	High	Inform			
	MP Penny Sharpe, Minister for portfolios covering Energy, Environment, Heritage, and Climate Change. Member of the Legislative Assembly.	High	Inform			
Local councils and elected representatives (non-regulators) **Local Council Representatives** **Key sources of local guidance and advice to minimise Project impacts, identify further key stakeholders, and enable Project success**	HSC Council: David Webb (General Manager); Jack Terblanche (Director Planning and Development); Alison McLean (Economic Development Officer); Mark Dowling (Director Corporate and Community Services). Councillors: Cr Carol Oataway (Mayor); Cr Lionel Garner (Deputy Mayor); Cr Geoff Chapman; Cr Jenny Dwyer; Cr Martyn Quinn; Cr Paul Porter; Cr Peter Handford.	High	Collaborate	Energy supply security	Livelihoods; Way of life	**6.19**
				Equitable sharing of benefits	Livelihoods; Way of life	**6.19**
Important stakeholders in shaping the potential offset / community benefits sharing plan opportunities **Representatives are listed on both the Hay Shire and ERC websites** **Important stakeholders for informing design of benefits sharing opportunities**	ERC Council: Phil Stone (General Manager); Mark Dalzell (Director Infrastructure); Marie Sutton. Councillors: Cr Pete Betts (Mayor); Cr Paul Fellows (Deputy Mayor); Cr Shirlee Burge; Cr Harold Clapham; Cr Linda Fawns; Cr Pat Fogarty; Cr Tarria Moore; Cr Marc Petersen.	High	Collaborate	Agricultural goods production, and land productivity	Livelihoods; Way of life	**6.7** **6.8**
Local media	Likely key partners and stakeholders to engage with during Project stages 3-6, especially Stage 4 (construction). Aim is to ensure real or perceived impacts resulting from the Project are effectively communicated and engaged with by the Project delivery team.	Moderate	Involve	Community consultation and communication	Stakeholder Participation and Decision-Making systems	**5**
	Radio: 2Hay FM Community Radio; ABC Radio Riverina Deniliquin Pastoral Times; The Riverine Grazier ABC Riverina. Community Facebook Groups: @VisitHay; #HayPlains			Equitable sharing of benefits	Livelihoods; Way of life	**6.19**

Stakeholder Group	Details / Key Areas of Interest / Risk Responses	Level of Interest	Engagement Strategy	Issue Raised	Relevant SIA Category/s	Section
Community members and Special Interest Groups	Community members or groups who live within 20 km from the proposed Project infrastructure, including social clubs of Booroorban and Wanganella Nearby town or village centres: Hay; Deniliquin; Booroorban; Wanganella Further afar: Coleambally; Swan Hill; Griffith Local schools and education institutions This includes engagement with identified local schools, TAFEs and Country University College/s during Project stages 4-6 to also consider future partnership opportunities with the Project. Clean Energy Council, NSW Farmers Association, and others as identified during the Project	High	Involve	Visual amenity and landscape character	Surroundings and Social Amenity; Way of life	**6.3**
				Waste management	Health and Wellbeing; Way of life	**6.18**
				Worker accommodation and housing	Livelihoods; Way of life	**6.19**
				Project decommissioning	Surroundings and Social Amenity; Way of life	**3.7**
				Agricultural goods production, and land productivity	Livelihoods; Way of life	**6.7** **6.8**
				Financial security of generator/s	Livelihoods; Way of life	**6.19**
				Community consultation and communication, including consultation fatigue and overwhelm	Stakeholder Participation and Decision-Making systems	**6.19**
				Equitable sharing of benefits	Livelihoods; Way of life	**6.19**
				Social infrastructure (incl. education and health services)	Health and Wellbeing; Accessibility	**6.19**
				Property values (financial)	Livelihoods; Way of life	**6.20**
				Ability to access Project information and inform Project decisions	Stakeholder Participation and Decision-Making systems	**5**
				Agricultural goods production, and land productivity	Livelihoods; Way of life	**6.7** **6.8**
Local business	Local business and employment agencies (construction and civil engineering focus), as identified through the ongoing expressions of interest (EOI) process on the Industry Capability Network (ICN) gateway and via Supply Nation and NSW Indigenous Chamber of Commerce platforms. Future interest in goods and service provision to the Project. Interest in potential impacts (negative / positive) resulting from various Project stages, particularly construction stage and decommissioning. Traffic movement, noting season peak usage of local roads for broad acre crop haulage and post-ginning module transport.	High	Inform	6 similar issues raised across this stakeholder group	Worker accommodation and housing	**6.19**
					Road and traffic; Accessibility	**6.11**
	Emergency Services: Hay / Deniliquin Hospital and Health Service NSW Ambulance – Deniliquin and Hay NSW Police Service – Deniliquin and Hay Fire and Rescue NSW Fire Station – Deniliquin and Hay Key areas of influence: access to site for emergency response. Impact on local services (workforce surge during construction). Community investment and partnership opportunities, programs and community events.	Moderate	Inform		Avoiding boom/bust business cycles; Livelihoods	**6.20**
					Access to affordable and renewable energy generated by Project; Livelihoods	**6.20**
	Local airports / aviation: Hay Airport; Deniliquin Airport AgFlite (Hay): bushfire response support and agricultural aerial service delivery impact concerns raised.	Moderate	Inform		Employment and business opportunity; Livelihoods; Way of life	**6.19** **6.20**
					Staff availability and skills shortages; Livelihoods	**6.19**

Table 5–5 Social Impact Themes Summary

Evaluated Significance	Very High	High		Medium	Low
Social Impact Theme Identified	1: Temporary changes to population and demography	4: Landscape character, use, aesthetic value and amenity	8: Local infrastructure to facilitate the Project (water, waste, telecoms, and electricity grid)	13: Environment and biodiversity (flora and fauna)	17: Stakeholder ability to access decision makers and influence Project decisions and benefits sharing
	2: Diversification of income streams, flow on economic benefits for the surrounding community and region	5: Aboriginal cultural heritage, including identification of potential culturally sensitive sites	9: Agricultural goods production and land productivity	14: Climate resilience, including drought resilience	18: Land values
			10: Increased demand for local goods and services, including local employment supply		
	3: Accommodation and housing	6: Access to local services (including health and education)	11: Access to affordable Energy	15: Bush and grassland fire management	19: Mental health concerns, for if Project does and/or does not proceed
		7: Road and traffic (including noise and air quality)	12: Project decommissioning and/or re-energising (replacement)	16: Social cohesion between community members	20: Perceived health impact of WTGs
Scope of Identified Impacts by DPE's SIA Category	All SIA categories	All SIA categories		Surroundings and Social Amenity; Community; Livelihoods; Way of Life	Health and Wellbeing; Livelihoods; Community; Way of Life

5.4 Regulatory Engagement Conducted and Feedback Received

This section describes the engagement conducted with regulators and other stakeholders. The outcome and where each concern is addressed in this EIS is discussed in **Section 6**.

Table 5–6 summarises the Applicant's numerous meetings and correspondence with regulators. The response to any issues raised is addressed, where relevant in **Section 5.5**. The engagement tools facilitated various meetings and correspondence with regulators which are summarised by 'aspect' in **Table 5–4**.

These exclude issues raised during the formal agency's submission to SEARs, Supplementary SEARs and Additional SEARS. All of which are listed in **Appendix C** and where each is addressed in this EIS is also indicated.

Table 5–6 Regulatory Engagement Conducted

Stakeholder	Method and Date	Request and Purpose	Issues Raised
NSW Department of Planning and Environment	MS Teams meeting (19/01/23) MS Teams meeting (10/11/23) Email (12/02/24) Supplementary SEARS issued (03/04/24) Provision of Southern Extension Area Paper (19/04/24)	• Stage 2 (feasibility) update and introduction of the Project. Established key points of contact. • Supplementary SEARs issued • Provision of paper detailing southern extension area, consultation undertaken and preliminary impact assessment • Supplementary SEARs incorporating Federal DCCEEW requirements	• Applicant provided overview of the Project. No specific issues raised. • Biodiversity (threatened species and communities) discussed • Department provided guidance on lodgement process • Ensure all regulators as per SEARs engaged with • Satisfied with SEARs requirements, ensure to address additional considerations specified in relation to EDC and Employment and the BESS
HSC	In-person meetings (13/12/22); (22/08/23); (06/11/23); (15/01/24); and (21/02/24). Phone calls: average of 2-4 calls per month (1/08/23 to 15/03/24) Emails: average of 2-3 emails per month (1/08/23 to 15/03/24) Email (24/11/23)	• Presentation to HSC leader/s to introduce the Project and the Applicant. Supportive response from Council. Key points of contact established for ongoing Project engagement. • Update HSC staff on Project and introduce AGL Energy as the Project partner • Pottinger Energy Park partnership with AGL Energy announcement to the community • Met with HSC for SIA consultation and discussions on VPA, community benefits and community impacts • Phone call with Executive Manager of Planning and Compliance (who also oversees Hay Aerodrome operations). Received confirmation the Project is unlikely to impact on Hay Aerodrome operations as it is 40km+ from the aerodrome and not in the flight path of any incoming or outcome key routes. • Inform the Director of Planning and Development of the Project and its proximity to Hay Aerodrome • Preparation for industry round table meeting in February 2024 • Discussion to progress VPA negotiations, provide initial feedback on HSC Community Consultation Report (on public exhibition at the time), and update on Project's EIS progression • Letter of Intent finalisation and signing in April 2024 (core terms and conditions for translation into a future VPA) • Southern Area extension notification	• Issues raised included Community consultation and communication (including consultation fatigue and overwhelm), energy supply security, equitable sharing of benefits, agricultural goods production, and land productivity, and accommodation and housing • Fundamental Principles for Successful Renewable Energy Development in Hay LGA report following whole of community and local councillors participatory process (Sept-Dec 2023) • No response to Southern Area extension notification to date
ERC	In-person meetings (08/02/22); (22/08/23); (24/11/23); and (17/01/24) Phone calls: average of 1-2 calls per month (1/08/23 to 15/03/24) Emails: average of 1-2 emails per month (1/08/23 to 15/03/24) Email (24/11/23) MS Teams meeting (14/02/24)	• Presentation to ERC leader/s to introduce the Project and the Applicant. Supportive response from Council. Key points of contact established for ongoing Project engagement. • Update ERC staff on Project post-SEARs being issued and introduce AGL Energy as Project partner • Discussion with ERC Economic Development Officer about the Project • Provided ERC CEO and Economic Development Officer with a Project update • Discussion to progress VPA negotiations, discuss benefits sharing and impact mitigation, and update on Project's EIS progression • Letter of Intent finalisation and signing in April 2024 (core terms and conditions for translation into a future VPA) • Southern Area extension notification • Meeting to discuss the Project and potential for construction traffic to utilise ERC local roads	• Issues raised included ageing population, access to water, telecommunications access challenges, housing and accommodation of workers, waste, transport, medical services, and local service delivery • Further issues raised included ensuring alignment with industry standards, as described in the recently updated NSW Guidelines • No response to Southern Area extension notification to date • Local roads upgrade requirements, site access design, proposed mitigation measures/controls to prevent damage to Council roads, proposed upgrades to accommodate any OSOM vehicles, unsealed and sealed road requirements, dilapidation surveys, roadside vegetation, B-Double approvals
BCD	Email (confirm with Someva) (02/06/23) MS Teams meeting (27/07/23) MS Teams meeting (14/03/24) Email (27/11/23) Email (15/12/23)	• Request to BCD on 26 May 2023, BCD confirmed on 2 June 2023 preference for engagement • Discussion about the Project and the BDAR approach and methodology • Pottinger Energy Park discussion in response to regulatory engagement request • Southern Area extension notification • Response to Southern Area extension notification with issues	• Biosis methodology clarifications • The preference is for early consultation on proposed SSD Projects, BCD noted willing to have that engagement when the Scoping Report was received and during the preparation of SEARs • Discussion of BBUs and BBAMP, NVR, avoidance, terminology, bilateral assessment approach for Plains-wanderer, BDAR template and deviations from the BAM • Methodology, lake PCTs and habitat at risk of impact (including waterbirds and bats), presence of frogs, Plains-wanderer habitat impacts • Additional WTGs will require additional BBUS locations to inform the required 24 months of BBUS survey effort. Increased survey effort for vegetation integrity plots and candidate flora and fauna species in specified survey months will also be required. Recommended that contact is made with the Biodiversity Conservation Trust to ensure no unnecessary disturbance to these areas and to discuss any required buffers from the boundaries of these conservation agreements.

Stakeholder	Method and Date	Request and Purpose	Issues Raised
			• The Flood Risk Management Manual (2023) should be used to inform flood management. Any mention of the superseded manual should be replaced with the latest version.
NSW National Parks and Wildlife Service	Email (27/11/23) Email (19/11/23) Email (15/02/24) Email (15/02/24)	• Southern Area extension notification • Response to Southern Area extension notification with issues • Regulatory engagement request • Meeting scheduled with BCD 14/03/24. NPWS could not attend, to be rescheduled	• The EIS should be clear on ensuring that no direct/indirect impacts will result from the Project's construction, operation and demolition on the natural and cultural values of the nature reserve or adverse risks to NPWS land management, including use of low flight aircraft, interference to the functionality and operation of emergency telecommunications systems). Impacts should consider proximity to land reserved under the National Parks and Wildlife Act 1974, subject to the Developments adjacent to National Parks and Wildlife Service lands guideline. • No response to date additional to submissions to SEARs
Heritage NSW	Email (24/11/23) Email (15/02/24) Email (20/02/24) MS Teams meeting 27/02/24	• Southern Area extension notification • Regulatory engagement request • Regulatory engagement response • Discussion about Pottinger Energy Park EIS	• No response to Southern Area extension notification to date • Preference for test excavation prior to determination on impacted PADs • Ensure clear level of impact on PADs as well as clear description on how defined in ACHAR • Methodology for excavation and post approval process to be described in ACHAR • Seek RAP written responses to ACHAR where practical • Add survey trace logs to ACHAR
Heritage Council of NSW	Email (24/11/23) Email (15/02/24)	• Southern Area extension notification • Regulatory engagement request	• No response to Southern Area extension notification to date • No response to regulatory engagement request to date
NSW Local Land Services (LLS)	Email (24/11/23) MS Teams meeting (29/11/23) Email (19/12/23) MS Teams meeting (13/2/24)	• Southern Area extension notification • Seeking LLS advice on Southern extension and key activities relevant to renewable energy Projects in the Hay area • Seeking LLS advice on biodiversity offset matters and local stewardships	• No response to Southern Area extension to date • Hay LLS endorsed approach proposed in-principle by Applicant, which is to source biodiversity offsets directly with local organisations and landholders to share benefits of the Project more broadly and in-region • Hay LLS noted the existence of several Travelling Stock Routes around the Project, including a range of existing biodiversity stewardship sites to protect Plains Wanderer habitats
DPE Water	Email (24/11/23) Email (27/11/23) Email (15/02/24)	• Southern Area extension notification • Response to Southern Area extension • Regulatory engagement request	• No additional feedback with relation to Southern Area extension notification • No response to date additional to submissions to SEARs • No additional feedback with relation to regulatory request
WaterNSW	Email (24/11/23) Email (27/11/23) Email (15/02/24) Email (15/02/24)	• Southern Area extension notification • Response to Southern Area extension • Regulatory engagement request • Regulatory engagement response	• No additional feedback with relation to Southern Area extension notification • No meeting was requested • No additional feedback with relation to regulatory request
Coleambally Irrigation Co-operative Limited (CICL)	In-person meeting (08/11/23) Email (24/11/23) Email (15/01/24)	• The Applicant met with CICL to discuss water strategies and CICL water infrastructure onsite (Coleambally Outfall Drain and bridge crossings over CICL water infrastructure). Letter of Intent/ MOU to be progressed for CICL post-EIS to confirm. • Southern Area extension notification • Further email/written advice in response to a range of questions submitted to CICL and discussed in Nov 23. Response received (15/01/24)	• No response with regards to the Southern Area extension notification • Increase in variability of weather, supply and drainage • CICL need to manage rainfall variability, climate change impacts through identifying constraints, correcting design errors etc
Environment Protection Authority	Email (24/11/23) Email (22/12/23) Email (15/02/24)	• Southern Area extension notification • Response to Southern Area extension • Regulatory engagement request	• Understood that reports will encompass any additional impacts to sensitive receivers due to the expansion of the site and all impacts (including cumulative impacts) of the larger development • No response to date additional to submissions to SEARs • No response to regulatory engagement request
DCCEEW	Email (20/06/23) MS Teams meeting (13/07/23) Site visit (23/8/23) Email (22/01/24) MS Teams meeting (31/01/24) Email (07/02/2024) Email (13/02/24) Email (16/02/24) Email (07/03/24)	• Request for EPBC Act referral pre-lodgement meeting • EPBC Act referral meeting • Project site visit with Applicant, Department staff and Biosis (consultant) • EPBC Referral Section 156 variation request for Pottinger Wind Farm • Acceptance on request to vary proposed action for Pottinger Wind Farm • Correspondence on Draft Native Vegetation Regulatory map data and Land Categorisation Explanation reports • Category Explanation Report package • Suspension of referral and assessment approach decision timeframes for Pottinger Wind Farm • Controlled Action Determination	• Original SEARs are still relevant • No further issues identified • Variation to the proposal under Section 156B of the EPBC Act was accepted • Proponent needs to ensure that they cover off on the variation legislation requirements in an official letter and once the department has received that, the delegate had 20 business days to make a decision of the variation's acceptance • Controlled Action determined. Further assessment required for species listed in letter.
Crown Lands	Email (14/11/23) Email (24/11/23) Email (13/12/23) Email (22/03/24)	• Southern Area extension notification/request for open paper roads GIS within Project Area • Follow up email to discuss Southern Area extension • Crown Lands responded with GIS files and process for use and/or access of Crown land and roads • Crown Lands requested that The Applicant complete a Landowner's Consent Form. The Applicant fulfilled this requirement by completing the form and is currently in the process of securing the necessary landowner consents for the Crown paper roads within the Project Area	• Crown Land recommended that the Applicant contact Crown Lands as early as possible to discuss and initiate the processes required to authorise the use of and/or access to Crown land and roads. Note: The landholder is in consultation with Crown lands to close these paper roads.

Stakeholder	Method and Date	Request and Purpose	Issues Raised
Regional NSW – Mining, Exploration & Geoscience	Email (24/11/23) Email (15/02/24)	• Southern Area extension notification • Regulatory engagement request. No response to date	• None to date
Department of Primary Industries – Agriculture division	Email (24/11/23) Email (24/11/23) Email (15/02/24) Email (23/03/24) MS Teams meeting (14/03/24)	• Southern Area extension notification • Response to Southern Area extension notification • Regulatory engagement request • Regulatory engagement response • Pottinger Energy Park discussion in response to regulatory engagement request	• No additional requirements outside the original SEARs • Ensure awareness for potential dust and wind communicated for those staying in onsite accommodation in LUCRA
Department of Primary Industries – Fisheries division	Email (24/11/23) Email (30/11/23) Email (15/02/24)	• Southern Area extension notification • Response to Southern Area extension • Regulatory engagement request	• No additional feedback with relation to Southern Area extension notification • No response to date additional to submissions to SEARs
Transport for New South Wales (TfNSW)	Email (07/06/23) Email (24/11/23) Email (04/12/23) MS Teams meeting (06/02/24) Email (8/02/24) Email (21/02/24) MS Teams meeting (29/02/24)	• Following a request to TfNSW on 26 May 2023, TfNSW had no comment on the transport route for Project infrastructure, and that the TTIA be prepared during the EIS phase of the Project • Southern Area extension notification • Response to Southern Area extension notification • Pottinger Energy Park discussion of route assessment and traffic • Request to receive traffic growth rates on State/regional roads • Follow up on request to receive traffic growth rates on State/regional roads • Meeting with TfNSW and DPHI to discuss terminology for traffic assessment	• The Traffic Impact Assessment will need to take into account the Southern Extension Area, which will very likely generate additional heavy (including OSOM) and light vehicle traffic particularly during construction. The Cobb Highway/West Burrabogie Road and Cobb Highway/Wargam Road intersections will require turn warrants assessments and swept path assessments to determine whether intersection upgrades will be required to ensure the safety and efficiency of the road network. • Construction route connections with State classified road networks, key site access points from State classified roads and origin destination and splits • Factors for peak construction have been considered including cumulative factors. Workforce accommodation effects on AM/PM construction traffic. • Strategic designs of intersections include traffic management propositions, sweat path analysis, construction traffic, treatment requirements and OSOM upgrades. • Cumulative impacts • Affected landowner consultation process • Ensure reference vehicles in drawings are to scale, demonstrate how swept paths have been created, ensure pullover areas do not affect vulnerable road users, legacy bypass issue, heaviest components are factored • Route assessment: if lifting is implemented ensure risk assessment is satisfactorily addressed, anticipated upgrades for routes in the REZ, hardstand materials • No response to request for traffic growth rates
Transgrid and Elecnor Australia	Email (24/11/23) Email (06/12/23) In-person meeting (11/03/24)	• Southern Area extension notification • To discuss Booroorban Accommodation Camp future usability by the Applicant to support Project worker accommodation during construction stage	• No response to Southern Area extension notification • No further issues identified
Department of Customer Service – Telco Authority	Email (24/11/23) Email (27/11/23) Email (8/01/24)	• Southern Area extension notification • Response to Southern Area extension notification • Regulatory engagement request • Regulatory engagement response	• Requested to assess potential impacts of proposed windfarm into the Public Safety Network • No concerns with relation to NSWTA assets based on the latest WTG location data made available for the assessment. Any change to WTG locations will require a reassessment in particular WTGs that are moved closer to the existing ACMA licence 11300366/1.
Fire & Rescue NSW	Email (24/11/23) Email (08/01/24) Email (31/01/24) Email (15/02/24) Email (21/02/24)	• Southern Area extension notification • Regulatory engagement request • Regulatory engagement response • Regulatory engagement request • Regulatory engagement response	• No response to Southern Area extension notification • Confirmed that no links are utilised by RFS • Requested no further consultation
NSW Rural Fire Service	Email (24/11/23) Email (26/11/23) Email (01/12/23) Email (21/02/24)	• Southern Area extension notification • Receipt of submission on Bush Fire Safety Authority • Response to Southern Area extension notification • Regulatory engagement request	• No response to date additional to submissions to SEARs • Advised that the RFS recommendations as per RFS letter dated 23 June 2023 remains unchanged
NSW Aboriginal Land Council	-	• -	• See discussion on Aboriginal heritage and regulatory
Commonwealth Department of Defence	Email (28/11/23)	• Southern Area extension notification	• No response to Southern Area extension notification
Civil Aviation Safety Authority	Email (24/11/23) Email (29/11/23)	• Southern Area extension notification • Response to Southern Area extension notification	• No additional feedback with relation to the Southern Area extension notification
Airservices Australia	Email (16/06/23) Email (29/08/23)	• Notification of met mast to be built • Response to met mast notification	• Based on assessment, the proposed met mast would not have an impact on any Airservices designed instrument procedures, CNS facilities or ATC operations at Hay Aerodrome

Stakeholder	Method and Date	Request and Purpose	Issues Raised
	Email (24/11/23) Email (10/01/24) Email (26/02/24) Email (2/05/24)	• Southern Area extension notification • Response to Southern Area extension notification • Regulatory engagement request • Regulatory engagement response	• Wind farm applications need to include an Aviation Impact Statement • The proposed wind farm impacts Airservices designed airspace procedures, CNS facilities or ATC operations at Hay aerodrome, consult with Aerodrome and aviation operators to ensure they accept proposed changes, proposed wind farm impacts Airservices designed Grif LSALT as currently presented and will need to be increased to 2300 ft, advise the VOD team of any need to increase GSALT heights at least two weeks before construction commencing, the proposed wind farm is more than 30m (99 ft) AGL, ensure notification process is completed to VOD team
Murray-Darling Basin Authority	Email (24/11/23) Email (20/12/23) Email (15/02/23)	• Southern Area extension notification • Response to Southern Area extension • Regulatory engagement request	• Concludes the proposal for the Southern Extension Area is unlikely to have a significant adverse impact on the flow, use, control, or water quality of the river Murray • No response to date additional to submissions to SEARs
Bureau of Meteorology	Email (08/01/24) Email (22/01/24)	• Regulatory engagement request • Regulatory engagement response	• Requested that the Bureau is informed by the owner/operator of changes to the windfarm including layout, change in location of more than 100m and altering WTG height, planned shutdowns at least two weeks before occurrence and collaborates with the Bureau in the event of severe weather conditions
Telstra	Email (08/01/24) Email (15/03/24)	• Regulatory engagement request • Regulatory engagement response	• Requires the developer to confirm its agreement to the following: there are no expected impacts to Telstra's Mobile network due to this wind farm based on WTG locations provided, based on the WTG locations provided and information regarding Telstra's existing point to point radio links obtained from Waypoint and maprad.io the proposed wind farm should not impact on any of Telstra's existing point to point radio links and a detailed analysis of the full power coordination impact (Low Frequency Induction) and/or Earth Potential Rise of the development is required including location of the switch yard, the route and potential of any associated HV transmission lines and the LFI and EPR impact on any Telstra Plant they may affect • Recommended that Dial Before You Dig is contacted
South Australia Department for Infrastructure and Transport (DIT)	MS Teams meeting (07/03/24)	• Discussion of proposed Wind Farm transport route	• Angle Vale Road may not be most viable as part of route. Part of the route amendments may be encroaching on private property. Biggest issue is the pinch points along the route, ensure pinch points have gone through appropriate approvals and works are undertaken correctly
Geoscience Australia	Email (08/01/24) Email (09/01/24)	• Regulatory engagement request • Regulatory engagement response	• Does not operate or maintain any Commonwealth GNSS Infrastructure within the extent of the proposed wind farm. Encouraged to contact CORSnet NSW
Optus	Email (08/01/24) Email (10/01/24)	• Regulatory engagement request • Regulatory engagement response	• No interference issues with Optus equipment
Broken Hill Council	MS Teams Meeting (27/02/24)	• Project and proposed transport route options through Broken Hill	• Preference for Option 3 or 4 with regards to bypass options through Broken Hill

5.5 Future Engagement Action Plan

Table 5–7 sets out the Applicant's key engagement objectives and actions across each Project stage.

Table 5–7 Future Engagement Objectives and Actions

Engagement Objective	Key Action
Planning and Approval	
Maintain communication channels for communities and identified key stakeholders to raise questions for the Applicant to respond to (and document responses)	Sustain communication channels. Respond to queries and document interactions.
Avoid extended periods of communication silence with key stakeholders. Continue to be active and 'visible' to the community to sustain engagement and create trust and constructive relationships.	Establish a Project communication update rhythm / frequency (e.g. standard fortnightly/monthly updates). Keep the communities and key stakeholders up to date about the planning approval process.
Proactively gather opinions and expectations about the Project and address any questions about it Sustain engagement and become an 'active member' of the community through the co-design of the community BSP Reflect on the community engagement process for the Project and identify ways this process can be improved (especially efficiency and effectiveness of community engagement techniques)	Ensure ongoing frequency of communications between the Applicant and identified key stakeholders (aim for monthly engagements). Document interactions. Begin implementation of the CBSP Through direct engagement and targeted surveys, review and update the CBSP as needed
Adhere to all NSW DPHI requirements to finalise planning approvals	Finalise and submit all EIS documentation and activities required to DPHI to progress the approvals process Facilitate public exhibition of the EIS. Prepare report to respond to submissions received and any subsequent changes to the Project. Await outcomes of NSW DPHI assessment of the EIS.
Construction	
Mitigate impacts on communities and key stakeholders by proactivity consulting with the community and communicating matters relating to the construction schedule. Address concerns by acknowledging and responding to any issues raised. Sustain engagement and become an 'active member' of the community through the implementation of the CBSP	Inform communities of the timeframes, schedules, activity locations, etc. in advance and keep them up to date. Make this information publicly available. Monitor and report significant impacts from the construction stage, including complaints handling and processing through the complaints management mechanism Follow through with the ongoing implementation of the CBSP
Sustain community support for the Project throughout the construction stage Reflect on the community engagement process for the Project and identify ways this process can be improved (especially efficiency and effectiveness of community engagement techniques)	Communicate the positive contribution of the Project to the community Implement more proactive engagement methods, particularly complaints management mechanisms, making their framework publicly available and reporting the process and outcomes Consider opportunities to provide tours of the construction site for interested groups (schools, community groups, etc.) to increase awareness and education about the construction process and benefits of renewable energy projects in the area Seek or respond to interest in opportunities for communities created by the construction process
Commissioning and Operations	
Mitigate impacts on communities and key stakeholders by proactivity consulting with the community and communicating matters relating to the Project commissioning and operations schedule. Address concerns by acknowledging and responding to any issues raised	Inform communities of the timeframes, schedules, activity locations, etc. in advance and keep them up to date. Make this information publicly available. Evaluate the Project's Stakeholder Engagement approach. Document and distribute evaluation findings and recommendations to key stakeholders and industry interest groups, including NSW DPHI

Engagement Objective	Key Action
Reflect on the community engagement process for the Project and identify ways this process can be improved (especially efficiency and effectiveness of community engagement techniques)	
Sustain engagement and become an 'active member' of the community through the implementation of the CBSP	Follow through with the ongoing implementation of the CBSP
Monitor ongoing community sentiments towards the Project to identify changes in perceptions of renewable energy value	Sustain the delivery of periodic qualitative and quantitative research activities (e.g. surveys and semi-structured interviews/phone calls), document interactions for future analysis (e.g. evaluation)
Decommissioning	
Assess and understand the overall impact of the Project on the immediate and surrounding community	Undertake an evaluation of the Project to assess the overall impact of it. Document and distribute evaluation findings and recommendations to key stakeholders and industry interest groups, including NSW DPHI.
Mitigate impacts on communities and key stakeholders by proactivity consulting with the community and communicating matters relating to the Project decommission or replacement schedule Address concerns by acknowledging and responding to any issues raised Sustain engagement as an 'active member' of the community through the CBSP	A Decommissioning and Rehabilitation Plan will be prepared for the Project no less than five years prior to decommissioning and / or in accordance with any project approval requirements. Relevant stakeholders will be consulted Inform communities of the timeframes, schedules, activity locations, etc. in advance and keep them up to date. Make this information publicly available.
Sustain community support for the Project throughout the decommissioning and/or replacement phase	Monitor and report impact during this phase, including complaints handling and processing through the complaints management mechanism. Make this information publicly available. Implement more proactive engagement methods, particularly complaints management mechanisms, making the framework publicly available and reporting the process and outcomes

6 IMPACT ASSESSMENT AND MITIGATION

This section provides a detailed summary of the potential environmental and social impacts of the Project. It is structured in a clear and logical way and separately describes the detailed and standard assessment of aspects. The summary of impacts is appropriate to the likely scale and nature of the Project-specific impacts and accurately summarises the key findings of the detailed technical studies which support this EIS.

This section focuses on the key findings of the assessment of performance measures, exceedances of relevant standards and provides a detailed explanation of the methods which support these findings. Where predicted exceedances are predicted, justification is provided. Where any residual uncertainties are identified, actions taken to address each is stipulated. Lastly, it highlights any key linkages between relevant assessments and likely cumulative impacts.

6.1 Risk Assessment

A review of the environmental and social matters relevant to the Project was conducted as part of the Scoping Report (RPS, 2023) to determine which issues needed to be assessed as part of the EIS and the level of assessment required.

In addition to the detailed assessments required as part of the SEARs, the Applicant has prepared an environmental and social risk assessment to identify the potential impacts associated with the Project, conducted generally in accordance with the provisions of 'ISO 31000 Risk Management' (ISO 2009).

A detailed risk assessment is presented in full in **Appendix A.** The risk assessment considered all relevant Project aspects and identified potential risks. It then ranked each potential risk in relation to the likelihood of occurrence, the potential consequence and provided an initial risk rating for each. The identified potential risks were considered in each assessment. Upon the application of mitigation and control strategies from each assessment, the likelihood and consequence were again considered with final mitigated risk ratings determined.

Prior to mitigation, there were no aspects rated as a critical risk. Four aspects were rated as being a potentially high risk (stakeholder engagement, biodiversity, Aboriginal heritage, visual). There were 15 rated with a potential to have a moderate risk, and two likely to be low.

With the implementation of appropriate mitigation, there were no environmental issues determined to be critical or high, with nine identified as moderate and 12 as low.

A summary by aspect is provided below in **Table 6–1.**

Table 6–1 Risk Assessment Summary (Post Mitigation)

Aspect	Critical	High	Moderate	Low
Stakeholder Engagement				
Noise				
Visual and Lighting				
Biodiversity				
Aboriginal Heritage				
Historic Heritage				
Soils				
Agriculture				
Hydrology and Flooding				
Water Resources				
Traffic				
Telecommunications				
Aviation				

Aspect	Critical	High	Moderate	Low
Preliminary Hazard Analysis				
Blade Throw				
Bushfire				
Air Quality				
Waste				
Social				
Economics				
Cumulative				

6.2 Noise

6.2.1 Background

A Noise Impact Assessment (NIA) has been prepared for the Project by Sonus Pty Ltd. Noise modelling was undertaken against established noise criteria for the construction and operational phases of the Project, and to recommend feasible and reasonable noise mitigation and management measures.

The NIA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**. The NIA is summarised below and included in **Appendix H.**

As required by the SEARs, the aim of the NIA was to:

- Asses the WTG noise in accordance with the Noise Bulletin;
- Assess operational noise impacts in accordance with the 'NSW Noise Policy for Industry' (NPfI) (2017);
- Assess construction noise impacts in accordance with the 'Interim Construction Noise Guideline' (ICNG);
- Assess traffic noise under the 'NSW Road Noise Policy' (DECCW, 2011);
- Assess vibration under the 'Assessing Vibration: A Technical Guideline' (DECC, 2006) (AVTG);
- Assess cumulative noise impacts, considering other developments in the area; and
- Prepare a draft Noise Management Plan (NMP) if the assessment shows construction noise is likely to exceed applicable criteria.

6.2.2 Methodology

The NIA included the following methodology:

- Undertake initial desktop review to identify noise sensitive receivers;
- Undertake noise monitoring to determine ambient and background noise levels;
- Establish Project noise goals for the construction and operation;
- Identify the likely principal noise sources during construction, operation and decommissioning, and associated noise levels;
- Assess the potential noise and sleep disturbance impacts associated with construction, operation and decommissioning aspects of the Project; and
- Provide feasible and reasonable noise mitigation and management measures.

6.2.2.1 Noise Monitoring

Background noise monitoring was undertaken between 13 September and 28 November 2023, at locations considered to be indicative of the background and ambient noise environment at the nearest affected receivers for the Project. The monitoring was completed in accordance with the Noise Bulletin. Assessment included consideration of the proposed 300 m micrositing of turbines.

The locations for background noise monitoring were selected based on preliminary noise predictions of the original wind farm layout. Preference was given to non-associated dwellings with the highest predicted noise levels in each direction of the Project (subject to landowner's consent to install monitoring equipment). The noise monitoring locations are summarised in **Table 6–2** and shown in **Figure 2-7.**

Local weather loggers were also deployed to collect rainfall and wind speed data to determine the periods when weather directly on the microphone may have influenced the measured background noise levels in the vicinity.

The findings of the background noise monitoring at a range of wind speeds at a hub height of 180 m within the operating range of the Project are provided in **Table 6–3.** The background noise levels were then analysed in accordance with the Noise Bulletin to establish the noise criteria for non-associated dwellings.

Table 6–2 Noise Monitoring Locations and Periods

Dwelling ID	Coordinates (GDA94 / MGA Zone 55)		Monitoring Period
	Easting	Northing	
NAD_02	282290	6146038	27/9/2023 – 8/11/2023
NAD_03	297571	6136774	13/9/2023 – 6/10/2023 9/11/2023 – 28/11/2023

Table 6–3 Measured Background Noise Levels at Hub Height

Dwelling ID	3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s	11 m/s	12 m/s	13 m/s
NAD_02	31	31	30	30	31	32	33	33	34	34	33
NAD_03	31	32	30	32	32	33	35	34	33	33	32

6.2.2.2 Construction Criteria

Noise

The ICNG provides an emphasis on implementing "feasible" and "reasonable" noise reduction measures and does not set mandatory objective criteria. The ICNG establishes "management levels" based on the existing RBL. The construction NMLs adopted by the Project during construction for non-associated receivers are presented in **Table 6–4.**

Table 6–4 Construction Noise Management Levels Criteria

Land Use	Time of Day		NML[3]
Residential	Recommended Standard hours	Monday to Friday 7 am to 6 pm Saturday 8 am to 1 pm	45 dB(A)[1]
	Outside Recommended Standard hours	Saturday 7 am to 8 am Saturday 1 pm to 6 pm Sunday or Public Holidays	40 dB(A)[2]
		Evening 6pm to 10 pm	35 dB(A)[2]
		Night 10 pm to 7 am	35 dB(A)[2]
Passive Recreation	When in use		60 dB(A)[4]

1 - Noise affected receivers = RBL + 10dB(A)

2 - Noise affected = RBL + 5dB (A)

3 – Background noise levels have been measured at less than 35 dB(A) during the day and less than 30 dB(A) during the evening and night. Therefore, the minimum RBLs provided in the NPfI have been applied to the Project.

4 - Passive recreation areas which includes national parks and reserves.

Sleep Disturbance

The ICNG requires a sleep disturbance assessment be undertaken where construction works are planned to extend over more than two consecutive nights. The ICNG makes reference to the EPA's Environment Criteria for Road Traffic Noise (ECRTN), now superseded by the NSW Road Noise Policy (RNP), for the assessment of sleep disturbance. The RNP recommends to minimise the risk of sleep disturbance during the night-time period (10pm to 7am), the $L_{A1(1\ min)}$ noise level outside a bedroom window should not exceed the $L_{A90(15\ min)}$ background noise level by more than 15 dB(A).

The RNP also states maximum internal noise levels below 50–55 dB(A) are unlikely to awaken people from sleep and one or two noise events per night, with maximum internal noise levels of 65–70 dB(A), are not likely to affect health and wellbeing significantly.

Construction is generally expected to take place during standard hours, and therefore sleep disturbance is not expected to be an issue. However, out of hours work and extended construction hours may be required on limited occasions such as for special deliveries or in the case of emergencies and as described in **Section 6.2**. Based on the guidance provided by the RNP and ECRTN and to achieve nighttime NMLs an L_{max} of 52 dB(A) construction noise sleep disturbance assessment level has been adopted for the Project.

Road Traffic Noise

The potential impacts of construction traffic travelling on public roads are assessed in accordance with the 'NSW Road Noise Policy' (DECCW, 2011). An initial screening test was first applied to evaluate if road traffic noise levels are expected to increase by more than 2 dB due to construction traffic. Where this is considered likely, further assessment is required using the road traffic noise criteria in **Table 6–5.**

Table 6–5 Road Traffic Noise Criteria

Development Type	Day (7am to 10pm) (dBA)	Night (10pm to 7am) (dBA)
Existing residences affected by additional traffic on arterial roads generated by land use developments	60 $LA_{eq(15hour)}$	55 $LA_{eq(9hour)}$
Existing residence affected by additional traffic on local roads generated by land use developments	55 $LA_{eq(1hour)}$	55 $LA_{eq(1hour)}$

Vibration

The 'Assessing Vibration: A Technical Guideline' (Department of Environment and Conservation, 2006) identifies three vibration categories as shown in **Table 6–6.** The associated vibration criteria which apply to residential receivers during the daytime for each type of vibration is presented in **Table 6–7.**

The vibration characteristics of most construction activities (e.g. excavation and piling) are considered to be intermittent. Higher vibration levels are allowed for intermittent vibration compared with continuous vibration on the basis that the higher levels occur over a shorter time period.

Table 6–6 Vibration Types

Type of Vibration	Description
Continuous	Vibration continues uninterrupted for a defined period and includes sources such as machinery, steady road traffic and continuous construction activities
Impulsive	Vibration is a rapid build up to a peak followed by a damped decay. It may consist of several cycles at around the same amplitude, with durations of typically less than two seconds and no more than three occurrences in an assessment period. This may include occasional dropping of heavy equipment, occasional loading and unloading
Intermittent	Vibration occurs where there are interrupted periods of continuous vibration, repeated periods of impulsive vibration or continuous vibration that varies significantly in magnitude. This may include intermittent construction activity, impact pile driving, jack hammers.

Table 6–7 Vibration Criteria

Continuous Vibration Vertical (rms)		Impulsive Vibration Vertical (rms)		Vibration Dose Value for Intermittent Vibration	
Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
0.01 m/s^2	0.02 m/s^2	0.3 m/s^2	0.6 m/s^2	0.2 $m/s^{1.75}$	0.4 $m/s^{1.75}$

Blasting

The 'Australian and New Zealand Environment Council – Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration (ANZEC) 1990' (ANZEC Guideline) provides criteria to minimise the annoyance and discomfort to residences from blasting activities which are provided in **Table 6–8.**

In addition, the ANZEC Guideline also recommends that blasting be restricted to the hours of 9 am to 5 pm on Monday to Saturday, with no blasting activity on Sunday or public holidays.

Table 6–8 Blasting Criteria

Air blast overpressure:	Below 115 dB L_{Zpeak} for 95 % of all blasts below 120 dB L_{Zpeak} at all times
Ground vibration:	Below 5 mm/s Peak Particle Velocity (PPV) for 95 % of all blasts Below 10 mm/s PPV at all times.

6.2.2.3 Operational Criteria

Intrusive and Amenity

The NPfI provides guidance on the assessment of operational noise impacts associated with the Project. The NPfI assessment procedure has two components:

- Controlling intrusive noise impacts in the short-term for residences; and
- Maintaining noise level amenity for residences and other land uses.

According to the NPfI, the intrusiveness of a noise source may generally be considered acceptable if the equivalent continuous (energy-average) A-weighted level of noise from the source (represented by the $L_{Aeq,15min}$ descriptor) does not exceed the background noise level measured in the absence of the source by more than 5 dB(A).

The Project amenity noise levels for different time periods of day are determined with consideration to Section 2.4 of the NPfI. The NPfI recommends amenity noise levels ($L_{Aeq,period}$) for various receivers including residential, commercial, industrial receivers and sensitive receivers such as schools, hotels, hospitals, churches and parks. These "recommended" amenity noise levels represent the objective for total industrial noise experienced at a receiver location. However, when assessing a single industrial development and its impact on an area, "project" amenity noise levels apply.

The Project noise trigger level is the lower of the intrusiveness and the amenity noise levels. The project noise trigger levels are shown in **Table 6–9.**

Table 6–9 Operational Noise Intrusive and Amenity Noise Trigger Levels

Receiver	Period / Description		Intrusive noise trigger levels, $L_{Aeq, 15min}$ dB(A)	Amenity noise trigger levels, $L_{Aeq, 15min}$ dB(A)	Project noise trigger levels, $L_{Aeq, 15min}$ dB(A)
Residential	Day	Monday to Saturday 7 am to 6 pm Sunday and Public Holidays 7 am to 6 pm	40	48	40
	Evening	Monday to Sunday and Public Holidays 6 pm to 10 pm	35	43	35
	Night	Monday to Saturday 10 pm to 7am Sundays and Public Holidays 10 pm to 8 am	35	38	35
Passive recreation	When in use	Not applicable	-	48	48

WTG Operation

The criteria for the assessment of WTG operational noise are contained in the Wind Energy Guideline for State significant wind energy development (DPE, 2016). These require that operational noise impacts from wind farms at non-associated dwellings should not exceed an outdoor noise level of 35 dB(A) or the background noise ($LA_{90, 10\ minute}$) by more than 5 dB(A), whichever is the greater.

The Noise Bulletin prescribes a 5 dB(A) penalty adjustment (added to the measured or predicted noise level) for the presence of repeated and excessive tonality and/or low frequency which occurs for more than 10% of an assessment period. Analysis of the Project data indicates that the proposed WTGs do not have tonal characteristics or excessive low frequency noise, therefore, the assessment did not apply any adjustment factors.

The operational noise criteria (Laeq,10 min) for non-associated dwellings have been determined from the results at each relevant background noise monitoring location at different wind speeds as provided in **Table 6**–13**.**

6.2.3 Impact Assessment

6.2.3.1 Construction Noise

The Project equipment and activities will vary throughout the construction period, depending on the various stages, required processes and specific construction activities. The predicted noise from construction activity was assessed as a typical worst case (highest noise level) scenario for the various stages of construction, based on weather conditions that are the most conducive for the propagation of noise.

The predicted noise levels from various construction stages at the closest non-associated are shown in **Table 6–10.**

Noise modelling determined predicted noise levels for all construction stages are below the NMLs at adjacent non-associated receivers with the exception of Stage 2 earthworks which are estimated to be 3 dBA above the NML at NAD_02 (associated with another development) and NAD_14 (derelict). In accordance with the ICNG feasible and reasonable work practices will be implemented to minimise noise during construction and at NMP if will be prepared as detailed in **Section 6.2.4**.

The highest predicted noise levels at the nearest passive recreational area (e.g. South West Woodland Nature Reserve) during any of the construction activities is 37 dB(A), which is compliant with the 60 dB(A) NML for passive recreation areas.

As discussed in **Section 3.5.4** the Project will involve the establishment of a quarry within the Disturbance Footprint. To meet the NML at the nearest non-associated receiver the quarry will need to be located at least 7 km from any non-associated dwelling (assuming no 5 dBA adjustment applies for annoying noise sources).

In addition to construction activities during the day period, a small number of activities may need to be undertaken outside of standard hours. The predicted noise level for these activities at the closest non-associated receiver (NAD_02) is provided in **Table 6–11**. The predictions indicate noise levels will not exceed NML during any of the proposed out of hours activities.

Table 6–10 Predicted Construction Noise Levels During Standard Hours

Stage	Highest Predictions $L_{eq\ (15\ min)}$ *
Stage 1 – Site Establishment	42
Stage 2 – Earthworks	48
Stage 3 – Construction and installation	37
Stage 4 – Commissioning and Testing	34
Future Stage – Decommissioning	42

** These noise levels include a 5dB(A) noise adjustment for particularly annoying noise sources*

Table 6–11 Predicted Construction Noise Levels Outside of Standard Hours

Activity	Highest Predictions $L_{eq\ (15\ min)}$ *
WTG Concrete Pour	26
WTG Installation	29
Use of Temporary Accommodation Facilities	< 20

6.2.3.2 Sleep Disturbance

No associated, non-associated (associated to another project) or non-associated receivers are predicted to experience noise greater than L_{max} 52 dB(A) which is below external screening noise level for sleep disturbance.

6.2.3.3 Construction Road Noise

Traffic movements associated with the Project will include (at least) semi-trailers, low loaders, trucks, mobile cranes, water tankers, four-wheel-drive vehicles and passenger vehicles.

Based on the projected maximum daily traffic movements during construction (refer traffic data provided in **Section 6.11** and the initial screening test, adverse impacts resulting from construction traffic noise are not expected within the Hay or Hay South Region.

Within the Booroorban region, construction traffic is expected to triple existing volumes on the Cobb Highway, resulting in an increase of more than 2 dB(A) in road traffic noise levels.

This increase triggers the requirement for further assessment to determine compliance with the road traffic noise criteria for local (i.e. West Burrabogie Road, Jerilderie Road, Wargam Road and East West Road) and arterial roads (i.e. Cobb Highway) provided in **Table 6–12.** Predicted construction noise levels were assessed using traffic numbers, construction traffic movements and setback distances from local and arterial roads. The assessment determined:

- Noise levels at all Project Area entrance point on West Burrabogie Road, Jerilderie Road, Wargam Road and East West Road are predicted to be well below the construction road traffic noise criteria for local roads during the day and night**.** This is due to setback distances from the local roads and the nearest identified dwelling being a minimum of 300 m; and
- Noise levels along the Cobb Highway are predicted to be well below the construction road traffic noise criteria for arterial roads during the day and night**.** This is due to setback distances from the road and the nearest identified dwelling being a minimum of 50 m.

Table 6–12 Predicted Noise Levels on Local Roads

Entrance	Distance from Road to Nearest Identified Dwelling (m)*	Predicted Noise Level
Site Entrance A – West Burrabogie Road (also Emergency Access Pont)	8,000	<20 dB(A)
Site Entrance B – Jerilderie Road	700	32 dB(A)
Site Entrance C – Wargam Road	300	22 dB(A)
Site Entrance D – East West Road	1,800	26 dB(A)

6.2.3.4 Vibration

Vibration generating activities will only be related to the construction phase of the Project. It is expected the primary source of vibration will be associated with the use of rock trenching equipment, a vibratory roller for internal roads and hardstand construction. Given the separation distances between construction activities and the nearest non-associated receiver is well in excess of 500 m impacts associated with vibration are not expected.

6.2.3.5 Blasting

The separation distances between any potential blasting activity associated with construction and the nearest dwellings are hundreds of metres) as a result any blasting impacts can be readily managed to comply with the relevant overpressure and vibration limits provided in **Section 6.2.2.2.**

Given the range of factors associated with both the generation and control of blasting, in the event that blasting is necessary, it will be designed in accordance with the ‘Australian and New Zealand Environment Council – Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration’ (ANZEC, 1990).

6.2.3.6 Operational Noise

WTG Noise

The predictions of environmental noise from the WTGs were made using the SoundPLAN noise model. The noise modelling is intended to provide a conservative worst-case assessment of operational noise and therefore includes several assumptions corresponding to the worst-case conditions (resulting in the highest noise level at dwellings).

The noise levels from operation of the WTGs have been predicted for all relevant wind speed scenarios (LAeq, 10 min) as outlined in **Table 6–13**. The assessment includes predictions at different wind speeds as the noise impacts from the WTGs vary depending on the speed with which it is turning.

Excluding any noise mitigation measures, the noise from the 247 WTGs will achieve the operational noise criteria at all assessed non-associated dwellings.

NAD_02 (associated with another project) and NAD_14 (derelict) are the most affected dwellings with a predicted noise level of 33 dB(A) which is below the criterion of 35 dB(A).

If WTGs were micro-sited 300 m closer to these receivers, noise levels are predicted to increase by up to 1 dB(A). This is a negligible increase and compliance with the 35 dB(A) base criteria is also maintained.

At national parks and reserves, the highest predicted noise level is 29 dB(A) (at South West Woodland Nature Reserve), which is well below the requirement of 50 dB(A) at 4 m/s.

Table 6–13 WTG Noise Predictions at Non-Associated Dwellings and Sensitive Receivers

Dwelling ID	Noise Level at Hub Height Integer Wind Speeds (180m) (dBA)																					
	3		4		5		6		7		8		9		10		11		12		13	
	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction	Criterion	Prediction
NAD_02	36	20	36	20	35	21	35	24	36	28	37	32	38	33	38	33	39	33	39	33	38	33
NAD_03	36	<20	37	<20	35	<20	37	23	37	26	38	26	40	30	39	31	38	31	38	31	37	31
NAD_04	36	<20	37	<20	35	<20	37	22	37	26	38	26	40	29	39	30	38	31	38	31	37	31
NAD_05	36	<20	37	<20	35	<20	37	<20	37	<20	38	<20	40	<20	39	21	38	21	38	21	37	21
NAD_06	36	<20	36	<20	35	<20	35	22	36	25	37	29	38	30	38	30	39	30	39	30	38	30
NAD_11	36	<20	37	<20	35	<20	37	<20	37	<20	38	21	40	23	39	23	38	23	38	23	37	23
NAD_12	36	<20	36	<20	35	<20	35	<20	36	<20	37	<20	38	<20	38	<20	39	<20	39	<20	38	20
NAD_13	36	<20	36	<20	35	<20	35	<20	36	<20	37	23	38	24	38	24	39	24	39	24	38	24
NAD_14	36	20	37	20	35	20	37	24	37	28	38	31	40	33	39	33	38	33	38	33	37	33
NAD_15	36	<20	37	<20	35	<20	37	<20	37	<20	38	21	40	22	39	22	38	22	38	22	37	22
NAD_16	36	<20	37	<20	35	<20	37	<20	37	<20	38	<20	40	<20	39	<20	38	<20	38	<20	37	<20
NAD_17	36	<20	37	<20	35	<20	37	<20	37	<20	38	<20	40	<20	39	<20	38	<20	38	<20	37	20
NAD_18	36	<20	36	<20	35	<20	35	<20	36	<20	37	<20	38	<20	38	<20	39	<20	39	<20	38	<20
NAD_19	36	<20	36	<20	35	<20	35	<20	36	<20	37	21	38	22	38	22	39	22	39	22	38	22
NAD_21	36	<20	36	<20	35	<20	35	<20	36	<20	37	<20	38	<20	38	<20	39	<20	39	<20	38	<20
NAD_22	36	<20	36	<20	35	<20	35	<20	36	<20	37	<20	38	21	38	21	39	21	39	21	38	21
NAD_23	36	<20	37	<20	35	<20	37	<20	37	<20	38	<20	40	21	38	21	38	21	38	21	37	21
NAD_24	36	<20	36	<20	35	<20	35	<20	36	<20	38	<20	38	21	39	21	39	21	39	21	38	21
NAD_25	36	<20	37	<20	35	<20	37	<20	37	23	38	27	40	28	39	28	38	28	38	28	37	28
NAD_26	36	<20	36	<20	35	<20	35	<20	36	21	37	24	38	26	38	26	39	26	39	26	38	26
Oolambeyan National Park	N/A	<20	N/A	<20	N/A	<20	N/A	<20	N/A	21	N/A	24	N/A	26	N/A	26	N/A	26	N/A		N/A	26
South West Woodland NR	N/A	<20	N/A	<20	N/A	<20	N/A	<20	N/A	24	N/A	27	N/A	28	N/A	28	N/A	29	N/A	29	N/A	29

Ancillary Equipment

Ancillary electrical infrastructure includes at least substations, a switching station and a BESS facility. Noise levels associated with these components have been predicted at the nearest non-associated receivers. As final equipment selections are not known, to provide a conservative assessment an adjustment of +5 dB (as per the NPfI) has been applied to the predicted noise levels to account for the potential tonal characteristics of transformer noise.

The highest predicted LA_{eq},15min noise level from ancillary infrastructure at non-associated dwelling is no more than 23 dB(A) therefore easily achieving the NPfI criteria (35 dB(A) in evening and night periods and 40 dB(A) during the daytime). Predictions also show noise levels below 20 dB(A) at the reserve. The low noise levels are due to the large separation distances between the noise sources and the sensitive receivers.

6.2.3.7 Decommissioning

Noise sources during decommissioning are generally commensurate with that during construction. No exceedances of criteria are predicted.

6.2.3.8 Cumulative Impacts

Consideration has been given to potential cumulative effects of other proposed renewable energy projects proposed in the REZ as described in **Section 6.21**.

The closest projects to the Project which may result in cumulative noise impacts are The Plains and Bullawah Wind Farm. Project EnergyConnect is also in the vicinity, however, based on the construction program provided it is anticipated that Project EnergyConnect will be completed prior to the construction of the Project and as such, cumulative noise impacts are expected to be negligible.

Cumulative noise impacts during construction of the Project, The Plains and Bullawah may occur, if construction activities are undertaken concurrently. Construction activities from all developments will be coordinated (where possible) to minimise noise impacts at the nearest non-associated sensitive receivers.

During operation, based upon the predicted noise levels from the Project cumulative noise impacts are not expected at the nearest non-associated sensitive receivers.

Due to the distance of the Dinawan Wind Farm and Dinawan Solar Farm projects from the Project, potential cumulative noise impacts during construction, operation and decommissioning are not expected.

6.2.4 Mitigation and Management

6.2.4.1 Construction

A NMP will be prepared and implemented as part of the CEMP. The NMP will include the following:

- Scheduling and planning of construction activities to minimise noise impacts including:
  - Completing works over the minimum possible duration;
  - Undertake the majority of noise-generating activities within standard working hours defined in the ICNG;
  - Scheduling works involving high noise emission or annoying character to the least sensitive time periods;
  - Where works are required outside standard working hours a justification should be provided, and works should be scheduled to limit the number of consecutive days or nights worked;
  - Designating staging areas for trucks that are away from sensitive receivers; and
  - Construction plant selections to use the lowest noise generating equipment possible to complete the task.
- Onsite noise management including:
  - Safety/environment inductions and daily toolbox sessions to include noise management measures and identify noise-sensitive receivers in proximity to the Project Area;
  - Site management practices to avoid unnecessary noise-generating activities (e.g. plant to be turned off when not in use);

  - Noise complaint investigation and closeout processes which include the consideration of alternative work methods to remove or minimise the cause of the noise complaint; and
  - Procedures to manage any works outside standard construction hours.
- Noise reducing work practices:
  - Plant and equipment to be turned off when not in use;
  - Minimise on-site reversing of plant with reverse alarms by using a forward-in, forward-out pathway wherever possible;
  - Instructing workers to use radios to communicate and to avoid shouting, whistling and use of horns or alarms for communication;
  - Minimising staging of trucks with materials on site or at locations adjacent to sensitive receivers;
  - Instructing plant operators to use the minimum power of equipment to complete the task, and throttle down to the minimum setting when not in use if it is not possible to shut plant down;
  - Placing petrol or diesel powered lighting towers away from sensitive receiver;
  - Orienting directional noise sources such as exhausts or cooling fans on stationary plant to face away from sensitive receivers;
  - Instructing drivers to secure tailgates of tippers prior to travel to/from site; and
  - Ensuring that plant is correctly maintained; noise reduction measures such as covers and mufflers are in place, rotating equipment is balanced, and cutting tools are sharp.
- Stakeholder engagement practices including:
  - Appointment of a designated person responsible for noise-related engagement activities and contactable by the community regarding noise issues;
  - A complaints management system which includes a designated Project phone number which is monitored on a 24-hour basis during construction works;
  - A complaints register to record the time and date of the complaint and the nature the noise issue as well as the actions taken to close out the complaint and any follow-up require; and
  - Community Notifications to sensitive receivers likely to be impacted by noise generating works and to local councils and authorities is recommended to ensure that any noise issues are appropriately managed.
- Measures to mitigate the potential for cumulative noise impacts associated with adjacent construction projects.

6.2.4.2 Operations

Based on noise modelling completed for the operational stages of the Project, noise impacts are not anticipated. As a result, specific noise management mitigation and management measures are not required.

General noise mitigation and management measures will be adopted and implemented as part of the OEMP. The NMP will include but not be limited to procedures for noise monitoring to confirm operational noise levels are compliant with predicted noise levels and a complaints management procedure and resolution process.

6.3 Landscape and Visual Impact Assessment

6.3.1 Background

A Landscape and Visual Impact Assessment (LVIA) has been prepared for the Project by Moir Landscape Architecture Pty Ltd (Moir LA) and is included in **Appendix I.**

The assessment was prepared in accordance with the revised SEARs described in **Appendix C** and the Visual Bulletin.

The objective of the LVIA was to provide a comprehensive assessment of visibility and potential visual impacts associated with the proposed construction, operation and decommissioning phases of the Project on the landscape character, landscape values, landscape amenity and any scenic vistas. The LVIA also made recommendations to assist in the mitigation of any potential impacts resulting from the Project.

6.3.2 Methodology

6.3.2.1 Visual Baselines Study

Community Consultation

Community engagement is detailed in **Section 5** and in relation to visual impacts, it and aimed to:

- Establish key significant landscape features;
- Define areas of scenic quality; and
- Identify key public viewpoints valued by the community.

Visual amenity was highlighted as a key concern of the Project by the “neighbours” stakeholder group and specifically, no additional landscape features or key public viewpoints were identified during the consultation process.

Baseline Study

In accordance with the Visual Bulletin, a preliminary landscape baseline study was prepared and determined:

- Elements of the landscape important to the community, including public and private viewpoints;
- The sensitivity of the viewers who use those viewpoints and the distances at which they may view the landscape and potential WTGs and other ancillary facilities;
- The character of the landscape involved consideration of its key features and the relative scenic quality; and
- The location of any existing operational or approved wind energy developments within both a regional and local context within 8 km (Visual Study Area) which may have the potential to create direct or indirect visual impacts between the Project and any other operational, approved or proposed developments.

The purpose of the LVIA was to establish the existing landscape and visual conditions through descriptions, mapping and photographic representations.

Bioregion Context

The LVIA characterised the Project Area as containing:

- Extensive saltbush plain with small depressions and isolated low rises;
- Flat topography with very minor and isolated rises of coarse-textured aeolian material;
- Grey cracking clays, red brown earths and compact brown clays; and
- Vegetation communities on channels and swaps that include black box and lignum.

Sensitive Land Use Designations

The Visual Study Areas are covered by two different land use designations:

- The Project Area and majority of the surrounding land is zoned RU1; and

- C1 National Parks and Nature Reserves are located at least 4.7 km from the nearest WTG and occupies the land known as South West Woodland Nature Reserve (outside the Project Area). Oolambeyan National Park is located 7 km from the nearest WTG.

Land Use

The KVIA determined that the land uses within and around the Project Area comprises largely agricultural production activities. The land was identified as containing native grazing pastures. Areas of irrigated cropping and pastures were identified as being prevalent within the outer edges of the Project Area.

Key Landscape Features and Key Viewing Locations

The Visual Bulletin states that key landscape features, dwelling locations and key public viewpoints must be identified. The key features of the Study Area included:

- Creeks, swamps and dry lakes – characterised by dry lakes and creeklines through most of the year. Lakes or depressions were identified as being relatively shallow and defined by low-storey, scrubby vegetation such as saltbush, speargrass and forbs;
- Geology and Landform – identified contains alluvial sediments with shallow and small depressions that are deep as 2 m. Large swamps and dry lakes result. Landform was characterised as generally flat with seasonal water corridors and floodplains;
- National Parks, State Conservation Areas and Nature Reserves – Significant ecological, cultural and historic associations were identified for the Oolambeyan National Park which is known for birdwatching. The South West Woodland Nature Reserve was characterised by fragmented woodlands and steam plains;
- Vegetation Character – Conditions were identified to support scattered stands of Belah trees, saltbush and speargrass communities;
- Campgrounds and Points of Interest – Points of interest were identified as the Oolambeyan Homestead Picnic Area 23 km from the Project Area. Two key public viewpoints (16 Mile Gums Rest Area and Booroorban Hotel) were identified outside of the study area 14 km to the north-west and 14 km to the west of the nearest WTGs;
- Towns and Settlements – No towns or settlements were identified within; and
- Access Roads – Major roads were identified surrounding the in the form of highways, roads, and unsealed minor roads.

Landscape Character Units

Five Landscape Character Units (LCU) were classified as occurring within the Visual Study Area. LCUs were informed by land use patterns, vegetation coverage, topographical maps, site images and a site inspection and included:

- LCU01 – Semi-arid Woodlands – This area was characterised by flat open woodlands and plains including the extents of the Oolambeyan National Park. Intact patches of endemic species including dense boree and black box woodlands with a grassy understorey adjoining the riverine waters were classified. The scenic quality rating was deemed Low;
- LCU02 – Preserved Grasslands – This area was identified to the north-east of the Project and comprised of flat land parcels in the Oolambeyan National Park. Vegetation included extensive native grassland with lower shrubs such as cotton bush and isolated black box. The scenic quality rating was deemed Low;
- LCU03 – Seasonal Water Corridors – On investigation, LCU03 contained flat to gently undulating vegetation corridors. Shallow depressions and elevation changes that carry water during rainy periods and have dry character at other times. Greater vegetation coverage was identified than LCU03 with speargrass, forbs and saltbush, and dense clumps of black box, nitre goosefoot and lignum. The

vegetated corridors act as important wildlife refuges and distribute water across the region. The scenic quality rating was deemed Moderate;

- LCU04 – Swamps and Floodplains –LCU04 was recognised as containing flat shallow sub-circular depressions of cracking clays that accommodate water collection. Water allows for riparian grasses, groundcovers and forbs. Prominent vegetation included nitre goosefoot, lignum shrubs, saltbush, canegrass and dillonbush. The scenic quality rating was deemed Low; and
- LCU05 – Saltbush and Grassy Plains – LCU05 was defined by vast open parcels utilised for sheep, cattle, emu and kangaroo grazing. Open plains with scattered or no tree cover and vast extents of saltbushes, speargrass and forbs defined the area. The scenic quality rating was deemed Low.

6.3.2.2 Define the Visual Catchment

Preliminary Assessment Tools

Two key visual parameters were used in the preliminary assessment which are discussed below and included:

- Visual Magnitude Tool; and
- Multiple Wind Turbine Tool.

Visual Magnitude Tool

The visual magnitude tool determined that of the seven non-associated dwellings within the Study Area:

- Two (NAD_02 and NAD_014) are within 3,750 m of a WTG;
- Two (NAD_03 and NAD_04) are within 3,750 – 5,500 m of a WTG; and
- Three (NAD_06, NAD_25 and NAD_26) within 5,500 – 8,000 m of a WTG. One of the dwellings (NAD_26) in this range is associated with another Project.

Multiple Wind Turbine Tool

The multiple wind turbine tool applied 6 x 60-degree sectors around each dwelling with the Visual Study Area. The LVIA considered the cumulative impact of the viewpoints considering the other nearby wind farm developments.

Dwellings with WTGs in up to three 60-degree sectors:

One (NAD_26) non-associated dwelling was identified as having three sectors occupied by views of wind farms. Of the three sectors, one was occupied by the Project and three were occupied by the Bullawah Wind Farm. This dwelling is associated with the Bullawah Wind Farm.

Dwellings with WTGs in up to six 60-degree sectors:

One (NAD_02) non-associated dwelling was identified as having views in up to six 60-degree sectors. Of the six sectors, two were occupied by the Project and six were occupied with the Bullawah Wind Farm. This dwelling is associated with the Bullawah Wind Farm.

Zone of Visual Interest

Due to the flat topography, the majority of WTGs associated with the Project were likely to be visible from most areas surrounding the Project Area. Small topographical variations resulted in some small pockets associated with low points having limited views of the Project. Views to the majority of WTGs were found to be likely where within the Visual Study Area and the zone of visual interest identified that this was a worst-case scenario assessment with no vegetation or structures modelled.

The assessment considered the proposed 300 m micrositing of turbines.

6.3.3 Impact Assessment

6.3.3.1 Receptors

Public Viewpoint Analysis

Twenty public viewpoints were assessed for the LVIA surrounding the Project. This includes the Oolambeyan Homestead Picnic Area (within the Oolambeyan National Park) and the 16 Mile Gums Rest Area adjacent to the South West Woodland Nature Reserve. There are no noted public amenities within the South West Woodland Nature Reserve and this viewpoint is considered to represent worst-case views from the nature reserve.

Each viewpoint was assigned a Visual Influence Zone (VIZ) based upon viewer sensitivity level, visibility distance zone and scenic quality class combinations. Each viewpoint was assessed against VIZ. All twenty viewpoints returned a rating of Visual Influence Zone 3 (VIZ3). This resulted in no visual performance objectives being imposed on the Project.

In consideration of potential impacts to the amenity values of the Oolambeyan National Park and the South West Woodland Nature Reserve, a more detailed public viewpoint analysis was completed for the Project. The analysis determined the Project will not be visible from the public viewpoint in Oolambeyan National Park due to a combination of distance and vegetation. The Project may be distinguishable from the representative viewpoint for South West Woodland Nature Reserve, however existing vegetation is likely to assist in fragmenting views toward the WTG. Despite not being required, public viewpoints analysis was undertaken from a further eight public viewpoints as shown in **Figure 6-1**.

Dwelling Assessment Overview

The dwelling assessment overview categorised dwellings within the Visual Study Area, dwellings:

- Within 3,750 m of the nearest WTG;
- Between 3,750 – 5,500 m of the nearest WTG; and
- Between 5,500 – 8,000 m of the nearest WTG.

As noted in **Table 2–2**, there are four lodged development applications / dwelling entitlements in the Edward River LGA, however these are not within 11 km of the Project Area and are outside the Visual Study Area. Due to the distance of these lodged development applications / dwelling entitlements to the Project Area, visual impacts are not anticipated.

Dwellings within 3,750 m

Of the two non-associated dwellings (NAD_02 and NAD_14) were identified within 3,750 m of the nearest WTG:

- One (NAD_02) was rated as having a low visual impact rating. This dwelling was associated with another development. On inspection it was determined that the existing vegetation surrounding the dwelling would screen the majority of views towards the Project; and
- One (NAD_14) was rated as having a high visual impact rating. This dwelling was identified as derelict (see photos in **Appendix I**). On inspection it was determined that the views to the northeast are open towards the Project however, existing vegetation in the foreground fragments views to some turbines in these directions.

Dwelling between 3,750 – 5,500 m

Of the two non-associated dwellings identified:

- One (NAD_04) dwelling was assessed as being within VIZ 3 with the Multiple Wind Turbine Tool (MWTT) deemed to be acceptable in determining no further mitigation; and
- One (NAD_03) dwelling was assessed as being in VIZ 2 (VIZ2). Objectives for VIZ2 determined that screening be considered. Existing vegetation was assessed to sufficiently screen this dwelling from the majority of views of the Project.

Dwellings between 5,500 – 8,000 m

Of the three non-associated dwellings:

- One (NAD_26) dwelling was rated as having negligible visual impact rating; and
- Two (NAD_06 and NAD_25) dwellings were rated as having a low visual impact rating. The MWTT effect was deemed to be acceptable.

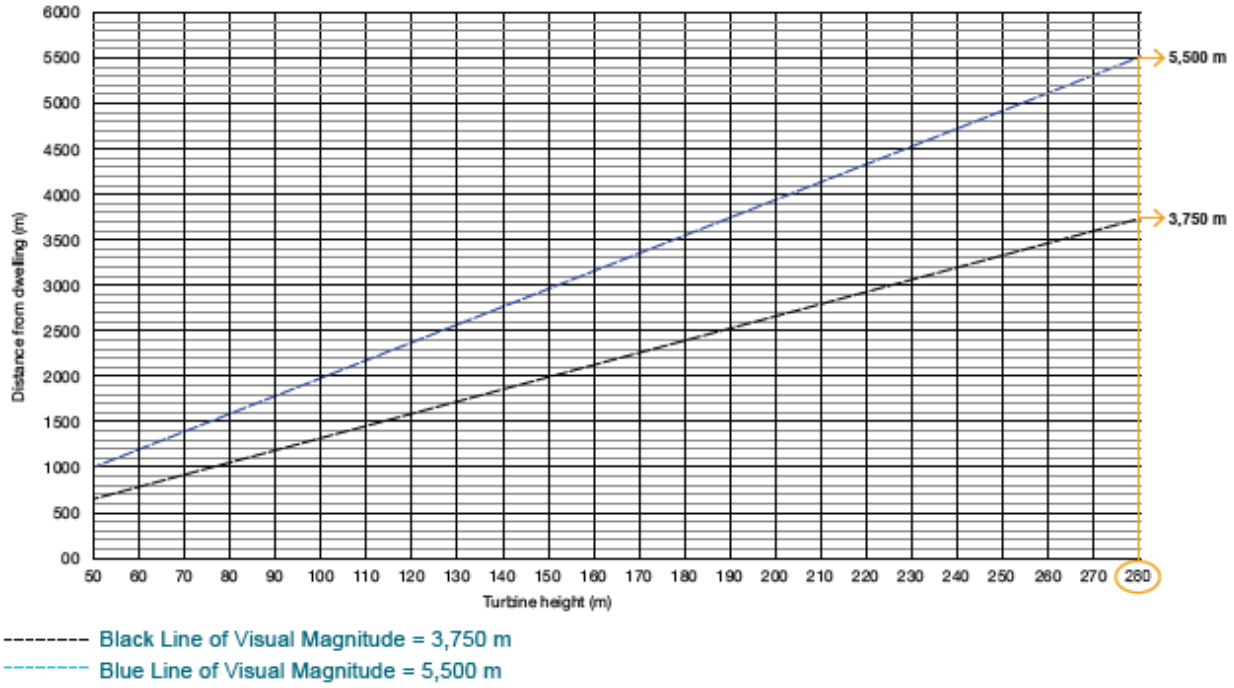


Figure 6-1 Visual Magnitude

6.3.3.2 Visualisations

A photomontage and wire frame diagram assessment was conducted and combines a photograph of an existing view with computer rendered images to determine an image of the Project.

Indicative viewpoints from the public locations and private dwellings are shown on **Figure 6-1** and included:

- Nine public viewpoint locations (VP16, VP12, VP20, VP04, VP05, VP06, VP09, VP10 and VP08); and
- Four private property locations (NAD_02, NAD_14, NAD_03 and NAD_06).

Additional wire frame diagrams and photomontages are included within **Appendix I**.

6.3.3.3 Shadow and Flicker Blade Assessment

A shadow flicker assessment was undertaken to determine impacts from the visual effect that occurs when rotating WTGs cause moving shadows when passing in front of the sun. This has the potential to affect the viewpoint.

The assessment determined that no non-associated dwellings were identified with potential shadow flicker hours. Shadow flicker was determined along a 2 km extent of Jerilderie Road and an 8 km extent of East West Road shown on **Figure 3-1.**

The blade glint assessment is the regular reflection off one or more rotating blades. This is a temporary effect at any particular location.

The assessment determined that the Project will be finished with a low reflectivity surface treatment in accordance with the requirements of the Visual Bulletin and as such the likelihood of blade glint is considered very low.

6.3.3.4 Night Lighting

Night lighting was identified with a potential to for farm projects in relation to two activities:

- Aviation Hazard Lighting (AHL) on WTGs up to 180 m above ground level; and
- Permanent external lighting required on each WTG for entrance doors, the BESS perimeter, substations, switching stations and O&M facility perimeters.

The Project has a potential to generate both types of lighting.

6.3.3.5 Cumulative

The cumulative landscape and visual effects that result from nearby wind farm developments and the Project considered:

- The impact of the Project, when added to the combined impacts of all other existing and proposed developments and environmental characteristics of the area;
- The impact of the Project in the context of the potential for development of wind energy. The impact of developments which are ancillary to or otherwise associated with the Project; and
- The potential for future development of wind farm developments in the region.

The Project, Bullawah Wind Farm and the Plains Wind Farm were determined to be clearly visible along Jerilderie Road and West Burrabogie Road which are low use providing access to rural dwellings and farm lots on the northern side of the Project. The MWTT determined that there are two dwellings which are within the Visual Study Area and Bullawah WTGs however, there were no dwellings within the Visual Study Area associated with the Plains and the Project.

Cumulative impacts on the two dwellings (NAD_02 and NAD_026) were limited by the existing intervening elements such as vegetation and structures. Both dwellings were associated with Bullawah Wind Farm.

The broader landscape was outlined as having the potential to be impacted by the cumulative effects of the wind farm developments in the region. The two aforementioned dwellings were identified to potentially have cumulative impacts relating to the broader landscape character. The MWTT assessment determined that one of the dwellings had three 60-degree sectors impacted by wind farms, of which one of the sectors was occupied by the Project. The second dwelling was identified as having all six 60-degree sectors occupied, of which two sectors were occupied by the Project.

The cumulative visual impact with regards to landscape character was assessed with consideration to sequential viewing. It was assessed that there was the potential for simultaneous distant views of all three wind farm projects whilst travelling the Cobb Highway. Due to the lack of any significant landscape features, the wind farms were assessed to have the potential to become a defining character element along this route.

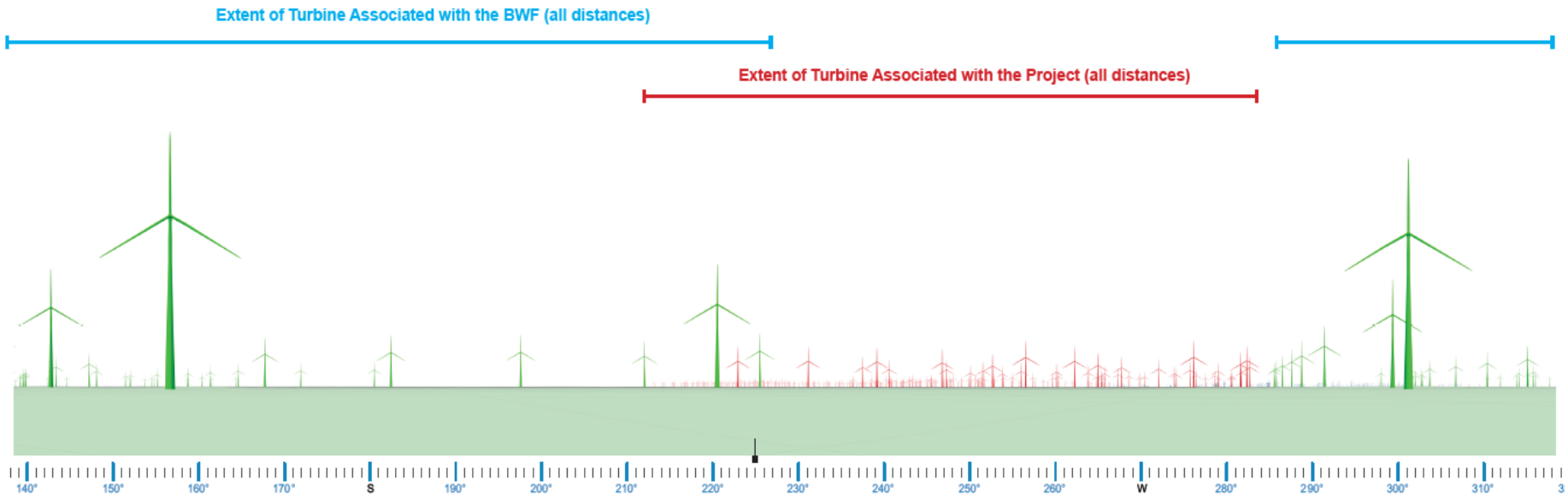
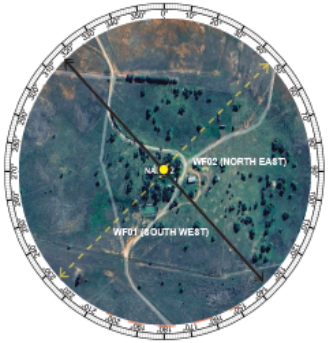


Figure 31 – Wireframe Diagram - Cumulative Visual Impact from Dwelling NAD_02 - southwest



Aerial Image - Wireframe Location (Aerial Image Source: Google Earth 2020)

LEGEND

- Direction of the Wireframe
- Extent of Panorama
- Turbine Associated with BWF
- Turbine Associated with the Project

NOTES

Turbine Layout for The Plains Wind Farm and Bullawah Wind Farm is as per the Major Projects Website.
Dwelling is involved with Bullawah Wind Farm

OVERVIEW OF CUMULATIVE VISUAL IMPACTS ON DWELLINGS:		
ID NAD_02: 4549 JERILDERIE ROAD, HAY SOUTH		
Distance to TPWF:	Distance to BWF:	Distance to the Project:
19.6 km	0.61 km	3.03km

Figure 6-2 Visual Montage NAD_02

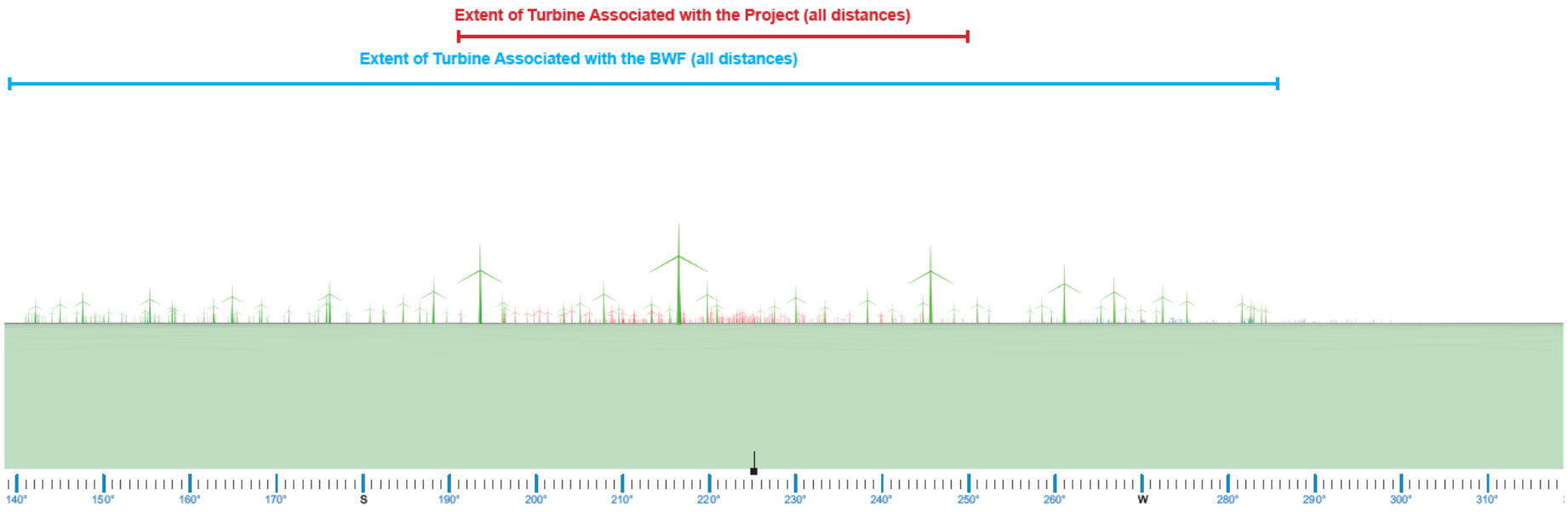


Figure 35 – Wireframe Diagram - Cumulative Visual Impact from Dwelling NAD_26 - southwest



Aerial Image - Wireframe Location (Aerial Image Source: Google Earth 2020)

LEGEND

- Direction of the Wireframe
- Extent of Panorama
- Turbine Associated with BWF
- Turbine Associated with the Project

NOTES

Turbine Layout for The Plains Wind Farm and Bullawah Wind Farm is as per the Major Projects Website.
Dwelling is involved with Bullawah Wind Farm

OVERVIEW OF CUMULATIVE VISUAL IMPACTS ON DWELLINGS:		
ID NAD_26: 3889 JERILDERIE ROAD, HAY SOUTH		
Distance to TPWF:	Distance to BWF:	Distance to the Project:
17.49 km	1.43 km	7.12km

Figure 6-3 Visual Montage NAD_26

6.3.3.6 Associated Infrastructure

In accordance with the Visual Bulletin, ancillary facilities and infrastructure was assessed and determined:

- Transmission Lines – transmission lines were determined to not to contrast with the existing landscape character or features and the visual impacts of the proposed transmission lines and towers were expected to be low;
- Substations – The northern and southern substations potential visual impacts were likely to be low;
- Switching Station – A switching station is proposed to be adjacent to the northern substation and BESS. The potential for views was deemed to be available along sections of Jerilderie Road. Despite this, the visual impact was assessed to be low;
- BESS – The BESS was deemed to be visible along Jerilderie Road due to the flat and open nature of the surrounding area. The BESS is proposed to be located adjacent to the collector substation and switching station. The visual impacts of the BESS were assessed to be low;
- Operations and Maintenance Building – A main and satellite O&M facility building were proposed as part of the Project. Views from the nearby uses and roads are fragmented or can be mitigated. The result of these factors determined that the potential visual impact was likely to be low;
- Meteorological monitoring masts – Power testing meteorological masts are required for the Project with locations yet to be confirmed. The height of the masts was deemed to be visible from the surrounding areas;
- Internal access roads – the construction of access roads was identified as being the greatest resulting residual visual impact from the construction of access road with mitigation measures provided; and
- Other temporary infrastructure – this included, temporary infrastructure elements such as 10 temporary meteorological masts, workers accommodation, construction compounds, laydown areas and concrete batching plants. No scenic views were assessed to be impacted by the construction activity.

6.3.3.6.1 Landscape Character

The LVIA determined that the Project is located within a rural landscape not identified as rare or significant. The Project was categorised as occupy vast modified plains with little topographical variation and scenic classes were rated as moderate or low for the Project Area.

Hydrological features do not occupy a large percentage of the Project Area and are ephemeral in most cases. The Project was determined to become a feature of the landscape due to the addition of WTGs across large flat expanses.

The Project was assessed as unlikely to interrupt the scenic value of the following key features as shown on **Figure 6-1:**

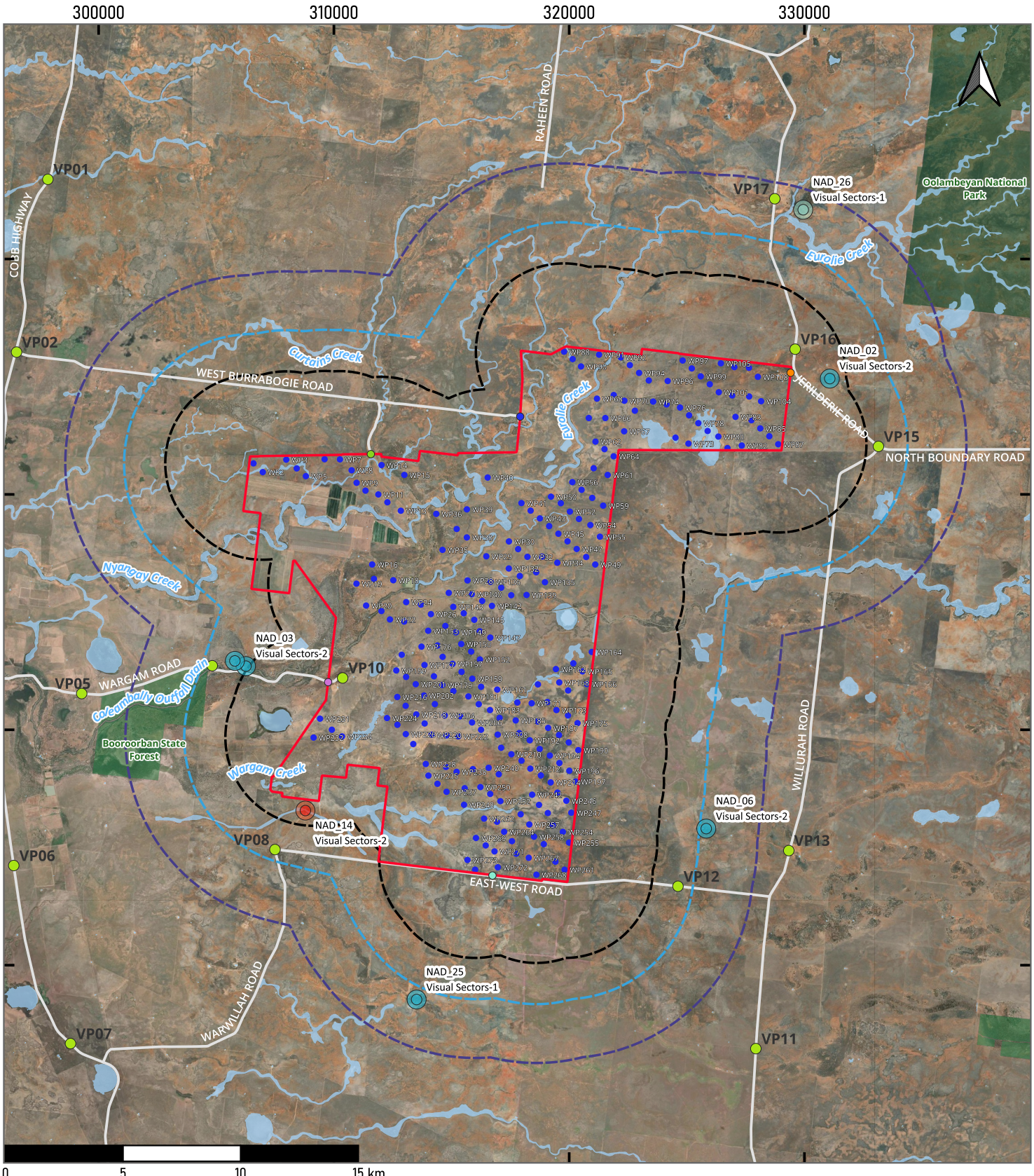
- Oolambeyan National Park Homestead and Picnic Area;
- South West Woodland Nature Reserve;
- Booroorban Hotel; and
- 16 Mile Gums Rest area.

Each Landscape Character Unit (LCU) was assessed for visual impacts on the existing landscape character of the local area. Five LCUs were identified and assessed. Due to the surrounding environment, it was determined that there was little to impede the views of the Project Area.

Table 6–14 Visual LCU Assessment

LCU	Name	Key landscape features	Quality Rating	Sensitivity	Magnitude	Character Impact
LCU01	Semi-arid woodlands	Dense woodlands Grassy understorey Flat topography	Low	**Low** The LCU consists of flat open woodlands and plains including the extents of the Oolambeyan National Park. Vegetation includes scattered to dense patches of endemic vegetation including trees and grasses. Some parts of the LCU have been subjected to human intervention. The LCU has the ability to retain its existing visual quality.	**Low** The Project is sited to avoid areas located within this LCU. The Project is not expected to compete visually with the existing character of this LCU. The visual character of the landscape within this LCU will remain unaltered as a result of the Project.	Low
LCU02	Preserved grasslands	Open grassland Flat topography Isolated stands of tree cover	Low	**Low** This LCU consists of flat land parcels that are within the extents of the Oolambeyan National Park, outside of the Study Area. Vegetation within the LCZ include extensive native grassland species along with lower storey shrubs such as cotton bush and isolated black box.	**Low** The Project is located in excess of 8 km of this LCU. As a result, distant views may be available, though will not be a feature from this LCU. Therefore, the visual character of the landscape within this LCU will remain unaltered as a result of the Project.	Low
LCU03	Seasonal Water Corridors	Seasonal creeklines, shallow depressions and channels Riparian vegetation of some tree species with understory shrubs and forbes Fragmented parcels of woodlands associated with South West Woodland Nature Reserve	Moderate	**Moderate** The LCU consists of Eurolie Creek, Nyangay Creek, Curtains Creek and other Coleambally Outfall Drain. Vegetation along these watercourses includes trees, mid-storey and low-growing shrubs and native grasses. The LCU also includes the fragmented parcels associated with South West Woodland Nature Reserve. No key viewpoints or amenities were identified within the Reserve. Although it is rated as a moderate scenic quality, there are no specific planning controls which attribute special value to this landscape.	**Moderate** Views towards the Project will be partially available within this LCU because of the relatively flat topographic character. Patches of vegetation along creek corridors, however, may help screen views in certain areas within the Project Area. No key viewpoints were identified within the LCU. It is likely that where open views towards the Project are available, the Project will be the dominant element of the view. Due to the existing vegetation coverage within the Reserve, the attributed values associated with the South West Woodland Nature Reserve will remain intact.	Moderate

LCU	Name	Key landscape features	Quality Rating	Sensitivity	Magnitude	Character Impact
LCU04	Swamps and Floodplains	Shallow depressions Flat topography Riparian vegetation of grasses	Low	**Moderate** The LCU consists of Eurolie Creek, Nyangay Creek, Curtains Creek and other Coleambally Outfall Drain. Vegetation along these watercourses includes trees, mid-storey and low-growing shrubs and native grasses. The LCU also includes the fragmented parcels associated with South West Woodland Nature Reserve. No key viewpoints or amenities were identified within the Reserve. Although it is rated as a moderate scenic quality, there are no specific planning controls which attribute special value to this landscape.	**Moderate** Views towards the Project will be partially available within this LCU because of the relatively flat topographic character. Patches of vegetation along creek corridors, however, may help screen views in certain areas within the Project Area. No key viewpoints were identified within the LCU. It is likely that where open views towards the Project are available, the Project will be the dominant element of the view. Due to the existing vegetation coverage within the Reserve, the attributed values associated with the South West Woodland Nature Reserve will remain intact.	Low-Moderate
LCU05	Saltbush and Grassy Plains	Modified rural land Flat and open Expansive Scattered Vegetation	Low	**Low** The landscape within this LCU is modified from its natural state and used for grazing and other agricultural uses. The elements that contribute to the quality will remain unchanged as a result of the Project. As a result, the LCU has the capability to absorb the change envisaged by the Project.	**Low** The Project is located within this LCU. Views are generally open with minimal obtrusive elements. Due to the flat and treeless nature to the LCU, the Project is likely to be the dominant feature within the LCU. However, the surrounding landscape is a heavily modified landscape. As such, the impacts to the scenic integrity of this LCU are anticipated to be low.	Low



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 6-4 Visual Landscape Features

Date:	14/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:225000
Basemap:	ESRI Satelitte (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed By: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure

- Project Area
- WTG Location
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Visual Study Area 3750m from WTG
- Visual Study Area 5500m from WTG
- Visual Study Area 8000m from WTG

Existing Infrastructure

- Main Road
- National Park
- Nature Reserve
- Hydro Area
- Public Viewpoint Assessment Location

Dwelling Visual Impact Rating

- High
- Low
- Negligible

6.3.4 Mitigation and Management

The following mitigation measures will be included in the CEMP and OEMP as required to mitigate the visual impact whilst enhancing the visual character of the surrounding environment.

Mitigation measures are best considered as two separate phases:

- Primary measures that form part of design through an interactive process; and
- Secondary measures that are designed to specifically address the remaining (residual) negative (adverse) effects of the Project.

6.3.4.1 Primary Measures

Public consultation and environmental constraints analyses has resulted in the Project undergoing significant modification as detailed in **Section 7**. The aforementioned principles have been considered in the siting of the WTGs as described in **Section 3.3.1** to provide a balanced appearance along the landscape.

The following general principles will be used in the detailed design phase to mitigate the visual impact of the Project: siting, access, layout and other principles which directly impact the appearance of the Project.

The following principles will guide the detailed design process of the Project:

- Controlling the location of different WTG types, densities and layout geometry to minimise the visual impacts;
- The lines of WTG will reflect the contours of the natural landscape as best as possible; and
- Ensure WTGs are evenly spaced to give a regular pattern creating a better balance within the landscape.

WTGs will:

- Have a matte white finish and consist of three blades;
- Have uniformity of colour, design, rotational speed, height and rotor diameter;
- Be in simple muted colours (consistent with any aviation requirements in **Section 6.13**) and non-reflective materials to mitigate distant visibility and avoid drawing the eye. Blades, nacelle and tower will be painted white; and
- Unnecessary lighting, signage and logos will not be installed.

6.3.4.2 Secondary Measures

Residences

Only one non-associated dwelling (NAD_14) was identified through the visual assessment as having the potential for a high visual impact. Should NAD_14 become habitable post-construction, screen planting and/or supplementary planting will be undertaken in accordance with **Appendix I** in consultation with the landowner. Typical landscaping will include planting of low maintenance, native trees, shrubs and groundcovers.

Ancillary Facilities

The smaller ancillary structures including the proposed O&M have the ability to be screened by existing vegetation or proposed screening vegetation. The following measures will be implemented:

- Siting to ensure minimal vegetation loss;
- Controlling the type and colour of building materials used. Where possible a recessive colour palette is to be used which blends into the existing landscape;
- Avoidance of unnecessary lighting, signage on fences and logos;

- Buildings to be sympathetic to existing architectural elements in the landscape; and
- Minimise cut and fill and loss of existing vegetation throughout the construction process.

Night Lighting

The potential visual impact associated with night lighting for aviation will be mitigated by:

- If used, air navigation lighting will be spaced around the outer edges of the Project. Lights are not required on every WTG. Where possible, consideration will be given to the selection of WTGs which avoid unnecessary impact upon residences;
- Treatment of the rear of blades with a non-reflective coating to mitigate reflection off the rotating blade at night;
- Use of the lowest candela intensity allowed by CASA;
- According to the CASA requirements, shielding may be provided to restrict the downward spill of light to the ground plane by ensuring that no more than 5% of the nominal light intensity should be emitted at or below 5° below horizontal;
- Light will not be emitted at or below 10° below horizontal; and
- Mitigating light glare from obstacle lighting through measures such as baffling.

If design principles are incorporated into the night lighting for ancillary infrastructure, it is likely there will be no visual impacts resulting from night lighting of ancillary infrastructure.

6.4 Biodiversity

6.4.1 Background

A Biodiversity Development Assessment Report (BDAR) was prepared for the Project by Biosis Pty Ltd (Biosis) and is included in **Appendix J.**

The BDAR was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D.** A summary is provided below.

The methodology for assessing the biodiversity impact of the Project included:

- Determination of the landscape context including the extent of native vegetation cover, rivers and streams applicable to the site, Riverina IBRA Bioregions and subregions, connectivity, geological features of significance, the prevailing landscape of the area;
- Categorisation of the land assessment for non-native vegetation or areas exempt from further assessment;
- Assessment of the native vegetation and habitat. This was an assessment to determine the extent of native vegetation, Threatened Ecological Communities (TEC) and vegetation integrity;
- Identification of the threatened species relevant to the area and their relevant flora and fauna habitats; and
- Identification of prescribed impacts relevant to the Project and in accordance with Section 6 of the Biodiversity Assessment Method (BAM) and clause 6.1 of the BC Regulation.

The key objectives of the BDAR were to:

- Address the BAM (DPIE, 2020a) and the NSW Biodiversity Offset Scheme;
- Identify how the Applicant has avoided and minimised impacts to biodiversity;
- Identify any potential impact that could be characterised as serious and irreversible (SAII);
- Describe the offset obligations required to compensate for any unavoidable biodiversity impacts resulting from the Project; and

- Consider and assess the proposal in accordance with other relevant legislation (e.g. EPBC Act).

6.4.2 Methodology

Site visits and desktop investigations were used to assess the biodiversity values of the Project. Details of the methodologies undertaken are described in **Appendix J.**

6.4.2.1 Avoid and Minimise Impacts

A series of impacts were assessed for the Project within the BDAR. The first impact assessment was undertaken prior to the Project Area being chosen and was termed 'Avoid and minimise impacts'. Detail on Project iterations is described in **Section 7.1**.

A biodiversity constraints GIS model and output were developed to provide an overview and an explanation of the biodiversity constraints and parameters within the Project Area. This constraints model was used to undertake initial avoidance and minimisation of impacts and formed the basis for impact minimisation throughout the design and assessment phases of the Project.

The constraints of vegetation and habitat present within the Project Area were identified and mapped into four categories ranging from No-go area – category 4 to Low constraint – category 1. Modelled biodiversity constraints associated with the Project are discussed at **Section 2.7** and shown in **Figure 2-12.**

Key biodiversity constraints considered throughout the Project are listed in **Table 6–15.**

Table 6–15 Key Biodiversity Constraints

Constraints	Bioregions / Species
DPE mapped Important Areas of Plains-wanderer *Pedionomus torquatus* habitat in the proximity of the Project Area	
The occurrence or potential occurrence of the following BC Act or EPBC Act TECs including:	Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions
	Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions
	Acacia melvillei Shrubland the Riverina and Murray-Darling Depression bioregions
The presence of potential habitat for threatened flora and fauna species	
The occurrence of ephemeral wetlands and two large freshwater lakes within the Project Area, which are likely to attract migrating waterbirds to the Riverina region and Project Area specifically	
Potential collision risk with bird and bat species	

6.4.2.2 Field Survey and Identified Ecology

Field investigations were undertaken as part of the BDAR assessment and are included in **Table 6–16.**

The assessment determined that only a small portion of the Project Area contained non-native vegetation which includes along farm tracks, dams and other infrastructure.

Plant Community Types (PCTs) were mapped for the site during field surveys of the Project Area and transport route and are included in **Table 6–17** and are shown in **Figure 6-5.**

Table 6–16 Biodiversity Field Surveys

Start date	End date	Surveys undertaken
14 February 2023	17 February 2023	PCT mapping, flora and fauna habitat assessments
21 August 2023	23 August 2023	PCT mapping, flora and fauna habitat assessments
28 August 2023	1 September 2023	PCT mapping and threatened species surveys
18 September 2023	22 September 2023	BAM plots and threatened species surveys
4 December 2023	8 December 2023	BAM plots and threatened species surveys
12 February 2023	16 February 2024	BAM plots
6 March 2024	7 March 2024	Assessment of transport route impacts

Table 6–17 Observed PCTs in the Project Area

PCT ID	PCT name	Condition	Survey Area (ha)	Disturbance Footprint (ha)
10	River Red Gum - Black Box woodland wetland of the semi-arid (warm) climatic zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low	4.29	0.17
13	Black Box - Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion).	Derived Native Grass (DNG)	273.09	10.22
		Low	744.2	76.96
		Moderate	1,678.88	128.51
16	Black Box grassy open woodland wetland of rarely flooded depressions in south western NSW, Riverina Bioregion and Murray Darling Depression Bioregion	DNG	239.38	11.57
		Low	183.46	10.96
		Moderate	420.10	2.74
17	Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	Low	22.45	0
		Moderate	242.86	6.21
		High	4.13	0
23	Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	Moderate	0.19	0.02
26	Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	DNG	359.29	12.77
		Moderate	9.22	0.32
		High	6.25	0
28	White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone	DNG	83.03	3
		Moderate	338.69	5.55
		High	582.59	3.03
44	Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion	Low	0.07	0
		Moderate	1,706.66	85.14

PCT ID	PCT name	Condition	Survey Area (ha)	Disturbance Footprint (ha)
45	Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	Moderate	133.90	15.37
46	Curly Windmill Grass - Speargrass - Wallaby Grass grassland on alluvial clay and loam on the Hay Plain, Riverina Bioregion	Moderate	3238.10	94.04
157	Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone, Riverina Bioregion	Moderate	230.62	6.13
159	Old Man Saltbush shrubland of the semi-arid (warm) climate zone (south western NSW)	Planted	35.48	0.14
		Moderate	0.92	0
160	Nitre Goosefoot shrubland wetland on clays of the inland floodplains	Poor	59.03	2.76
		Moderate-Low	259.56	22.75
		Moderate	21.75	0
		Moderate-High	1699.6	71.22
163	Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid.	Low	39.54	0
		Moderate	354.81	13.72
164	Cotton Bush open shrubland of the semi-arid (warm) zone	Low	52.82	14.11
		Moderate	1,349.78	0
		Moderate-High	8,347.27	517.24

Threatened Ecological Communities

Three TECs listed under the BC Act and one listed TEC under the EPBC Act were found during field surveys on the subject site and are included in **Table 6–18**. The TECs location within the Project Area is provided in **Figure 6-6**.

Within the subject land, patches of moderate condition Myall Woodland occur and are dominated by non-intact canopy of Weeping Myall with regeneration present. Areas of low condition were also found in the Survey Area and were modified with no canopy present and no regeneration of canopy species.

In the Riverina bioregion and the far south western portion of the NSW South Western Slopes bioregion, the Sandy Pine Woodland community is typically associated with prior streams and aeolian source-bordering dunes. All areas including the disturbed grassy areas of the sand form were considered to meet the condition thresholds for listing of this TEC under the BC Act.

Acacia melvillei Shrubland typically occurs on red-brown, sandy loam soils as scattered patches dominated by *Acacia melvill.* Areas of the site with PCT 23 in moderate condition were determined to meet the condition thresholds for the listing of the TEC.

Weeping Myall Woodlands was highlighted as an Endangered Ecological Community (EEC) under the EPBC Act. The larger patches of moderate condition PCT 26 in the west of the Project Area were determined to meet the condition thresholds for the listing of the TEC. The smaller patches, which were surveyed at less than 0.5 ha in area and the areas of low or DNG condition, were not considered to meet the EPBC Act listing requirements.

Table 6–18 Threatened Ecological Communities

Community	Listing Status	Land (ha)	Disturbance Footprint (ha)
BC Act TEC			
Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (Myall Woodland)	Endangered	15.47	0.32
Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (Sandhill Pine Woodland)	Endangered	1,004.31	11.58
Acacia melvillei Shrubland in the Riverina and Murray-Darling Depression bioregions (Acacia melvillei shrubland)	Endangered	0.19	0.02
EPBC Act TEC			
Weeping Myall Woodlands	Endangered	15.47	0.32

Threatened Species

Threatened species impacted by the Project are outlined in **Table 6–19**. A map of the areas of threatened species within the Project Area is provided in **Figure 6-6**.

Table 6–19 Threatened Species Summary

Species	Impact (ha)	Risk Weighting	Polygon Attributes
Flora			
Chariot Wheels	130.8	2	• PCTs 26, 44, 46, 157, 164 • All condition states except Low, Poor and Plated, considered too degraded to support ethe species presence • PCT 164 Low included due to the species being recorded • Central portion of the survey area has been excluded from the species polygon due to lack of detection
Mossgiel Daisy	279.74	2	• PCTs 13, 16, 44, 45, 46, 157, 160, 163, 164 • All condition states except Low, Poor and Plated, considered too degraded to support ethe species presence. • PCT 15 Low is included due to the species being recorded
Silky Swainson-pea	10.34	2	• PCTs 23, 26, 28, 44, 45, 46 • All condition states except Low, Poor and Plated, considered too degraded to support ethe species presence • Species was recorded on two occasions (in one location) in PCT 164 • Species polygons were not mapped south of the Coleambally Outfall Drain as the species was not recorded in this southern portion of the Project Area
Slender Darling Pea	261.60	2	• PCTs 16, 23, 26, 28, 44, 45, 46, 157, 163, 164 • All condition states except Low, Poor and Plated, considered too degraded to support ethe species presence. • The southern portion of the Project Area, south of the Coleambally Outfall Drain, has been excluded from the habitat polygon due to a lack of recording of the species in that portion of the Project Area
Flora			
Pink Cockatoo	18.72	2	• BioNet associated PCTs in all condition states were selected where they our within a 200 m buffer of potential nest trees • Potential nest trees were determined to be hollow-bearing trees recorded in the south/central-western portion of the subject land where the species was commonly recorded during breeding season

Species	Impact (ha)	Risk Weighting	Polygon Attributes
Flora			
			• The species was recorded investigating tree hollows, in pairs, suggesting breeding was occurring in this location. • Slightly further south, adjacent to the homestead on the southern property, all associated PCTs were selected in proximity of breeding season records, due to a lack of hollow-bearing tree mapping in this location
Plains-wanderer	5.16	2	Impacted areas of Mapped Important Areas of habitat form the species polygon for Plains-wanderer
Southern Bell Frog	6.42	2	• BioNet associated PCTs in all condition states were selected where they our within a 200 m buffer of aquatic habitats linked directly to records of the species • This includes the main watercourses and waterbodies within the subject land, as well as irrigation channels within the southern portion of the subject land and associated with the irrigated agricultural areas • A 50 metre wide corridor linking the available waterbodies was not considered relevant/necessary

Bat and Bird Surveys

Seasonal bat and bird utilisation surveys have been undertaken to identify resident threatened aerial species, resident raptor species and nomadic/migratory species likely to fly over the Project Area. This survey data which is provided in **Table 6–20,** will be used to inform bat and bird collision risk modelling completed for the Project which is provided as **Appendix J.**

A total of 30 fixed survey sites were selected representative of proposed WTG locations. The surveys were completed in summer, autumn, winter and spring 2023 and are continuing through 2024.

A total of 99 bird species were recorded within the Project Area during bird utilisation surveys. A large proportion of the birds recorded were observed flying between 10 and 15 m above ground level, at a high corresponding to the tree canopy and foraging areas across the Project Area. Only 0.42% of all individuals were recorded above the Rotor Swept Area (RSA) and this was limited to four species (Wedge-tailed Eagle, Black Kite, Australian Pelican and Great Cormorant).

Bat utilisation surveys positively identified (“Almost certain” or “Possible”) 11 of the 18 species that are known or predicted to occur within 10 km of the Project Area. The Yellow-bellied Sheathtail-bat is the only listed (i.e. vulnerable under the BC Act) species which flies in open areas and is a collision risk with WTGs.

Table 6–20 Bat and Bird Survey Data

Species	Listing Status (BC Act and/or EPBC Act
Brown Goshawk Accipiter fasciatus	N/A
Wedge-tailed Eagle Aquila audax	N/A
Spotted Harrier Circus assimilis	Vulnerable, BC Act
Black-shouldered Kite Elanus axillaris	N/A
Brown Falcon Falco berigora	N/A
Nankeen Kestrel Falco cenchroides	N/A
Australian Hobby Falco longipennis	N/A
Black Falcon Falco subniger	Vulnerable, BC Act
Whistling Kite Haliastur sphenurus	N/A
Black Kite Milvus migrans	N/A
Southern Whiteface Aphelocephala leucopsis	Vulnerable EPBC Act and BC Act
Dusky Woodswallow Artamus cyanopterus cyanopterus	Vulnerable, BC Act).

Species	Listing Status (BC Act and/or EPBC Act
Sharp-tailed Sandpiper Calidris acuminata	Vulnerable EPBC Act, Migratory
Spotted Harrier Circus assimilis	Vulnerable, BC Act
White-fronted Chat Epthianura albifrons	Vulnerable, BC Act
Black Falcon Falco subniger	Vulnerable, BC Act
Pink Cockatoo (eastern subspecies) Lophochroa leadbeateri leadbeateri	Endangered, EPBC Act).
Grey-crowned Babbler (eastern subspecies) Pomatostomus temporalis temporalis	Vulnerable, BC Act
Corben's Long-eared Bat Nyctophilus corbeni	(Vulnerable EPBC Act, BC Act
Little Pied Bat Chalinolobus picatus	Vulnerable BC Act
Inland Forest Bat Vespadelus baverstocki	Vulnerable BC Act
Yellow-bellied Sheathtail-bat Saccolaimus flaviventris	Vulnerable BC Act
Sharp-tailed Sandpiper Calidris acuminata	Vulnerable EPBC Act, migratory
Gull-billed Tern Gelochelidon nilotica	Migratory
Caspian Tern Hydroprogne caspia	Migratory
Rainbow Bee-eater Merops ornatus	Migratory/Nomadic

6.4.2.3 Port to Site Route

The assessment of the port to site route is currently desktop only and further on-ground survey will be completed post-EIS submission. All flora and fauna species credit species have been assumed present and a preliminary disturbance footprint of 19 ha for two the two proposed upgrades around Broken Hill has also been assumed.

The desktop assessment identified potential impacts to four native PCTs (refer Table 6-21), including one BC Act listed threatened ecological community which is associated with PCT 128 and PCT 155 and known habitat for seven threatened flora credit species and 10 fauna credit species (refer **Table 6-22**).

The transport route within the Hay LGA, includes of native shrubs, grasses and forbs and has been subject to historic disturbance from the formation of roads and surrounding agricultural practices. The Sturt Highway/Cobb Highway roundabout junction contains a very low level of native vegetation, with the site almost wholly developed for roads and infrastructure.

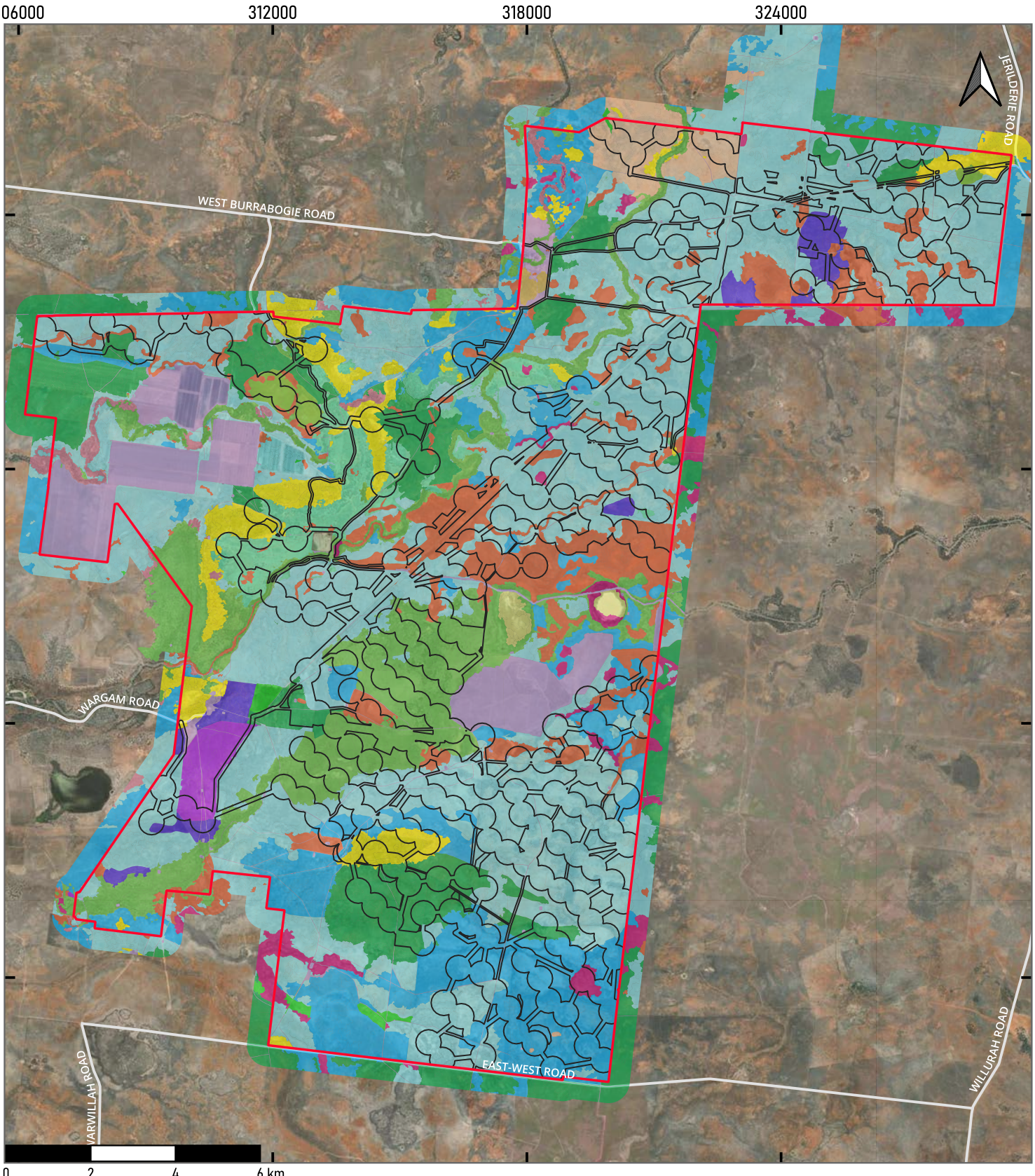
Table 6-21 Port to Site PCTs (Desktop Assessment)

PCT ID	PCT name	Condition	Area in the Disturbance Footprint (ha)
123	Mulga Dead Finish on stony hills	Benchmark	2.18
128	Nelia tall open shrubland	Benchmark	1.16
139	Prickly Wattle tall open shrubland	Benchmark	0.04
155	Bluebush shrubland	Benchmark	11.34
	Total		**14.72**

Table 6-22 Port to Site Flora and Fauna Credit Species (Desktop Assessment)

PCT name	Area in the Disturbance Footprint (ha)
Flora	
Creek Wattle	2.18
Creeping Darling Pea	11.34
Mallee Golden Wattle	3.34
Purple-wood Wattle	1.16

PCT name	Area in the Disturbance Footprint (ha)
Showy Indigo	13.52
Slender Darling Pea	11.34
Yellow-Keeled Swainsona	12.54
Fauna	
Australian Bustard	12.54
Barrier Range Dragon	13.52
Black-breasted Buzzard	1.20
Bush Stone-curlew	1.16
Crowned Gecko	14.72
Eastern Fat-tailed Gecko	3.38
Little Eagle	14.72
Pink Cockatoo	14.72
Stimson's Python	14.72
Thick-billed Grasswren (north-west NSW subspecies)	11.34



Pottinger Wind Farm

Figure 6-5 Plant Community Types – Vegetation

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:125000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

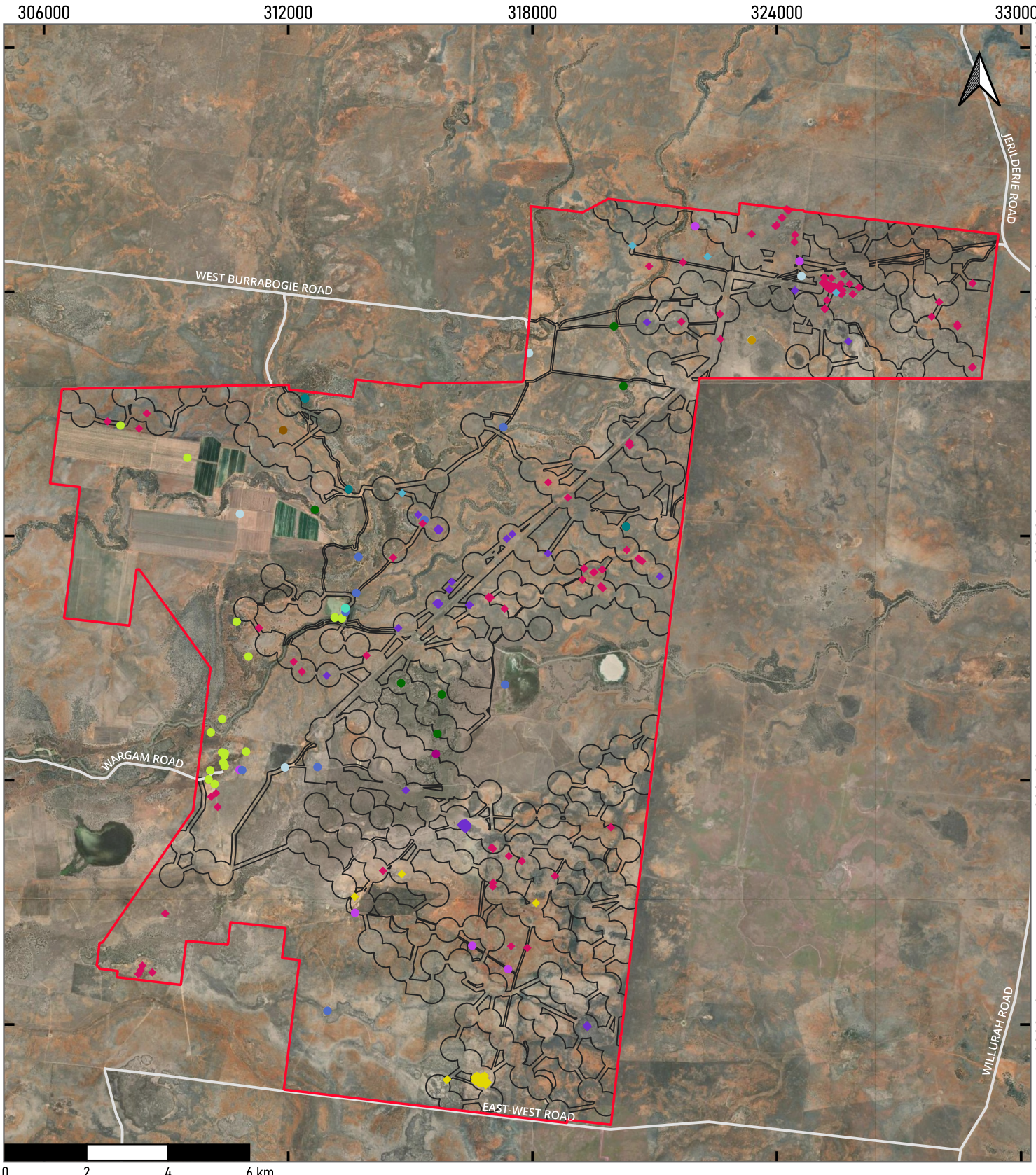
Prepared By: EL Reviewed by: TS
Version: 3.1
This figure may contain third party information. This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Survey Area

Existing Infrastructure
- Main Roads

Plant Community Types
- 0 - Not Native
- 10 - River Red Gum
- 13 - Black Box
- 15 - Black Box open woodland wetland
- 16 - Black Box grassy open woodland wetland - rarely flooded depressions
- 17 - Lignum shrubland wetland
- 23 - Yarran tall open shrubland (BC)
- 24 - Canegrass swamp tall grassland wetland
- 26 - Weeping Myall open woodland (BC and EPBC)
- 28 - White Cypress Pine open woodland (BC)
- 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland
- 45 - Plains Grass grassland
- 46 - Curly Windmill Grass - Speargrass - wallaby grass grassland
- 157 - Bladder Saltbush shrubland
- 159 - Old Man Saltbush shrubland
- 160 - Nitre Goosefoot shrubland wetland
- 163 - Dillon Bush Nitre Bush Shrubland
- 164 - Cotton Bush open shrubland
- 165 - Derived corkscrew grass grassland/forbland
- 216 - Black Roly Poly low open shrubland
- 238 - Permanent and semi-permanent freshwater lakes wetland



SOMEVA RENEWABLES

Pottinger Wind Farm

Figure 6-6 Threatened Flora and Fauna

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed by: TS
Version: 3.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Survey Area

Existing Infrastructure
- Main Roads

Threatened Flora
- Brachyscome papillosa
- Maireana cheelii
- Swainsona murrayana
- Swainsona sericea

Threatened Fauna
- Black Falcon
- Caspian Tern
- Grey-crowned Babbler
- Grey-crowned Babbler eastern subspecies
- Major Mitchell's Cockatoo
- Sharp-tailed Sandpiper
- Southern Bell Frog
- Southern Whiteface
- Spotted Harrier
- Whiskered Tern
- White-fronted Chat

6.4.3 Impact Assessment

6.4.3.1 Impacts unable to be Avoided

A summary of the direct impacts is presented in **Table 6–23**. Additionally, **Table 6–24** describes the potential indirect impacts on both threatened and non-threatened species as well as ecological communities.

The anticipated prescribed impacts for the Project are identified in **Table 6–27**.

Table 6–23 Direct Ecological Impacts

Direct impact	Description of impact	Assessment of impact
Removal of native vegetation and flora and fauna habitats	Removal of 1004.65 ha of native vegetation comprising 15 PCTs throughout the disturbance footprint, supporting habitat for a range of threatened and non-threatened flora and fauna species.	• Following all practicable efforts made to mitigate impacts the Project will result in the removal of native vegetation, ranging from Low (and DNG) to Moderate-high ecological condition • Whilst impacts to almost 1004.65 ha of native vegetation can be considered substantial it should be noted around 53% of this impact occurs to non-threatened PCT 164 Cotton Bush shrubland vegetation • Efforts undertaken to avoid TECs and minimise impacts to the fullest extent possible mean that despite the size of the impact, it is not considered overly significant in the context of the Project Area, broader Project Area, locality or SW REZ
Removal of BC Act and EPBC Act TECs	• Removal of the following TECs: • 0.32 ha of EPBC Act listed Weeping Myall Woodland • 11.58 ha of BC Act listed Sandhill Pine Woodland • 0.02 ha of BC Act listed *acacia melvillei* shrubland	• Impacts to TECs have been minimised to the fullest extent possible and equate to very small percentage of the Project impacts to native vegetation • Impacts to EPBC Act listed Weeping Myall Woodland make up 0.03% of the Project impacts, BC Act listed Myall Woodland contributes just 0.03%, BC Act listed Sandhill Pine Woodland comprises 0.1% of impacts and BC Act listed *Acacia melvillei* shrubland <0.01% • Avoidance and mitigation of these areas is ongoing and will be implemented through a BMP.
Removal of BC Act and EPBC Act listed threatened flora species and habitat	Removal of the assumed habitat for: • Chariot Wheels – 130.8 ha • Mossgiel Daisy - 279.74 ha • Silky Swainson-pea – 10.34 ha • Slender Darling Pea – 261.6 ha	• Impacts to TECs have been minimised to the fullest extent possible and equate to very small percentage of the Project impacts to native vegetation • Impacts to Chariot Wheels have been determined to occur in the north-eastern and south-eastern potions of the subject land and an estimated loss of 21% of recorded individuals • Mossgiel Daisy and Slender Darling Pea are located in numerous locations throughout the Project Area. Impacts are estimated to occur to around 13% of recorded Mossgiel Daisies and 21% of Slender Darling Peas • Silky Swainson-pea is only recorded in the northern section of the Project Area, with impacts are expected on 30 to 40 individuals
Removal of habitat for threatened fauna species	Removal of the assumed habitat for: • Pink Cockatoo – 18.72 ha • Plains-wanderer – 5.16 ha • Southern Bell Frog – 6.42 ha	• Impacts to Pink Cockatoo potential breeding habitat are considered only likely to occur in the central/western portion of the subject land. This is based on the presence of suitable breading habitat • Impacts to 3% of suitable habitat for the Plains-wanderer is expected. Due to the species being highly threatened, the low population numbers, and its sedentary habits, impacts have been conservatively assessed as significant under the EPBC Act. This determination will ensure direct offsets are secured for all impacts to the species

Direct impact	Description of impact	Assessment of impact
		• The Southern Bell Frog has been recorded in numerous location all broadly connected to the Coleambally Outfall Drain, the Disturbance Footprint has been designed to minimise impacts in this location and to watercourses generally, including establishment of setbacks in all areas, other than where crossing is required • The BMP will also include mitigation strategies to minimise the potential impacts to fauna species utilising trees that cannot be avoided
Loss of hollow bearing trees and stick nests	There will be impacts to 19 hollow bearing trees and two stick nests	• A total of 276 hollow-bearing trees have been mapped as occurring within the Project Area • A total of 65 stick nests have been mapped as occurring within the Project Area, a number of which were found to be actively used for raptor breeding. Stick nests were considered high priority for avoidance during design workshops, and only two stick nests were unable to be avoided by the current version of the project's disturbance footprint

Table 6–24 Biodiversity Indirect Impacts

Impact	Entities	Extent / Frequency / Duration / Timing of impact	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	• All PCT / vegetation zones • Ecosystem credit species and species credit fauna • Known threatened fauna species habitat • Avoided areas threatened flora populations • Avoided TECs • Werkenbergal Swamp, freshwater lake and irrigation dam • BCT Conservation Areas • Avoided hollow-bearing trees • Avoided Plains-wander habitat	Extent: Within the Retained vegetation Surrounding the disturbance footprint Frequency: Ongoing in a staged manner for Project life Duration: Temporary and permanent Timing of impact: construction and operation	Low Impacts were determined to adjacent vegetation during construction and operations. These impacts were identified as being able to be prevented or effectively minimised through mitigation in **Section 6.4.4.**
Reduced viability of adjacent habitat due to edge effects	• All PCT / vegetation zones • All ecosystem credit species assumed present • Known threatened fauna species habitat • Avoided areas threatened flora populations • Avoided TECs • Werkenbergal Swamp, freshwater lake and irrigation dam • BCT Conservation Areas • Avoided hollow-bearing trees • Avoided Plains-wander habitat	Extent: Within the retained vegetation surrounding the disturbance footprint Frequency: Ongoing in a staged manner for Project life Duration: Temporary and permanent Timing of impact: Construction and operation	Low The majority of avoided / retained vegetation within the Project Area was already subject to some level of edge effects due to historical clearing for agriculture The Project will not substantially increase edge effects due to the overall regular shapes of the Project infrastructure and more linear components along disturbed track and other edges
Reduced viability of adjacent habitat due to noise, dust or light spill	• All PCT / vegetation zones • All ecosystem credit and species credit fauna	Extent: Within the retained vegetation surrounding the disturbance footprint Frequency: Ongoing in a staged manner for the Project life	Low. The assessment predicted that the adjacent habitat may be impacted in a small way by noise, dust, compaction and light spill, during construction and operation. However, this will be managed via best practices in **Section 6.3**

Impact	Entities	Extent / Frequency / Duration / Timing of impact	Likelihood and consequences
	• Known threatened fauna species habitat • Avoided areas threatened flora populations • Avoided TECs • Werkenbergal Swamp, freshwater lake and irrigation dam • BCT Conservation Areas • Avoided hollow-bearing trees • Avoided Plains-wander habitat	Duration: Temporary and permanent Timing of impact: Construction and operation	Improve and maintain principles were proposed to be outlined within the BMP to ensure retained areas of adjacent habitat do not decline or are subjected to adverse impacts. The majority of noise and dust impacts was forecast to occur during construction, with a reduction to near normal levels following completion of construction Operational lighting systems designed as per **Section 6.3.**
Transport of weeds and pathogens from the site to adjacent vegetation	• All PCT / vegetation zones • All ecosystem credit and species credit fauna • Known threatened fauna species habitat • Avoided areas threatened flora populations • Avoided TECs • BCT Conservation Areas • Avoided hollow-bearing trees • Avoided Plains-wander habitat.	Extent: Within the retained vegetation surrounding the disturbance footprint Frequency: Ongoing in a staged manner for the Project life Duration: Temporary and permanent Timing of impact: Construction and operation	Low The assessment determined that weeds occurring within the disturbance footprint are consistent with those occurring within adjacent vegetation to be retained. Increased transport of pathogens and weeds is unlikely to occur but will be managed by biosecurity measures in **Section 6.8.** Regular Project monitoring and management during both the construction and the operational phases within undisturbed areas.
Increased risk of starvation, exposure and loss of shade or shelter	• All ecosystem credit species assumed present. • Known threatened fauna species habitat.	Extent: Within the retained vegetation surrounding the disturbance footprint. Frequency: Ongoing for the Project life Duration: Temporary Timing of impact: Construction and operation	Negligible The removal of habitats that provide food and shelter to a range of fauna species, and areas currently vegetated will become areas of infrastructure and hardstands no longer suitable to support the majority of fauna species currently occupying the area However, the level of change is minimal in the context of the Project Area and broader locality and the ecosystem is unlikely to be at carrying capacity such that displaced fauna cannot continue to persist in adjacent retained areas
Disturbance to specialist breeding habitats(including	• Plains-wanderer • All ecosystem credit species assumed present	Extent: Within the retained vegetation surrounding the disturbance footprint	Low/Moderate Breeding habitats supported by hollow-bearing trees and nest trees have the potential to be indirectly impacted during construction of the project via noise, dust, vibration, lights etc, and during operation by the noise, movement and

Impact	Entities	Extent / Frequency / Duration / Timing of impact	Likelihood and consequences
Mapped Important Areas	• Known threatened fauna species habitat	Frequency: Ongoing for the Project life Duration: Temporary Timing of impact: Construction and operation	potential changes to air pressure surrounding operation turbines. Where nests occur adjacent to the construction and operational footprint of the wind farm indirect impact may occur, however these impacts will be managed and mitigated as per **Section 6.4.4**. Impacts will occur to 5.16 ha of native vegetation in Mapped Important Areas for Plains-wanderer. Approximately 918 ha of Mapped Important Areas occur within the Project Area. when additional similar habitat mapped is considered impacts increase to 33.80 ha, however this remains a very small portion of all suitable habitat, at just 2.8 % of the total 1195.4 ha
Trampling of threatened flora species	• Avoided areas of known threatened flora populations • Any currently undiscovered threatened flora populations	Extent: Areas of known and potential habitat within retained vegetation Frequency: Ongoing for the Project life Duration: Temporary Timing of impact: Construction and operation	Low / moderate Known threatened species which were recorded within the Project Area have been avoided. Species that occur within retained vegetation will benefit from improved and maintain principles to ensure retained areas of adjacent habitat and individuals do not decline or are subjected to adverse impacts. Grazing will be managed to ensure potential trampling from livestock is minimised Impacts to retained flora populations which may occur due to the proximity of the Project infrastructure to the retained populations **Section 6.4.4** mitigation regarding ongoing monitoring of the population will ensure if impacts occur that they are managed.
Inhibition of nitrogen fixation and increased soil salinity	Unlikely to occur	Unlikely to occur	Negligible Standard environmental controls for the Project would ensure potential impacts are minimised. Waste will be managed as per **Section 6.18.4**
Fertiliser drift	Unlikely to occur	Unlikely to occur	Negligible Historical grazing occurred oved the Project Area. The Project is expected to reduce grazing and not contribute to fertiliser drift.
Rubbish dumping	Unlikely to occur	Unlikely to occur	Negligible Standard environmental controls would ensure potential impacts are minimised. Waste will be managed as per **Section 6.18.4**
Wood collection	Unlikely to occur	Unlikely to occur	Negligible. Wood collection is not required for the Project
Removal and disturbance of	Unlikely to occur	Unlikely to occur	Negligible.

Impact	Entities	Extent / Frequency / Duration / Timing of impact	Likelihood and consequences
rocks, including bush rock			The Project Area does not support bush rock
Increase in predators and pest animal populations.	• Fauna species, including threatened species • Plains-wanderer is of particular threat from this impact	Extent: Adjacent to the Project Area footprint Frequency: Ongoing for the life of the Project life Duration: Temporary and permanent Timing of impact: Construction and operation	Low / Moderate The Project Area is within a rural landscape with known presence of introduced domestic livestock and established populations of feral species such as: cats, European rabbit, European hare, and European red fox A change in the general landscape, such that an increase in feral species occurs is not expected from the Project. Pest management regimes are described in **Section 6.8.4**
Changed fire regimes	Unlikely to occur	Unlikely to occur	Negligible Fire mitigation systems will be implemented as per **Section 6.16**
Fragmentation of movement corridors	• All fauna species, particularly those more mobile species • To a lesser extent all flora species	Extent: Within the retained vegetation surrounding the disturbance footprint Frequency: Ongoing for the life of the Project Duration: Temporary and permanent Timing of impact: Construction and operation	Low The removal of vegetation associated was forecast to possibly impact upon movement corridors at the site scale and the local landscape scale and have been addressed in **Section 6.4.4**
Impacts to Oolambeyan National Park and the South West Woodland Nature Reserve	• Biodiversity values present in the conservation reserves • Populations of species that occur within the Project Area and extent to the conservation reserves	Extent: Within the Project Area and local conservation reserves Frequency: Ongoing for the life of the Project Duration: Temporary And permanent Timing of impact: Construction and operation	Low Oolambeyan National Park occurs between 5 km and 25 km to the north-east of the Project Area. South West Woodland Nature Reserve occurs as two separate parcels approximately 20 km to the south-west and 30 km to the south-east of the Project Area. Some highly mobile species may utilise habitats within these conservation reserves as well as the Project Area as part of their larger home ranges, as a result habitat removal within the disturbance footprint may reduce the total habitat available to these mobile species. The removal of habitat as a result of the Project is not considered to be substantial enough to result in the constriction of habitat available to these mobile species. Sufficient habitat supporting similar values will remain within the forage range of any such species to prevent the National Park/Reserve becoming unsustainable refuge islands.

Impact	Entities	Extent / Frequency / Duration / Timing of impact	Likelihood and consequences
			The occurrence of local records of Plains-wanderer to the north-east of the Project Area suggest the population which may occur within the Project Area is linked to the population in Oolambeyan National Park. However, as the species is relatively sedentary, with home ranges of between just 7 and 21 hectares (DoE 2016), the distance between the Project Area and the National Park prevent any impacts associated with forced migration from habitat removal leading to increased and unsustainable numbers of the species moving into the national park. The distance between the disturbance footprint and the National Park/Reserves is great enough to prevent any impacts associated with construction and operation of the project, such as noise, light, dust, vibration, from impacting upon the reserves and the habitats and populations they support.
Collision (powerline strike), electrocution, and exposure to electrical and magnetic fields due to installation of powerlines	• Bird and bat species utilising the habitats within the Project Area	Extent: Along the 36 km powerline to be constructed within the disturbance footprint Frequency: Ongoing for the life of the Project Duration: Temporary and permanent Timing of impact: Operation	Low An approximately 36 km overhead powerline is proposed to be constructed within the disturbance footprint. The potential exists for threatened species of birds and bats to be impacted via direct collision (powerline strike), electrocution, and exposure to electrical and magnetic fields. Birds and bats have the ability to avoid collisions with birds generally accepted as having between a 95 % to 98 % avoidance rate for the dynamic components of operational turbines, and a 99 % avoidance rate for the static components such as towers. It is acknowledged that powerlines are like to be less visible to birds and bats and therefore avoidance potential will not be as high as for large static turbine towers, however it can be assumed that the vast majority of time a bird or bat flies in the vicinity of a powerline it will not result in a collision. Collisions were considered likely to be infrequent and will be mitigated as per **Section 6.4.4**

Table 6–25 Biodiversity Prescribed Impacts

Prescribed impact	Description of relevant habitat features	Threatened species likely to utilise habitat features	Importance of habitat feature to impacted species
Karst, caves, crevices, cliffs, rocks, geological features of significance	No karst, caves, crevices, cliffs, rocks or other geological features of significance were located within the Survey Area	N/A	N/A

Prescribed impact	Description of relevant habitat features	Threatened species likely to utilise habitat features	Importance of habitat feature to impacted species
Occurrences of human-made structures and non-native vegetation	Human made structures are present within the Project Area: • Dams • Fences • Farm tracks • Formed public roads • Irrigation canals/channels • Railway Non-native vegetation occurs, predominately in the form of cropped land, and exotic components of retained native vegetation	Avian fauna species are known to utilise artificial and human made structures for nesting due to historic clearing of native vegetation Dams are utilised by fauna species as permanent water resources throughout the year, this includes migratory waterbirds Exotic vegetation, including cropped land is known to be utilised by raptor species for foraging Flooded and irrigated areas of cropped vegetation is also used by species such as Australasian Bittern and Southern Bell Frog Migratory species have been recorded in the large wetland, lake and irrigation dam around 12 km south of the Project Area Potential for occurrence within the Project Area	Hold a low level of biodiversity value, due to their degraded nature from livestock use (dams), or lack of natural features due to clearing and over grazing Dams to be drained of water at least one week prior by supervised by a suitably qualified person with relocation undertaken as required Transmission towers support nesting opportunities for birds. These towers will not be impacted No areas of predominantly non-native vegetation are considered to support habitat for threatened species The habitats that these exotic species provide are also present in the form of native groundcover and larger shrubs
Corridors or other areas of connectivity linking habitat for threatened entities	Native ground stratum vegetation and ephemeral watercourses in both a Project level scale and broader landscape scale were found to occur	All threatened fauna, flora and TECs	Connectivity corridors have a high biodiversity importance
Water bodies or any hydrological processes that sustain threatened entities	The seasonal watercourse Eurolie Creek, Nyangay Creek, Wargam Creek and irrigation channel Coleambally Outfall Drain occur within the Project Area. Coopers Swamp located in the south of the Project Area is in poor condition with natural hydrology historically impacted by the Coleambally Outfall Drain, however it also encompasses the two freshwater lakes connected to the outfall drain channel	When containing water, migratory species, and other fauna are likely to use aquatic habitat within the Project Area. Migratory species, aquatic and semi-aquatic species, and a range of threatened and non-threatened fauna species are likely to rely on Werkenbergal Swamp, the freshwater lake and irrigation dam throughout the year as semi-permanent and permanent water sources. These areas of retained key aquatic habitat are outside the disturbance footprint Ephemeral wetland areas occur across the subject land during periods of high rainfall and wet seasons, these areas, alongside Eurolie Creek, Nyangay Creek, and Wargam Creek are likely to be used by an array of fauna species.	The ephemeral watercourse is considered of limited importance to biodiversity values

Prescribed impact	Description of relevant habitat features	Threatened species likely to utilise habitat features	Importance of habitat feature to impacted species
Protected animals that may use the proposed wind farm development site as a flyway or migration route	Potential impacts from turbine strikes on significant bird and bat species considered 99 bird species, which included 10 raptor species and eight threatened species and 18 bat species known or predicted to occur within 10 kilometres of the Project Area, five of these were threatened species. The bird and bat species assessed were selected based on: • Being recorded at the Project Area during bird and bat surveys • The species occurring in the region but not necessarily recorded on the Project Area • The occurrence of highly suitable habitat for the species • based on previous experience and detailed literature review, only aerial fauna species with a moderate or higher risk of being impacted by turbine strike from the Project were considered	The Collision Risk Assessment was undertaken using bat/bird flight data in conjunction with the height that will be occupied by the WTG. The assessment determined six species were at more than a "low" risk of turbine strike: • Australasian Bittern (Endangered EPBC Act, Endangered BC Act) • Black Falcon (Vulnerable BC Act) • Black Kite • Pink Cockatoo (Endangered EPBC Act, Vulnerable BC Act) • Nankeen Kestrel • Wedge-tailed Eagle Bat species have a low risk of collision than larger bird species due to their size	Potential impacts during the operational phase of the Project are associated with turbine strike and the barrier effect. The barrier effect occurs when a wind farms physically excludes birds causing extended flight journeys around the project during migration or when commuting between colonies and foraging areas. Potential impacts can be avoided at the following spatial scales: • Macro-avoidance - bird or bat responds to the presence of the Project by flying around or over it; • Meso-avoidance - birds or bats fly within the overall Project but avoid collisions by choosing to fly only in the airspace between turbines; and • Micro-avoidance, when a bird or bat flying in close proximity to a turbine and that is otherwise on a collision course, does not collide with the turbine Meso-avoidance is a key consideration to ensure continued use of habitats when the Project is in operation. Spatial modelling has determined the optimum separation distance between WTG to ensure the continued use of habitat is between 200m and 400m. Collisions were considered likely to be infrequent and will be mitigated as per **Section 6.4.4**
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	Potential to result in increased vehicle strikes during construction and operational phase due to increased vehicle moments in particular heavy vehicles. Key areas where this is may occur are Jerilderie Road, West Burrabogie Road, East-West Road and the Cobb Highway.	Particularly in the early stages of construction and vegetation clearing, low flying birds have the potential to collide with vehicles. Threatened species • Pink Cockatoo • Spotted Harrier	The potential for vehicle strikes can be effectively managed. The Project is not expected to result in any substantial or significant impacts associated with vehicle strikes.

Human made structures and non-native vegetation

Nature, Extent and Duration

The following human made structures existing with the Project Area: dams, fences, farm tracks, transmission towers, formed public roads and irrigation channels.

Non-native vegetation with the capacity to support habitat of any significant value was not assessed on the site.

Consequences

Southern Bell Frog has been recorded in association with farm dams in the southern portion of the Project Area.

One avian fauna nest was recorded on manmade structures with the Project Area.

Dams were found to be utilised by fauna species as a permanent water resource throughout the year.

The consequence of removing dams was found to be low on a broader scale. On a smaller scale, frogs, yabbies and turtles may be required to be relocated to similar nearby habitats.

Widening of tracks was forecast to lead to increases in edge effects for some species.

Exotic features in the landscape were found to have low biodiversity value.

Habitat Connectivity

Nature

Habitat connectivity pathways were identified through the Project Area and broader landscape in varying degrees of quality and length.

Key features include:

- The uncleared riparian corridor following Eurolie Creek/Coleambally Outfall Drain. This riparian corridor is continuous (with the exception of small areas of fragmented canopy cover) from the Murrumbidgee River, Murrumbidgee Valley National Park, Murrumbidgee Valley Regional Park and the Oolambeyan National Park to the north-east of the subject land and the South West Woodland Nature Reserve) and on towards the Edward River to the south-west of the Project Area.
- The uncleared riparian corridor following Nyngay Creek. This riparian corridor is fragmented before it enters from the north into the Project Area, it then forms a continuous riparian corridor outward from the western extent of the Project Area, connecting with the Coleambally Outfall Drain and on towards the Edward River.

The downstream rivers, parks and drains form an important network of corridors and refugia for fauna species. Although disturbed, these areas aid in maintaining contiguous connectivity throughout the landscape between larger core areas of habitat.

Native ground stratum in the disturbance and site footprint forms part of a very large contiguous area of native grassland / low shrubland habitat across the Hay Plain, which was identified to support habitat for a range of native species, including the Plains-wanderer. The Plains-wanderer has been recorded frequently within the 5 km of the Project Area which suggests that the Project Area into Oolambeyan National Park support population of the species.

Extent

1004.65 ha is proposed to be removed by the Project which covers a total area of 19,500 ha. The placement of infrastructure was strategic when designing the Project to avoid key areas of native vegetation.

Consequences

Assessment identified that within the finer scale of the Project, fragmentation is expected to occur. This is expected through the:

- Removal of native vegetation;
- Removal of scattered trees;
- Removal of small, isolated patches of vegetation; and
- Increased edge effect and reduction in scale of larger areas of native vegetation.

Access road upgrades and increase of internal access roads will increase the barrier effect. Minimisation measures as per **Section 6.4.4** will avoid and minimise this impact.

Survey Area connectivity will be disrupted however this was assessed as being minor at the larger scale.

Key consequences of the Project will include an increase of fragmentation and edge effect for the species that use shrubland and grassland areas. Threatened species rely on this habitat connectivity to some degree.

Barrier effect has been minimised as a result of the proposed layout of WTGs, with substantial areas of airspace remaining available for birds and bats to move through once the wind farm becomes optional. A 'nearest neighbour analysis' undertaken in GIS has determined that the average gap between RSAs along strings of turbines throughout the subject land is between 305 m and 531 m.

Some habitat connectivity impacts will result, though key functional corridors within the landscape were not identified for substantial impacts. Fauna species will continue to utilise the existing corridors within the Project Area and broader landscape, with minor or negligible impacts to movement patterns and/or population viability forecast.

Water bodies, water quality and hydrological processes

Nature

Impacts associated with waterbodies and hydrological processes in particular alterations to surface water, water quality and direct removal of dams have been assessed and include:

- Discharge from the construction and operational site, especially into waterways;
- Removal of dams;
- Further modification of watercourses; and
- Construction of large scale infrastructure and bulk earthworks within the broad floodplain comprising the subject land.

Nyngay Creek, Wargam Creek and Eurolie Creek, the near-permanent irrigation channel Coleambally Outfall Drain, and numerous off-shoot irrigation channels occur within the Project Area.

A large portion of the central/southern portion of the subject land is mapped as a wetland in the Wetlands of NSW dataset (DPE 2023c) that runs north-east to south-west through the site, following the approximate flow path of Wargam Creek.

Werkenbergal Swamp is located in the north-eastern extent of the Project Area

No areas mapped within the Directory of Important Wetlands, Ramsar wetland or NSW DCCEEW wetlands occur within the Project Area.

Extent

Wargram creek, Werkenbergal Swamp, the freshwater lake, irrigation dam and Coleambally Outfall Drain would not be impacted by the Project. Werkenbergal Swamp, and the adjacent freshwater lake fall within an area set aside for biodiversity conservation.

Duration

The impacts were Projected to occur from the outset of the Project.

Consequences

The Project does not include works within the following key areas of aquatic habitat:

- Werkenbergal Swamp;
- Freshwater lake;
- Large irrigation dam;
- Active irrigation channels; and
- Coopers Swamp.

The Project will include works within the following areas of aquatic habitat:

- Natural “hydroarea” depressions in the landscape.
- Areas of identified degraded DCCEEW mapped wetland.
- Coleambally Outfall Drain;
- Wargam Creek;
- Nyangay Creek; and
- Eurolie Creek.
- Directly adjacent to Coopers Swamp.

Direct impacts to watercourses as a result of the Project are not expected to result in substantial impacts to biodiversity values utilising the areas of habitat.

WTG Blade Strike / Barotrauma

Nature

WTG strike or collision risk is the likelihood of individual species occurring in proximity to a wind farm and colliding with a WTG. Collision risk varies with species, number and behaviour of bird and bats, site specific topography, weather conditions, WTG height / design and WTG layout.

In addition to the potential strike or collision risk, microchiropteran bats (i.e. microbats) are known to be at risk to a condition known as “Barotrauma”. This condition is from exposure to pressure changes located near the surface of moving WTG blades, which can result in internal bleeding, damage to lungs or other organs and damage to the inner ear (WREN 2018). WTG blades create zones of low-pressure as air flows over them and animals entering these low pressure zones may suffer barotrauma. Microchiropteran bats most at risk from barotrauma comprise relatively high-flying species that prefer to forage above canopy height.

Extent

The extent of WTG blade strike and barotrauma is difficult to predict prior to commissioning of the Project, and as such the extent impacts are considered uncertain. A monitoring and adaptive management approach has been developed as discussed in **Section 6.4.4.1** to ensure any impacts to may occur are realised as early as possible, mitigations is implemented to minimise the potential for the impact to reoccur.

Duration

The impacts were Projected to occur during operation of the Project.

Consequences

A collision risk model run for the Project predicted the number of strikes for species that were recorded flying within RSA height. **Table 6–26** provides the species which will result in a moderate loss in numbers of individuals, leading to minor reduction in population viability for between one and five years.

In addition, the Australian Pelican, Great Cormorant, Masked Wood swallow and Welcome Swallow are predicted to experience occasional loss of individuals, but this is not expected to result in a reduction in population viability. The Yellow-bellied Sheathtail-bat is the only threatened bat species which fly in open areas and is at most risk from barotrauma and collision risk with WTGs due to its flights above canopy level. The other bat species with an increased risk of collision with WTG due to characteristic flight behaviours is the White-striped Free-tailed Bat. These species have a 50% and >95% strike rate respectively in any given year, with collisions more likely to occur in spring and autumn due to seasonal changes in bat utilisation in the Project Area.

Table 6–26 Predicted Bird and Bat Impacts Associated with WTG collision

Species	Rate and timing of impact per turbine per year
Australasian Bittern	• <50% likelihood of a strike occurring in a given year • 9 High risk turbines present potential collision risk based on habitat within 500m of a turbine • Collisions more likely to occur between spring and autumn
Black Falcon	• 50% likelihood of a strike occurring in a given year • Very high risk (incl 3 stick nests), 11 High risk (incl 8 stick nests) present potential collision risk based on habitat within 500m of a WTG • Collisions more likely to occur between spring and autumn
Black Kite	• Between 5 and 3 modelled collisions per year (95-99% avoidance rate) • 3 Very high risk (incl 3 stick nests), 11 High risk (incl 8 stick nests) present potential collision risk based on habitat within 500m of a WTG • Collisions may occur all year
Nankeen Kestrel	• >50% likelihood of a strike occurring in a given year • 3 Very high risk (incl 3 stick nests), 11 High risk (incl 8 stick nests) present potential collision risk based on habitat within 500m of a WTG • Collisions may occur all year
Pink Cockatoo	• 50% likelihood of a strike occurring in a given year • 3 Very high risk, 11 High risk present potential collision risk based on habitat within 500m of a WTG • Collisions may occur all year
Wedge-tailed Eagle	• Between 2 and 1 modelled collisions per year (95-99% avoidance rate) • 3 Very high risk (incl 3 stick nests), 11 High risk (incl 8 stick nests) present potential collision risk based on habitat within 500m of a turbine • Collisions more likely to occur between spring and autumn

Vehicle Strikes

Nature

The Project was assessed to have the potential to result in increased vehicle strikes during the construction and operational phase. The key increase will likely occur with heavy vehicles. Key areas where this was expected to occur were Wargam Road, Jerilderie Road, West Burrabogie Road, East-West Road and the Cobb Highway.

Extent

Vehicle movements were expected throughout the Project lifespan but were modelled to mainly increase during the construction phase of the Project.

Duration

Vehicle strikes were forecast to occur for the duration of the life of the Project.

Consequences

Assessment suggests that rare threatened species of bird, particularly low flying species such as the Pink Cockatoo and Spotted Harrier could collide with vehicles. The modelled occurrence was considered to be infrequent and could reasonably be expected that the potential for vehicle strikes be mitigated through the following measures:

- Driver awareness training;
- Minimisation of night driving;
- On-site reduced speed limits and signage; and
- Vehicle strike protocols, including contact numbers with vehicle strikes.

Substantial or significant impacts associated with vehicle strikes were not expected to result from the Project.

Impacts to Groundwater Dependent Ecosystems

The Project Area was not assessed to be mapped as supporting Aquatic or Terrestrial GDEs associated with an aquifer in accordance with the Risk Assessment Guidelines for Groundwater Dependent Ecosystems (DPI 2012). Furthermore, the land was not mapped as having Groundwater Vulnerability under the Hay LEP 2011.

No areas were mapped as being within the High Ecological Value Aquatic Ecosystems (HEVAE) Vegetation Groundwater Dependent Ecosystems Value mapping (NSW DCCEEW 2018). The land was not mapped as 'Non-GDE' in the GDE Probability mapping for the Murray Murrumbidgee catchment management area in the Spatial Layer of the Probable Vegetation Groundwater Dependent Ecosystems in NSW (DPE – Water 2022).

Uncertain Impacts

Operational impacts to bird and bat species associated primarily with collision risk and to a lesser potential barrier effect are considered uncertain at this stage. As such, a monitoring and adaptive management strategy has been developed for the Project to ensure any negative effects are realised early, mitigated where possible, and offset if required. The monitoring and adaptive management strategy is summarised in **Section 6.4.4**, and detailed in the projects draft Bird and BBAMP.

Serious and Irreversible Impacts

An impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct. A Serious and Irreversible Impact (SAII) completed for the Plains-wanderer determined the Project is unlikely to result in a SAII on this species due to the small percentage (i.e. 1%) of NSW population which may be impacted. Appendix 5.1 of the BDAR provides a further discussion on the Plains Wanderer with consideration of SAII.

Cumulative Impacts

The potential cumulative biodiversity impacts for the Project are described in **Table 6–27**.

Table 6–27 Cumulative Impact Summary

Project	Overview	Potential Biodiversity Impacts
Pottinger Solar Farm (EIS stage)	300 MW solar farm and 500 MW BESS, across ~1,600 ha	Impacts to approximately 600 ha of native vegetation, including potential impacts to Weeping Myall Woodland, Sandhill Pine Woodland, low potential Plains-wanderer habitat, and similar threatened species to the Pottinger Wind Farm

Project	Overview	Potential Biodiversity Impacts
Project EnergyConnect (Approved Project)	330 kV and 500 kV transmission line and Dinawan Substation	38 PCTs directly impacted 1,615 ha of native vegetation 232 ha of TECs, including 101 ha of Weeping Myall
Bullawah Wind Farm (EIS Stage)	170 wind turbines and 1 GW capacity	• 20 PCTs identified in the Project Area, 4 TECs considered highly likely to occur including Myall Woodland and Sandhill Pine Woodland • Estimated impacts to 1,012 ha of native vegetation Numerous threatened species consider likely to occur
The Plains Solar Farm (EIS Stage)	900,900 PV panels, 500 MW capacity and BESS	• 15 PCTs identified in the Project Area, 4 TECs considered likely to occur including Myall Woodland • Numerous threatened species consider likely to occur
The Plains Wind Farm (EIS Stage)	226 wind turbines and 1.8 GW capacity	• 15 PCTs identified in the Project Area, 2 TECs confirmed as present – Myall Woodland and Sandhill Pine Woodland • Numerous threatened species consider likely to occur
Romani Solar Farm (EIS stage)	250 MW solar farm with 150MW/300MWh BESS	• Potential impacts to an estimated 900 ha, however an estimated 60% occur on Category 1 Exempt land • Nine PCTs noted a potentially present and range of threatened species
Dinawan Wind Farm (EIS stage)	1.5 GW wind farm on ~22,000 ha	• Estimated impacts to 780 ha of native vegetation, including nine PCTs and three TECs • Weeping Myall and Natural Grasslands impacts are anticipated

6.4.3.2 Impacts to MNES

A summary of the MNES recorded, or considered to have the potential to occur within the Project Area is provided in **Table 6–28.**

Table 6–28 MNES within the Project Area

Matter of MNES	Project specifics	Potential for significant impact
Threatened species	The Controlled Action decision identified the proposed action as likely to have a significant impact on the following species: • Plains-wanderer • Curlew Sandpiper The Controlled Action decision identified the following species as being at risk of impact and requiring further assessment: **Fauna:** • Australasian Bittern • Australian Painted Snipe • Caspian Tern • Coben's Long-eared Bat • Common Sandpiper • Curlew Sandpiper • Flathead Galaxias • Glossy Ibis • Grey Falcon • Grey Snake • Latham's Snipe • Pink Cockatoo (eastern)	The following species/vegetation communities were determined to be at risk of significant impact, and require assessment under the EPBC Act (refer **Appendix J):** • Plains-wanderer • Australian Painted Snipe • Australasian Bittern • Corben's Long-eared Bat • Caspian Tern • Glossy Ibis • Grey Falcon • Southern Whiteface • Southern Bell Frog • Chariot Wheels • Grey Snake • Latham's Snipe • Mossgiel Daisy • Pink Cockatoo • Slender Darling-Pea • Curlew Sandpiper

Matter of MNES	Project specifics	Potential for significant impact
	• Plains-wanderer • Sharp-tailed Sandpiper • Silver Perch • Southern Bell Frog • Southern Whiteface **Flora:** • Chariot Wheels • Mossgiel Daisy • Slender Darling-Pea • The following additional EPBC Act listed species were identified as part of this assessment: **Fauna:** • Caspian Tern • Corben's Long-eared Bat • Sharp-tailed Sandpiper • Silver Perch **Flora:** • Chariot Wheels	• Flathead Galaxias • Silver Perch
Threatened ecological species	The project will not have a significant impact on the Weeping Myall Woodlands	A Significance Assessment determined significant impact to the Weeping Myall Woodlands EEC is not expected, refer to Appendix 6 of the BDAR
Migratory species	EPBC Act listed species were identified as part of this assessment: • Caspian Tern • Common Sandpiper • Curlew Sandpiper • Glossy Ibis • Latham's Snipe • Sharp-tailed Sandpiper	Species determined to be at risk of significant impact, and require assessment under the EPBC Act, refer to Appendix 6 of the BDAR: • Caspian Tern • Common Sandpiper • Curlew Sandpiper • Glossy Ibis • Latham's Snipe • Sharp-tailed Sandpiper
World Heritage properties and or National Heritage Places	• No World Heritage or National Heritage places were identified as occurring within or within proximity of the Project Area • The City of Broken Hill (with the entire LGA mapped) is listed as a National Heritage Place, the Barrier Ranges haulage route areas fall within this area • The Hay Post Office, located around 1.2 km from the Sturt Highway/Cobb Highway roundabout upgrade is listed as a Commonwealth Heritage Place	-
Wetlands of international importance	• No Ramsar wetlands are located within the subject land, or within 50 km of the Project Area • One area of DoIW (Coopers Swamp) occurs adjacent to the Cobb Highway/Warwillah Road haulage route upgrade. Black Swamp occurs around 3 km north-west of Coopers Swamp and is also identified as a DoIW. Both Coopers Swamp and Black Swamp are located around 30 km from the windfarm Project Area	The Project is not expected to incur any significant impacts, or modifications to the natural drainage systems including the watercourse within the Project Area or surrounding landscape

6.4.4 Mitigation and Management

Predicted Project impacts to biodiversity values will be minimised by implementing specific biodiversity management and mitigation measures both within the Project Area and for the external transport route. These will be documented in a Biodiversity Management Plan (BMP), Bird and Bat and Bat Adaptive Management Plan (BBAMP).

A dedicated Biodiversity Offset Strategy (BOS) will also be implemented for the Project.

Each is described in the sections below.

6.4.4.1 Biodiversity Management Plan

As part of the EMS, a BMP will be prepared and implemented to ensure adaptive management strategies are achieved and include at least:

- Measures to protect vegetation and habitat outside the Survey Area;
- Survey requirements prior to micro-siting of infrastructure components and criteria that must be met;
- Monitoring and management protocol including identification and reporting of fauna mortalities;
- Collection of detailed baseline weed/pest data;
- Ongoing vertebrate pest control programs working cooperatively;
- Pre-clearing protocols, including inspections, establishment of exclusion zones and on-ground identification of specific habitat features to be retained and/or relocated;
- Monitoring of soil and water controls to prevent indirect impacts to species and waterways;
- Rehabilitation and revegetation including targets and suitable species;
- Unexpected finds procedure;
- Clear performance targets, monitoring and reporting criteria;
- Adaptive management triggers, and corrective actions;
- Identification of potential risks to the successful implementation of the BMP, and a description of the contingency measures; and
- Timing and responsibilities, including timing of regular review/updates.

6.4.4.1 Bird and Bat Adaptive Management Plan

As part of the EMS, a BBAMP will be prepared and implemented and include at least:

- Clear framework and objectives;
- Coalition of adequate baseline information;
- WTG curtailment strategy for very high and high risk turbines;
- Definition of trigger levels for further investigation and adaptive response management measures;
- Monitoring and reporting (particularly on carcasses) on the trigger level effectiveness, including trials;
- Operational mitigation measures including adjustments based on efficacy reviews (with consideration of SMART curtailment, automated avian detection systems, relevant mitigation during flood years when waterbirds more prevalent);
- Residual impacts and compensatory measures; and
- Monitoring and adaptive management triggers for barrier effect impacts.

6.4.4.2 Actions to Mitigate Direct, Indirect and Prescribed Impacts

Management and mitigation actions to be incorporated in the BMP to address the Project's The direct, indirect and prescribed impacts are summarised in **Table 6–24** and **Table 6–25**.

Table 6–29 Biodiversity Mitigation Summary

Measure	Actions	Phase
Removal of native vegetation and TECs	• Avoid impacts relating to native vegetation and TECs through minimisation of clearing footprint during detailed design. This will involve preferentially locating infrastructure, plant and materials in areas of existing disturbance. • Mitigate potential impacts of construction activities on retained native vegetation and habitat: – Permit system for the clearing of native vegetation – Minimise vegetation clearance and disturbance, including impacts to standing dead trees and riparian zones. – Where possible, limit clearing to trimming rather than the removal of Whole plants. – Micro-siting of all construction related access roads, stockpiles, vehicle parking and site compounds where possible these areas should be located in areas that do not contain (ore minimise impacts to) native vegetation or fauna habitat. – Physically delineate vegetation to be cleared and/or protected on site and install appropriate signage prior to works commencing. – Erect no-Go Zones to limit the extent of clearing works in patches of vegetation and check as part of the pre-clearing survey. – Do not damage tree roots unless absolutely necessary. – Retain dead tree trunks and/or logs in-situ unless they are in the disturbance footprint. Reposition material elsewhere on the site where practical – Undertake pre-clearance inspections – Unexpected finds procedure that includes strategies relating to impacts to threatened species not recorded during the preparation of the BDAR. • If any unanticipated threatened species (flora or fauna) is discovered during the works, stop work immediately (in the vicinity of the find) and notify the onsite Manager. • Prepare a Biosecurity Management Plan (BIMP) to prevent weed infestation and pathogens. • Secure offsets in accordance with NSW BOS and **Section 6.4.4** (as modified for the final development consent).	Prior to and during construction
Removal of fauna and flora habitat	• The BMP shall include a plan for pre-clearance surveys • If native fauna is encountered, stop work and allow the fauna to move away un-harassed. A suitably qualified person only to handle wildlife if required to move. • Areas subject to temporary impacts will be rehabilitated to mitigate the loss of potential habitat for flora and fauna species. Rehabilitation of the ground stratum vegetation and habitats will be managed through the BMP.	Prior to and during construction
Removal of fauna and flora habitat	**Plains-Wanderer** • Review Mapped Important Areas and Biosis mapped areas of habitat following finalisation of detailed design to allow for further avoidance of habitat during micro-siting. • Undertake nocturnal pre-clearance surveys of habitat • Establish exclusion protocols • If evidence of breeding is recorded during pre-clearance surveys, proposed vegetation removal works are to cease in the vicinity of the breeding pair until rearing of chicks is complete and the bird can relocate (or be safely re-located by a suitably qualified person). • Strategies to mitigate predators such as foxes and weed ingress. • Maximise connectivity opportunities where impacts to optimal habitat and important habitat areas during final designs.	

Measure	Actions	Phase
Removal of fauna habitat	**Hollow-dependent species** • All hollow-bearing trees within 200 m of the final disturbance footprint are to be mapped/validated at least one month prior to vegetation removal. • Collect details on hollow height, dimension, location and other relevant information to determine the suitability of hollows • Removal of HBTs assessed as supporting threatened species potential breeding will not be removed during the relevant species breeding season, unless the tree has been confirmed as not being used for breeding • Removal of potential threatened species nest trees could occur outside breeding season where practical and prior to the main vegetation clearing program to ensure that this would not result in the removal of potential nest trees more than one breeding season prior to the main vegetation clearing program • Pre-clearance surveys of all HBTs to be undertaken to determine if these habitat features are being used by fauna within 24-48 hours before vegetation removal • Two-staged tree removal under ecologist supervision is required for the removal of all HBTs	Prior to and during construction
Removal of fauna habitat	**Raptors** • All potential raptor nests within 200 m of the final Project Area footprint are to be mapped at least one month prior to the vegetation removal; • Surveys are to be undertaken within one week of vegetation removal for raptor nest determination • Raptor nests with juvenile raptors present is not to occur • Clearing of raptor nests 200 m from vegetation is to be avoided • Two staged removal of all raptor nests in trees is to occur under supervision from ecologist	Prior to and during construction
Removal of fauna habitat	**Southern Bell Frog** • Construction within waterbodies and irrigation channels if required will be preferentially undertaken when dry as far as practicable. • A suitable location for the relocation of Southern Bell Frog will be determined prior to clearing taking place, ensuring any areas proposed for relocation does not contain Gambusia species (or similar pest species). • Engaging an appropriately qualified person be present during dewatering of farm dams is required, to undertake fauna relocation into an appropriate nearby habitat. • Once dewatering is complete, dams are to be left for a minimum of 48 hours to allow species such as frogs (or other fauna) to naturally relocate. Where possible, dewatered dams should be left dry for a minimum of 1 week.	Prior to and during construction
Construction adjacent to identified threatened flora populations	• The extent of the population will be established during the appropriate flowering season • Installation of a no-go fence around the entire population where it occurs outside the disturbance footprint • Establishment of erosion and sediment controls to ensure no additional run-off flows from the disturbance footprint • No-go zones and erosion controls are established early and are maintained throughout the life of the construction phase of the Project • Regular monitoring of the health of the population to be undertaken throughout the life of the Project. This is to be guided by the BMP, negative pressures acting on the population will be subject to management • Where feasible, no grazing is to occur within the patch of vegetation supporting the population	Prior to construction and during construction
Indirect impacts on retained native vegetation, habitat and native species	• Project fencing will be designed so as not to create barriers to fauna movement, nor to funnel fauna species into dead ends. Egress points will be provided for fauna that do enter • Fauna-friendly fencing opportunities that benefit Plains-wanderer will be investigated and implemented if feasible • Ensure all works areas and access routes are clearly delineated and sign-posted. This is to avoid unauthorised or accidental access to retained areas	Prior to and during construction

Measure	Actions	Phase
	• Develop and implement specific erosion and sediment controls • Specific erosion and sediment control plans for waterways and crossings • All material stockpiles, vehicle parking and machinery storage etc., to be kept inside areas considered in current assessment and not located within retained vegetation outside the Project Area footprint • Waste management plan to be developed to ensure rubbish and construction waste are properly managed • Cleared vegetation which can be mulched or stored for re-use on site: – Stockpiled separately from topsoil in a manner facilitating respreading or salvaging, avoiding damage to adjacent live vegetation and does not impede wildlife – Mulch produced from native vegetation to be reused for landscaping and site rehabilitation • Commit to undertaking animal pest control program in consultation with the landholder to ensure a strategic approach can be achieved. To be done in conjunction with a local/regional control program • Regular carcass removal to prevent raptors being attracted to and minimise perching opportunities (where possible) within the solar Project Area to minimise potential collisions with overhead powerlines • Use of strategic grazing of ground stratum vegetation will be considered as a lower impact management opportunity • Deploy species specific features on powerlines to prevent collisions	
Reduced viability of adjacent habitat due to edge effects	• Landscaping and rehabilitation management plan to ensure areas of temporary disturbance are rehabilitated via best practice methods • Re-use of felled vegetation to increase the habitat values of any retained and adjacent vegetation • Any revegetation / rehabilitation or vegetation screening works within and/or contiguous with areas of native vegetation are to be locally sourced only. All species installed are to be locally indigenous, suitable and characteristic of the surrounding PCTs	Prior to construction and during construction.
Reduced viability of adjacent habitat due to noise, dust or light spill	• Minimising the amount of noise, light and vibration impacts • Breeding habitat adjacent to work areas will be considered in noise management strategies, including noise monitoring • Lighting will be designed so as not to shine onto adjacent retained vegetation and habitats as much as is possible	Prior to and during construction a
Transport of weeds and pathogens	• A BIMP will be prepared to prevent the spread of weeds and pathogens as well as other biosecurity items • The BIMP will include prescriptions for regular monitoring and control of weeds	Prior to and during construction
Indirect impacts to aquatic habitats during construction of creek crossings	• Any upgrade, construction or maintenance activities that would produce in-stream sedimentation are to be completed when watercourses are dry with no flowing water, as far as is practicable. • Where construction or maintenance activities are required that would incur in-stream sedimentation or require blockage of water flows and thus potential fish passage, consultation must be completed with the relevant regulator to determine appropriate measures prior to commencement of works.	Prior to and during construction
Adaptive management strategies to respond to uncertain impacts on biodiversity value	• BMP will be reviewed and updated through the life of the operation and include survey requirements prior to micro-siting • The CEMP and OEMP will include relevant water and soils management measures (including but not limited to sediment, erosion control and water management). • The BBAMP will be reviewed and updated through the life of the operation and include a rerun of the CRM following 12 months additional data and based on 24 months of data, as well as additional 12 months of microbat data.	Prior to and during construction, post construction
WTG strike and barriers to movement	• All Very high and High risk WTGs will be feathered at wind speeds below operational cut-in speeds as an up-front proactive mitigation strategy to minimise the potential for turbine strike impacts.	

Measure	Actions	Phase
	• Automated avian detection systems, such as the IdentiFlight avian detection system (IDF), to allow for detection of bird species and the triggering of curtailment of WTG as a means of pre-emptively reducing potential mortality events and will be investigated for suitability and feasibility during preparation of the BBAMP • Where blade strike impacts are found to occur, adaptive management strategies will be implemented	
Vehicle strike	• Speed limit for construction vehicles will be enforced. • Vehicle movements at night will be minimised, fauna exclusion will be established where appropriate to minimise the potential for vehicle strike. • Fauna species (particularly threatened species) susceptible to vehicle strike will be included in project inductions • A vehicle strike protocol will be developed	Prior to and during construction, post-construction
Construction near waterways, wetlands and removal of dams	• Construction within waterbodies will be preferentially undertaken when dry. • During the micro siting process, where possible, construction in wet areas including dams, drainage lines and creek lines should be avoided. • Indirect impacts to DoIW wetland adjacent to transport impact off Cobb Highway and Warwillah Road are to be avoided via establishment of suitable erosion and sedimentation controls and minimisation of impacts to vegetation and soil in the location • Where avoidance or undertaking works when waterbodies are dry is not possible, all areas containing water, e.g. dams, must be surveyed as part of the pre-clearance and clearing survey outlined in the BMP including engaging a qualified and licensed ecologist to be present during dewatering of farm dams, to undertake fauna relocation (e.g. turtles, frogs, etc.) into an appropriate nearby habitat	Prior to and during construction
Fragmentation of corridors	• Establish the BOS as **Table 7–1** • Explore fencing, disturbance minimisation, restoration of habitat connectivity during detailed design	Post construction

6.4.4.3 Biodiversity Offsets

Where impacts cannot be completely mitigated, a BOS will be sought to ensure no net loss of biodiversity values. No offsets are required for PCT 16_DNG.

Table 6–30 and **Table 6–31** summarises the required ecosystem credits for offsets for each of the Project Area and Barrier Range, respectively.

Table 6–32 and **Table 6–33** summarises the required Threatened species offsets for each of the Project Area and Barrier Range, respectively.

Table 6–30 Biodiversity Offsets Project Area – Ecosystem Credits

Vegetation zone	Area (ha)	VI score	Offset required	TEC	HBTs	Credits
PCT 10_Low	0.17	22.6	Yes	No	Yes	1
PCT 13_DNG	10.22	39.0	Yes	No	No	174
PCT 13_Low	76.96	48.7	Yes	No	Yes	1,641
PCT 13_Moderate	18.51	87.4	Yes	No	Yes	708
PCT 16_Low	10.96	45.8	Yes	No	Yes	219
PCT 16_Moderate	2.74	60.4	Yes	No	Yes	72
PCT 17_Moderate	6.21	88.9	Yes	No	No	242
PCT 23_Moderate	0.02	82.3	Yes	Yes	No	1
PCT 26_DNG	12.77	20.8	Yes	No	No	133
PCT 26_Moderate	0.32	46.0	Yes	Yes	No	7

Vegetation zone	Area (ha)	VI score	Offset required	TEC	HBTs	Credits
PCT 28_DNG	3.00	30.6	Yes	Yes	No	46
PCT 28_Low	5.55	52.3	Yes	Yes	No	145
PCT 28_Moderate	3.03	80.7	Yes	Yes	No	122
PCT 44_Moderate	85.14	99.9	Yes	No	No	4,251
PCT 45_Moderate	15.37	95.7	Yes	No	No	643
PCT 46_Moderate	94.04	98.1	Yes	No	No	3,458
PCT 157_Moderate	6.13	85.1	Yes	No	No	252
PCT 159_Planted	0.14	82.3	Yes	No	No	7
PCT 160_Poor	2.76	44.2	Yes	No	No	46
PCT 160_ Moderate_Low	22.75	83.4	Yes	No	No	712
PCT 160_ Moderate_High	71.22	98.7	Yes	No	No	2,635
PCT 163_Moderate	13.72	94.2	Yes	No	No	485
PCT 164_Low	14.11	50.8	Yes	No	No	269
PCT 164_ Moderate_High	517.24	91.5	Yes	No	No	17,739
Total						**34,008**

Table 6–31 Biodiversity Offsets Barrier Range – Ecosystem Credits

Vegetation zone	Area (ha)	VI score	Offset required	TEC	HBTs	Credit requirement
PCT 123_Benchmark	2.18	100	Yes	No	Yes	82
PCT 128_Benchmark	1.16	100	Yes	Yes	Yes	58
PCT 139_Benchmark	0.04	100	Yes	Yes	Yes	2
PCT 155_Benchmark	11.34	100	Yes	Yes	No	567
Total						**709**

Table 6–32 Biodiversity Offsets Project Area – Species Credits

Species	Credit Requirement
Mossgiel Daisy *Brachyscome papillosa*	12,315
Cockatoo *Lophochroa leadbeateri*	335
Plains Wanderer *Pedionomus torquatus*	359
Silky Swainson-pea *Swainsona sericea*	363
Slender Darling Pea *Swainsona murrayana*	11,940
Southern Bell Frog *Litoria raniformis*	226
Total	31,682

Table 6–33 Biodiversity Offsets Barrier Area – Species Credits

Species	Credit Requirement
Australian Bustard *Ardeotis australis*	624
Barrier Range Dragon *Ctenophorus mirrityana*	676
Black-breasted *Buzzard Hamirostra* melanosternon	46
Bush Stone-curlew *Burhinus grallarius*	58
Creek Wattle *Acacia rivalis*	30
Creeping Darling Pea *Swainsona viridis*	1,015
Crowned Gecko *Lucasium stenodactylum*	736
Eastern Fat-tailed Gecko *Diplodactylus platyurus*	169
Little Eagle *Hieraaetus morphnoides*	553
Mallee Golden Wattle *Acacia notabilis*	60
Pink Cockatoo *Lophochroa leadbeateri*	736
Purple-wood Wattle *Acacia carneorum*	87
Showy Indigo *Indigofera longibractea*	1,015
Slender Darling Pea *Swainsona murrayana*	567
Stimson's Python *Antaresia stimsoni*	736
Thick-billed Grasswren (north-west NSW subspecies) *Amytornis modestus obscurior*	851
Yellow-Keeled Swainsona *Swainsona flavicarinata*	941
Total	**8,900**

6.5 Aboriginal Heritage

6.5.1 Background

An Aboriginal Cultural Heritage Assessment Report (ACHAR) has been prepared for the Project by Environmental Resources Management Australia Pty Ltd (ERM) and included in full in **Appendix K.**

The ACHAR was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D,** stakeholder engagement summarised in **Section 5** and RAP engagement summarised in **Section 5.3**. The ACHAR is summarised below**.**

The aims of the ACHAR are to:

- Assess the impact to Aboriginal cultural heritage items (cultural and archaeological) in accordance with the ‘Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW’ (OEH, 2011) and the ‘Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW’ (DECCW, 2010) (Code of Practice), including results of archaeological test excavations (if required); and
- Document evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures, having regard to the ‘Aboriginal Cultural Heritage Consultation Requirements for Proponents’ (DECCW, 2010) (RAP Consultation Guidelines).

6.5.2 Methodology

The scope of the ACHAR included:

- Consultation with Aboriginal communities in relation to the Project;
- Review of the landscape and natural resources of the Project Area to establish background parameters;
- Research of Aboriginal cultural heritage literature and archaeological records on a regional and local context, including review of the Aboriginal Heritage Information Management System (AHIMS) database and other relevant databases; and
- Archaeological field surveys within the Project Area. The aims of the field surveys were to:
  - Identify the presence or absence of Aboriginal cultural material within the Project Area;
  - Assess the likely extent and nature of any such cultural material;
  - Assess the archaeological significance of any cultural material;
  - Provide an opportunity for Registered Aboriginal Parties (RAPS) to assess the cultural significance of any materials; and
  - Assess the management requirements for any cultural material.

6.5.2.1 Aboriginal Community Consultation

A key objective of the ACHAR was to identify any cultural values within the landscape in which the Project is located so that those values can be recognised and incorporated into the mitigation and management measures. Aboriginal community consultation was undertaken in accordance with RAP Consultation Guidelines. A log and copies of correspondence with Aboriginal community stakeholders is presented in the ACHAR.

The ACHAR included four main engagement strategies:

- Stage 1: Identify RAPS who wish to be consulted about the Project;
- Stage 2: Provide information about the Project and the proposed assessment methodology to the RAPs;
- Stage 3: Acquire information regarding Aboriginal cultural values associated with the Project through RAP consultation and fieldwork; and
- Stage 4: Produce a draft ACHAR to be issued to all RAPs for their consideration.

Consultation undertake for Stage 1 to Stage 4 is summarised in **Table 6–34.**

Table 6–34 Aboriginal Community Consultation Summary

Stage	Actions	Outcome
1	Two advertisements were placed in the 'Riverine Grazier' on 15 August 2023 and 27 September 2023 and two in the Pastoral Times on 16 August 2023 and 26 September 2023 to gather expressions of interest from Aboriginal parties A letter seeking information from various agencies was sent on 8 August 2023	The following individuals/groups registered to be consulted and constitute the RAPs for the Project: • Deniliquin Local Aboriginal Land Council • Girragirra Murun Aboriginal Corporation • Griffith Local Aboriginal Land Council • Hay Local Aboriginal Land Council • Moama Local Aboriginal Land Council • Pappin Family Aboriginal Corporation • Southern West Yiradyuri Clans, Land, Water and Sky Country Aboriginal Corporation • Wakool Indigenous Corporation • Yarkuwa Indigenous Knowledge Centre • John Winch • Neville Whayman

Stage	Actions	Outcome
		• Nicholas Smith • Patricia Winch • Thomas Dahlstrom • Verna Pappin • Wingarra Wilay
2	Detailed Project information was provided in the assessment methodology issued to RAPs between the 3 October and 24 October 2023 Information provided included the archaeological context of the Project Area, a description of the proposed survey and asked whether there were any cultural values that should be considered in the assessment. Each RAP had 28 days to review on the assessment methodology	Interest in participating in the survey program was received from several RAPs One response was received from the Wakool Indigenous Corporation suggesting the predicted archaeological "mounds" features are unlikely to be encountered in the Project Area
3	The field survey was undertaken over multiple surveys between November 2023 and February 2024 with the assistance of representatives from the RAP groups A total of eight RAPs were invited to participate in the field survey each day An additional survey of the site entrance in the north-eastern area was undertaken on 23 February 2024, to assess impact to sites PSF 10 and PSF 11	Hay Local Aboriginal Land Council requested a buffer of 200 m should be provided to recorded PADs, a buffer of 100 m should be provided to recorded hearths, and a buffer of 50 m provided to CMTs Hay LALC, Nari Nari Tribal Council and Deniliquin LALC requested no test excavations be undertaken prior to the Project receiving development consent, to avoid unnecessary disturbance to identified Aboriginal heritage sites During the additional survey, discussions were had with Hay LALC regarding their suggested mitigation measures for PSF 10 and PSF 11. Hay LALC noted they prefer disturbance to occur on an existing track, instead of micro-siting around the sites and creating a new road through undisturbed Country. It was requested by Hay LALC that, should any subsurface disturbance associated with the site entrance construction occur within the buffers of PSF 10 and PSF 11, monitoring by their representatives should be undertaken to mitigate impacts to these sites. This is further detailed in **Section 6.5.4**
4	The draft ACHAR was sent to RAPs on 29 March 2024 with a closing period of 26 April 2024. The letter attached to the ACHAR invited RAPs to review the ACHAR and provide any comments on the cultural values of the sites recorded and the broader Project Area.	No comments were received from the RAPs relating to the ACHAR

6.5.2.2 Environmental Factors

An understanding of the environmental factors (including landscape features and landforms) is prerequisite in any Aboriginal archaeological investigation. This will inform the assessment of likely extent and nature of any Aboriginal cultural material in the Project Area. The natural geomorphic processes of erosion and/or deposition, as well as the historical and current land uses, influence the degree to which material cultural remains are retained in the landscape as archaeological sites; and the degree to which they are preserved, revealed and/or conserved in present environmental settings.

The Project Area is located around 40 km south of the Murrumbidgee River, in an area generally used by Aboriginal people in winter when there was more surface water resulting from winter rainfall and/or floodwaters pushed out from the rivers along the normally dry creeks / palaeochannels. In the dryer summer months Aboriginal activity was concentrated around the Murrumbidgee River.

The Project Area is within the Riverina and Hay Plain which has a flat landscape consisting of clays, silts, and sands that has historically been subject to a consistent cycle of flooding.

The Riverina and Hay Plains contain extensive Aboriginal cultural deposits, one of the prominent physical features are the campsite ovens and/or mounds. The ovens and /or mounds formed central components of Aboriginal campsites on the Riverina and Hay Plains and were most likely used to cook (ovens) and potentially grow food (mounds). Mounds contain archaeological material such as ash, charcoal, faunal remains stone tools and occasionally burials, and represent former areas of congregation by Aboriginal people. Mounds are located across the Murrumbidgee subregion in vast quantities and vary in their height and length from centimetres to metres.

Saltbush scrubland with old man saltbush is present across most of the Project Area. Consultation with the RAPs determined this is used for medicinal purposes and in areas lacking wood supplies, old man saltbush can also be used as a source of wood for fires. There are significant cultural values associated with the land in the Murrumbidgee Province. Aboriginal Dreaming is inextricably linked to the land and common Dreaming sites along the Hay Plains may include landscape features such as bends in the river, waterholes, palaeochannels, lakes, hills, trees or other minor features.

Disturbance to any Aboriginal sites across the Project Area in the past is likely to be associated with historical impacts associated with grazing, flooding, erosion, deposition and/or wind. **Section 2.4** provides further details on the topography, geology, hydrology, vegetation and land use of the Project Area which are critical considerations in understanding the Aboriginal cultural heritage of an area.

6.5.2.3 Previously Recorded Sites

Table 6–35 summarises the results of the desktop searches undertaken to identify previously recorded Aboriginal heritage sites within and adjacent to the Project Area.

The AMHIS data indicated three existing known sites were located within the Project Area, these sites consist of artefacts, hearth and a Culturally Modified Tree (CMT). The presence of a variety of site types across the Project Area indicates a variety of complex land uses by Aboriginals.

Table 6–35 Aboriginal Heritage Desktop Search Results

Name of database searched	Type of search	Results
Commonwealth Heritage Listings	Hay LGA Edward River LGA	No places listed on either the National or Commonwealth heritage lists are located within the Project Area
National Native Title Claims Search	NSW	The Project Area is not located within the boundaries of a native title claim or determination
AHIMS	Project Area	One site (Site ID 48-6-0166) identified within the Disturbance Footprint and a further two within the Project Area (Site ID: 48-6-0164 and 48-6-0165)
Local Environmental Plan	Hay LEP Edward River LGA	No previously recorded Aboriginal places are identified near the Project Area

6.5.3 Impact Assessment

6.5.3.1 Predictive Modelling

To inform scope and extent of the cultural heritage survey(s) a localised landscape based predictive model was developed to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the Project Area and where they are more likely to be located. The location of Aboriginal cultural heritage sites is affected by the availability of and/or accessibility to a range of natural resources including permanent water sources, plant and animal foods; stone resources and rock shelters; as well as by their general proximity to other sites/places of cultural/mythological significance. Consequently, sites tend to be found along permanent and ephemeral water sources, along access or trade routes or in areas that have good flora/fauna resources and appropriate shelter.

Results of the predictive modelling undertaken for the ACHAR indicated:

- Stone artefact sites are likely to be located across a variety of soil and geomorphological areas;

- Aboriginal occupation sites are likely to be concentrated in proximity to current or former watercourses (palaeochannels);
- Aboriginal sites are likely to include instances of mounds, hearth, artefact, burial, and Potential Archaeological Deposit (PAD) features;
- Mound, heath, burial, and PAD features are likely to be concentrated in areas associated with palaeochannel landforms and in areas of ephemeral lakes and swamps;
- Aboriginal Ancestral Remain (AAR) sites are likely to be located within raised sandy landforms found in association with palaeochannel features as well as within mound features;
- Archaeological remains associated with low lying clay-based environments are likely to be limited to surface artefact sites;
- CMTs may be present in areas of mature vegetation. Due to the limited presence of tree species across the Project Area, CMTs are likely to be rare within the Project Area; and
- Disturbance to sites are likely to be associated with the impact of grazing, flooding, erosion, and wind.

Predictive modelling confirmed the Project Area has moderate to high potential to contain Aboriginal sites.

6.5.3.2 Field Survey

The purpose of the field survey was to identify any previously undetected Aboriginal sites, places or areas with cultural heritage values and evaluate the possible need for further investigation. The scope and extent of the cultural heritage survey(s) was based on the results of predictive modelling completed for the Project (refer **Section 6.5.3.1**). In accordance with the Code of Practice, the field survey(s) was to record the material traces and evidence of Aboriginal land use that are:

- Visible at or on the ground surface;
- Exposed in section or visible as features (e.g. rock shelters with rock-art); and
- Areas where it can be inferred that, although not visible, material traces have a high likelihood of being present under the ground surface.

The field survey was delineated into eight survey units across the Project Area based on the level of Aboriginal heritage sensitivity. Sample transects were completed across these survey units, using a combined method of pedestrian and driving survey.

A total of 111 new Aboriginal cultural heritage sites were identified during field surveys**. Table 6–36** summarises the types of Aboriginal cultural heritage sites recorded during the survey of the Project Area and **Figure 6-7** shows the location of the sites. All sites have now been registered on the AHIMS. No AAR were recorded within the Project Area.

Table 6–36 Aboriginal Cultural Heritage Sites Recorded During the Site Survey

Site Type	Number
Artefact	35
CMT	31
Artefact, hearth, PAD	15
Artefact, PAD	10
Artefact, Hearth	11
Hearth	4
PAD	2
PAD, CMT	1
Earth Mound, Hearth	1
Hearth, CMT	1
Total	**111**

[PAGE LEFT INTENTIONALLY BLANK FOR]

Figure 6-7 Aboriginal Heritage Sites

[Removed from public display]

6.5.3.3 Significance Assessment

Significance forms the basis for the management of Aboriginal cultural heritage. Aboriginal cultural heritage sites are assessed under the following categories of significance, derived from the 'International Council on Monuments and Sites (ICOMOS) Burra Charter (Australian ICOMOS, 1999)':

- Social or cultural value to contemporary Aboriginal people;
- Historical value;
- Scientific/archaeological value; and
- Aesthetic value.

The Project Area forms a component of a cultural landscape associated with Aboriginal use of the Riverina Murray Region for several cultural and subsistence-based activities. The sites vary in type and density and are reminders of the traditional use of the area by Aboriginal people and are a tangible link to their ancestors. No specific areas of social or cultural significance have been identified; however, it is understood that all Aboriginal heritage sites retain significance for the Aboriginal community as they provide physical evidence of past Aboriginal use and occupation of the area.

Historic values refer to the association of the place with aspects of Aboriginal history. The ACHAR has not identified a specific person or event of historic value associated with the Project Area.

Sites within the Project Area have been evaluated as being of low to moderate and unknown scientific significance. Sites with low scientific significance include isolated finds, low-density artefact scatters and CMTs. These sites are likely to represent movement though the area rather than intensive occupation of the area. Sites with a moderate scientific significance include artefact sites and hearth features. These sites will provide an insight into local occupation and use of the landscape. Sites with an unknown scientific significance include PADs and earth mounds. These sites will require further investigation though archaeological testing to determine the level of significance.

Aesthetic values refer to the sensory, scenic, architectural, and creative aspects of the place. the Project Area has some aesthetic values associated with being part of one the flattest landscapes in Australia, it been assessed as having low aesthetic significance due to absence of landmark features within the landscape.

6.5.3.4 Likely Impacts

A total of 114 sites were identified within the Project Area; comprised of 111 sites identified during field surveys, and three previously recorded sites in the Project Area.

An assessment of the likely impacts on these sites was completed using the site extents in conjunction with the following site buffer zones, established further to consultation with Hay and Deniliquin LALC:

- 200 m has been included on recorded PADs and Earth Mounds;
- 100 m has been included on recorded hearths; and
- 50 m to CMTs (however no CMTs were recorded within the Project Area).

The assessment categorised the likely impacts on all sites in the Project Area based on the following impact definitions adopted for the Project:

- High: Site extent is within disturbance footprint;
- Moderate: Buffer of site extent is within the disturbance footprint; and
- Low: Site (including buffer) is outside of the disturbance footprint.

Significant project design refinements to specifically amend the Project Disturbance Footprint as described in **Section 2.7** to avoid Aboriginal heritage impacts, avoided the potential for direct impacts on 15 sites. This includes 10 sites reduced from high to moderate impact, six sites from a high to low impact and a further six sites from a moderate to a low.

There are to 53 sites (both extents and buffer zones) within the Disturbance Footprint, with 17 of these directly impacted (high impact) and a further 36 sites with moderate impacts. The remaining sites are outside the Disturbance Footprint and have a low potential for impact.

The Aboriginal heritage sites which will be impacted by the Disturbance Footprint (i.e. high and moderate impacts) are shown in **Table 6–37.**

Table 6–37 Aboriginal Heritage Impact Summary

Site ID / AHIMS No.	Site Type	Significance	Potential for Impact
48-6-0166	Artefact, Hearth	Moderate	High
PSF 04	Artefact, Hearth, PAD	Moderate	High
PSF 05	Artefact (multiple), Hearth, PAD	Moderate	High
PSF 12	Artefact	Low	High
PWF SUB 01	Artefact	Moderate	High
PWF SUC 04	Artefact, Hearth, PAD	Moderate	High
PWF SUC 12	Artefact, Hearth	Moderate	High
PWF SUD 04	PAD, CMT	Low / Unknown	High
PWF SUD 06	CMT	Low	High
PWF SUG 08	Artefact, Hearth, PAD	Moderate	High
PWF SUG 09	Artefact, Hearth, PAD	Moderate	High
PWF SUG 10	Artefact, Hearth, PAD	Moderate	High
PWF SUG 13	Artefact, Hearth	Moderate	High
PWF SUG 18	Artefact	Low	High
PWF SUG 20	Artefact, Hearth, PAD	Moderate	High
PWF SUG 31	Artefact, Hearth, PAD	Moderate	High
PWF SUG 35	Artefact	Low	High
PSF 02	PAD	Unknown	Moderate
PSF 03	Artefact (multiple), PAD	Moderate	Moderate
PSF 06	Artefact (multiple), Hearth, PAD	Moderate	Moderate
PSF 10	Artefact (multiple), PAD	Low / Unknown	Moderate
PSF 11	Artefact (multiple), PAD	Moderate	Moderate
PWF SUA 02	Hearth, CMT	Moderate	Moderate
PWF SUA 04	Artefact (multiple), hearth	Moderate	Moderate
PWF SUB 09	Artefact (multiple), Hearth, PAD	Moderate	Moderate
PWF SUB 12	PAD	Unknown	Moderate
PWF SUC 10	Artefact (multiple), hearth	Moderate	Moderate
PWF SUC 13	Artefact (multiple), hearth	Moderate	Moderate
PWF SUC 14	CMT	Low	Moderate
PWF SUC 15	CMT	Low	Moderate
PWF SUC 16	CMT	Low	Moderate
PWF SUC 17	CMT	Low	Moderate
PWF SUC 18	CMT	Low	Moderate
PWF SUC 19	CMT	Low	Moderate
PWF SUC 20	CMT	Low	Moderate
PWF SUC 21	CMT	Low	Moderate
PWF SUD 01	CMT	Low	Moderate
PWF SUD 03	CMT	Low	Moderate

Site ID / AHIMS No.	Site Type	Significance	Potential for Impact
PWF SUD 12	Earth Mound, Hearth	Moderate	Moderate
PWF SUD 16	Hearth	Moderate	Moderate
PWF SUD 19	CMT	Low	Moderate
PWF SUD 20	CMT	Low	Moderate
PWF SUE 04	CMT	Low	Moderate
PWF SUG 01	Artefact(multiple), PAD	Low	Moderate
PWF SUG 02	Artefact(multiple), PAD	Low	Moderate
PWF SUG 06	Artefact(multiple), PAD	Moderate	Moderate
PWF SUG 07	Artefact(multiple), PAD	Low	Moderate
PWF SUG 15	Artefact (multiple), Hearth, PAD	Moderate	Moderate
PWF SUG 22	Artefact, Hearth	Moderate	Moderate
PWF SUG 23	Artefact (multiple), PAD	Low	Moderate
PWF SUG 24	Hearth	Moderate	Moderate
PWF SUG 32	Artefact (multiple), Hearth, PAD	Moderate	Moderate
PWF SUH 01	CMT	Low	Moderate

6.5.3.5 Port to Site Route

The proposed route for OSOM vehicles from the Port of Adelaide to the Project Area entries has been assessed using swept path analysis. The analysis identified several locations in South Australia (T01 to T08) and NSW (T09 to T011 and S01 to S09) which will require road modifications to accommodate OSOM vehicle movements as summarised in **Section 3.4.4** and documented in the appendix to the Traffic Impact Assessment provided in **Appendix O.** The locations have been assessed for potential Aboriginal heritage constraints through desktop assessment. Option 1 and Option 2 through Broken Hill have not been included in this assessment as consultation with Broken Hill Council indicates that these route options are not preferred.

The Taa Wika database is part of the Aboriginal Affairs and Reconciliation's (AAR) central archives and provides information relating to registered Aboriginal sites and objects in South Australia. An extensive search of the Taa Wika database was undertaken on 18 April 2024 at the locations within South Australia where road modifications are required. The AAR advised that the central archives do not contain records for Aboriginal heritage within the activity area and a 20 m buffer of the road modifications. The South Australian section of the transport route has been subject to significant disturbance associated with the existing road infrastructure and is considered unlikely to contain unidentified Aboriginal objects. Any relevant assessments in relation to the road modifications in South Australia will be undertaken in accordance with the requirements of relevant South Australian regulatory authorities.

Within NSW, a search of the AHIMS register was conducted on 16 April 2024. There are no Aboriginal heritage sites recorded within the activity areas for road modifications within the NSW transport section. Potential Aboriginal heritage constraints have been identified with T09 (Option 3 & 4 through Broken Hill) and S07. T09 (Option 3 & 4 through Broken Hill) requires the construction of a new access track which will generally follow the alignment of existing farm tracks but will require widening to a nominal width of 5.5 m. Someva advises that the road modifications will be located on rural land and recorded AHIMS sites are recorded in the general vicinity. The road modifications would only occur following a Due Diligence procedure to determine Aboriginal heritage as described in **Section 3.4.5.3.**

Someva also advises that the road modifications associated with S07 are within an area of moderate to high sensitive Aboriginal heritage and in the general vicinity of recorded AHIMS sites. The closest AHIMS site is PSF 11 in which its buffer is approximately 240 m from the works as shown in **Figure 6-7.** The road modifications would only occur following a Due Diligence procedure to determine Aboriginal heritage.

The ACHMP described in **Section 6.5.4** will include final detail following detailed design on any Aboriginal heritage sites impacted by the final OSOM route from Port of Adelaide.

6.5.4 Mitigation and Management

An Aboriginal Cultural Heritage Management Plan (ACHMP) will be developed in consultation with RAPs and relevant regulators prior to the commencement of construction.

The following mitigation measures will be incorporated into the ACHMP and will be implemented throughout construction, operation and or decommissioning:

- Ongoing Project design refinements including the micro-siting of Project elements will be undertaken to avoid disturbing sites (in particular PAD, hearth and CMT sites) where practical;
- Management and mitigation consistent with **Table 6–38**;
- To avoid unnecessary disturbance to Aboriginal heritage sites the Hay LALC, Nari Nari Tribal Council, and Deniliquin LALC have requested Archaeological test or salvage excavation be undertaken following Development Consent being granted for the Project;
- The development of a detailed test and salvage excavation methodology for areas of PADs or Earth Mounds which may be subject to harm as part of clearing of the disturbance footprint;
- Consideration will be given to the building up of the access road within the extent and buffer zone of sites PSF 10, PSF 11 and PSF 12 in preference to grading or scraping the access road. Should any subsurface disturbance associated with the site entrance be required within the buffer zone of PSF 10 and PSF 11 and the site extent of PSF 12, monitoring will be required by representatives from the Hay LALC;
- Measures to manage the relocation of any archaeological material salvaged during the Project away from development activities;
- Appropriate heritage exclusion fencing and signage to be installed to protect and conserve Aboriginal heritage sites not impacted by the Project (i.e. all remaining sites not included in **Table 6–37** with a potential for indirect impacts);
- An Aboriginal Heritage Unanticipated Finds Protocol (AHUFP) will be developed. The AHUFP will be implemented during construction, operation and decommissioning of the Project. If items of potential Aboriginal heritage significance are discovered during the Project, then the AHUFP will be enacted;
- Inductions for work crews will include a cultural heritage awareness procedure to ensure they recognise Aboriginal artefacts. Consultation with the Traditional Owners regarding the Aboriginal cultural heritage induction materials will be considered; and
- Consultation with the Aboriginal community regarding the Project will be ongoing in accordance with the Consultation Guidelines and the ACHMP. The RAPs will be involved in any cultural heritage works conducted under the ACHMP.

Table 6–38 summarises management and mitigation measures for all sites where high or moderate impacts are anticipated from **Table 6–37.**

Table 6–38 Aboriginal Heritage Management Summary

Site ID	Site Type	Significance	Potential for Impact	Management Measures
48-6-0166	Artefact, PAD	Moderate	High	Excavation and Salvage
PSF 02	PAD	Unknown	Moderate	Test Excavation to confirm significance, micro-siting where practical
PSF 03	Artefact, Hearth, PAD	Moderate	Moderate	Excavation and Salvage
PSF 04	Artefact (multiple)	Moderate	High	Excavation and Salvage

Site ID	Site Type	Significance	Potential for Impact	Management Measures
PSF 05	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PSF 06	Artefact (multiple, Hearth, PAD	Moderate	Moderate	Excavation and Salvage
PSF 10	Artefact (multiple), PAD	Low/ Unknown	Moderate	Excavation and Salvage
PSF 11	Artefact (multiple), PAD	Moderate	Moderate	Excavation and Salvage
PSF 12	Artefact (multiple),	Low	High	Excavation and Salvage
PWF SUA 02	Hearth, CMT	Moderate	Moderate	Excavation and Salvage
PWF SUA 04	Artefact (multiple), Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUB 01	Artefact (multiple)	Moderate	High	Excavation and Salvage
PWF SUB 09	Artefact (multiple), Hearth, PAD	Moderate	Moderate	Excavation and Salvage
PWF SUB 12	PAD	Unknown	Moderate	Test Excavation to confirm significance, micro-siting where practical
PWF SUC 04	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PWF SUC 10	Artefact (multiple), Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUC 12	Artefact (multiple), Hearth	Moderate	High	Excavation and Salvage
PWF SUC 13	Artefact (multiple), Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUD 04	PAD, CMT	Unknown	High	Test Excavation to confirm significance, micro-siting where practical
PWF SUD 12	Earth Mound, Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUD 16	Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUG 01	Artefact (multiple), PAD	Low	Moderate	Excavation and Salvage
PWF SUG 02	Artefact (multiple), PAD	Low	Moderate	Excavation and Salvage
PWF SUG 06	Artefact (multiple), PAD	Moderate	Moderate	Excavation and Salvage
PWF SUG 07	Artefact (multiple), PAD	Low	Moderate	Excavation and Salvage
PWF SUG 08	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PWF SUG 09	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage

Site ID	Site Type	Significance	Potential for Impact	Management Measures
PWF SUG 10	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PWF SUG 13	Artefact (multiple), Hearth	Moderate	High	Excavation and Salvage
PWF SUG 15	Artefact (multiple), Hearth, PAD	Moderate	Moderate	Excavation and Salvage
PWF SUG 18	Artefact (multiple	Low	High	Excavation and Salvage
PWF SUG 20	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PWF SUG 22	Artefact, Hearth,	Moderate	Moderate	Excavation and Salvage
PWF SUG 23	Artefact (multiple), PAD	Low	Moderate	Excavation and Salvage
PWF SUG 24	Hearth	Moderate	Moderate	Excavation and Salvage
PWF SUG 31	Artefact (multiple), Hearth, PAD	Moderate	High	Excavation and Salvage
PWF SUG 32	Artefact (multiple), Hearth, PAD	Moderate	Moderate	Excavation and Salvage
PWF SUG 35	Artefact (isolated)	Low	High	Excavation and Salvage

[PAGE LEFT INTENTIONALLY BLANK FOR]

Figure 6-8 Aboriginal Heritage Sites by Management Measure

[Removed from public display]

6.6 Historic Heritage

6.6.1 Background

A Historic Heritage Assessment (HAA) has been prepared for the Project by Environmental Resources Management Australia Pty Ltd (ERM).

The HHA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5.** The HHA is summarised below and included in **Appendix L.**

The aim of the HHA is to assesses the impact to historic heritage having regard to the 'NSW Heritage Manual' (NSW Heritage Manual) (Heritage Office, 1996).

6.6.2 Methodology

6.6.2.1 Assessment Approach

The HHA has been undertaken in accordance with guidelines set out in the NSW Heritage Manual and meets the following objectives:

- To identify historical heritage resources within the Project Area, including areas of archaeological potential and built heritage values;
- To assess the significance of any recorded historical heritage items or areas;
- Determine whether the Project is likely to cause harm to recorded historical heritage items or areas; and
- Provide management recommendations and options for mitigating impact.

Field surveys aimed to identify any potential previously unidentified heritage and/or archaeological items. Field surveys were undertaken in three stages from November 2023 to February 2024 and used a team of two to three heritage consultants.

Previously Recorded Sites

A desktop search of the following databases was conducted on 1 November 2023 to identify any potential previously recorded heritage items within a 2 km buffer of the Project Area. The results are shown in **Table 6–39.**

Table 6–39 Historic Heritage Desktop Search Results

Name of database searched	Type of search	Results
World Heritage Listing	NSW	There are no WHL places within, or in close proximity to the Project Area
National and Commonwealth Heritage Listings	Hay LGA Edward River LGA	There are no National and Commonwealth Heritage Listings places within or in close proximity to the Project Area
State Heritage Listings	Hay LGA Edward River LGA	There are no State Heritage Register (SHR) listed items within the Project Area. The closest SHR listed items are the Royal Mail Hotel located 18 km south- west and Black Swamp located 24 km south-west of the Project Area.
Section 170 Heritage Registers	Hay LGA Edward River LGA	As the Project Area does not coincide with any NSW government property, S170 register searches were not required
Conargo and Hay LEPs	Hay LGA Edward River LGA	There are no locally listed heritage sites within the Project Area

6.6.2.2 Historic Context

The Project Area has been used for farming and agricultural purposes since early exploration of the Murrumbidgee Region commenced in the early 1800s. The non-Aboriginal history of the area is associated with exploration and transportation developments. The township of Hay (previously known by Europeans as Lang's Crossing place) was established on the Murrumbidgee River to support development of the wider region.

The Project Area includes two large operational properties on West Burrabogie (north) and Wargam Estate (south). Between the late nineteenth century to the early twentieth century, residences associated with West Burrabogie and Wargam Estate properties as well as outbuildings, sheds, and other agricultural improvements including dams, wells, mills, tanks, yards, access tracks and fences were established. The main residences and structures associated with these properties will not be impacted by the Project.

However, it is possible that discrete historical features could be present in the Project Area including rubbish pits associated with early rubbish disposal, postholes associated with light structures or former fence lines and the foundation remains of the former late nineteenth to early twentieth century residence and hut of Wargam Estate.

6.6.3 Impact Assessment

There are no known built heritage items within the Project Area or within its immediate vicinity and no direct and/or indirect impacts to built heritage items (including significant view lines) will be associated with the Project. As a result, there is unlikely to be any potential impacts to any built heritage items associated with the Project and no further assessment of significance associated with known or potential impacts to built heritage items in accordance with the Assessing Significance for Historical Archaeological Sites and 'Relics'' *(*Heritage Council of NSW, 2009) is required.

There is a low potential for archaeological resources to be present within the Project Area, these resources are likely to be discrete historical features, including rubbish pits and postholes as well as remains of the former late nineteenth to early twentieth century residence and hut of Wargam Estate.
An assessment of the significance completed in accordance with the guiding document 'Assessing Significance for Historical Archaeological Sites and 'Relics' *(*Heritage Council of NSW, 2009) determined these resources are unlikely to provide a new understanding of the history of the local area that is not available from other sources and accordingly these resources will have a low archaeological research potential and low archaeological heritage significance.

6.6.3.1 Port to Site Route

The proposed route for OSOM vehicles from the Port of Adelaide to the Project Area entries has been assessed using swept path analysis. The analysis identified several locations in South Australia (T01 to T08) and NSW (T09 to T011 and S01 to S09) which will require road modifications to accommodate OSOM vehicle movements as summarised in **Section 3.4.4** and documented in the appendix to the Traffic Impact Assessment provided in **Appendix O.** The locations have been assessed for potential historic heritage constraints through desktop assessment. Option 1 and Option 2 through Broken Hill have not been included in this assessment as consultation with Broken Hill Council indicates that these route options are not preferred.

A desktop assessment approach was utilised and included a search of the South Australian Heritage Places Database and the NSW Heritage Databases listed in **Table 6–40** on 16 April 2024. Where relevant, a review of existing literature was also conducted, including existing historic heritage assessments and management plans.

South Australia (T01 to T08)

A search of the South Australian Heritage Places Database found no historic heritage constraints for the road modifications associated with T01 to T07.

T08, Burra (Copperhouse Street and West Street)

A historic heritage constraint has been identified at T08 (Copperhouse Street and West Street intersection) located in Burra, 160 km north-east of Adelaide along the Barrier Highway. The road modifications associated with T08 include tree trimming and/or tree removal and laying temporary hardstand material where the truck and trailer wheels leave the existing road surface.

Burra has been recognised as being a nationally significant heritage area under the National Heritage List (Place ID: 106304) and as a State Heritage Area under the South Australian Heritage Register (State Heritage ID: 16183). Burra is only one of two areas in Australia that reflect the successful transplantation of Cornish mining systems to Australia, and the development of mining settlements that are an important expression of Australian identity and experience (Swanbury Penglase, 2021).

The swept path analysis also shows that the tree trimming and/or removal is proposed to occur within the curtilage of a State Heritage Place under the South Australian Heritage Register to accommodate the transport of blades.

Historic heritage listings associated with T08 are summarised in **Table 6–40**.

Table 6–40 Historic heritage listings associated with T08

Heritage List	Item Name	Place ID
National Heritage List	Australian Cornish Mining Sites: Burra	106304
South Australian Heritage Register	Burra State Heritage Area	16183
South Australian Heritage Register	Burra Railway Station (Station Buildings, Water Columns and Tank)	10009

Statutory Considerations

The EPBC Act outlines the legal framework for the protection and management of nationally and internationally important flora, fauna, ecological communities, and heritage places. The key sections of the EPBC Act to the assessment within this section are:

- Part 3, Division 1: Requirements Relating to Matters of National Environmental Significance (MNES);
- Section 15B: Requirement for approval for activities with a significant impact on National Heritage values; and
- Section 341ZC: Requirement to minimise adverse impacts on the heritage values.

The 'Significant Impact Guidelines 1.1 – Matters of National Environmental Significance' (SIG 1.1) (Commonwealth of Australia, 2013) provides the guidance on determining whether an action is likely to have a significant impact upon MNES which are protected under national environmental law. These guidelines outline a 'self-assessment' process, including criteria to assist in deciding whether referral may be required. **Table 6–41** provides the self-assessment considerations and a response prepared by the Applicant.

Relevant management plans which have been reviewed as part of this self-assessment include:

- 'Australian Cornish Mining Sites: Burra Conservation Management Plan' (Burra CMP) (Swanbury Penglase, 2021); and
- 'Street Trees in Burra North, Identification and Recommendations for Management' (Oxigen Landscape Architects, 2007).

Table 6–41 Historic Heritage Assessment of Impact – SIG 1.1 Considerations Burra

SIG 1.1 Considerations	Response
Are there any matters of national environmental significance located in the area of the proposed action (noting that 'the area of the proposed action' is broader than the immediate location where the action is undertaken; consider also whether there are any matters of national environmental significance adjacent to or downstream from the immediate location that may potentially be impacted)?	Yes. The action is located within the town of Burra which is listed for its National heritage values (Place ID: 106304)
Considering the proposed action at its broadest scope (that is, considering all stages and components of the action, and all related activities and infrastructure), is there potential for impacts, including indirect impacts, on matters of national environmental significance?	No. The activity area is located within 'Precinct 10' (Rail / Bon Accord Area) of the Burra CMP. Page 237 of the Burra CMP maps important tree groupings and street trees within this precinct and the trees proposed for trimming and/or removal have not been identified. The trees proposed for trimming and/or removal further have not been identified in Street Trees in Burra North (2007) document. Therefore, the tree trimming and/or removal as part of the action are not considered contributory to the loss of National heritage values of Burra. The hardstand proposed is temporary and is required for the construction phase only.
Are there any proposed measures to avoid or reduce impacts on matters of national environmental significance (and if so, is the effectiveness of these measures certain enough to reduce the level of impact below the 'significant impact' threshold)?	No mitigation measures are proposed as there are no impacts to National heritage values.
Are any impacts of the proposed action on matters of national environmental significance likely to be significant impacts (important, notable, or of consequence, having regard to their context or intensity)?	There is no potential for impacts to Burra's National heritage values.

This self-assessment has found that the activity associated with T08 would not result in the identified National heritage values of the "Australian Cornish Mining Sites: Burra" being lost, degraded or damaged or notably altered, modified, obscured or diminished. The activity would not have a significant impact on the heritage values of the National Heritage Place, and therefore, an EPBC Referral is not required.

Any relevant assessments in relation to the road modifications in South Australia will be undertaken in accordance with the requirements of relevant South Australian regulatory authorities.

NSW (T09 to T11 and Site Entries)

A search of the NSW Heritage Databases found no historic heritage constraints for the road modifications associated with T011 and S01 to S09.

Historic heritage constraints have been identified in relation to the road modifications located in Broken Hill (T09 and T10).

The City of Broken Hill LGA was listed on the National Heritage List (NHL) on 20 January 2015 (Place ID: 105861). The City of Broken Hill includes the whole urban area of Broken Hill, the surrounding non-urban areas containing extensive areas in the course of regeneration, the extensive mullock heaps, tailings, skims and slagheaps along the Line of Lode, the remaining gossan outcrops and mining leases.

The City of Broken Hill meets the threshold for National heritage value under Criteria A to Criteria H. An extract of the NHL statement of significance for the City of Broken Hill is provided below:

> *"The City of Broken Hill has outstanding significance to the nation for its role in creating enormous wealth, for its long, enduring and continuing mining operations, and the community's deep and shared connection with Broken Hill as the isolated city in the desert, its outback landscape, the planned design and landscaping of the town, the regeneration areas and particularly the physical reminders of its mining origins [ongoing since 1883] …The Broken Hill zinc-lead-silver ore deposit is*

one of the world's largest ore bodies and contains an extraordinary array of minerals. It is geologically complex and has national scientific significance."

T10 requires a temporary gravel track to be built to link the end of Chettle Street to the Barrier Highway / Argent Street. Road modifications associated with T10 are within a small portion of the curtilage of Mining Precinct 9 listed under the Broken Hill LEP 2013 (Item No 310-341).

Historic heritage listings associated with T09 and T10 are summarised in **Table 6–42.**

Table 6–42 Historic heritage listings associated with T09 and T10

Heritage Register	Item Name	Item Number
National Heritage List	City of Broken Hill	105861
Broken Hill LEP 2013	Mining Precinct 9	310-341

Mining Precinct 9, Broken Hill NSW

Information relating to historic heritage within the Mining Precinct 9 is provided in the 'Broken Hill North Historic and Aboriginal Heritage Assessment and Statement of Heritage Impact' (OzArk, 2017) and the 'Operational Historic Heritage Management for the Broken Hill North' (R.W Corkery & Co, 2022).

The closest registered site of heritage significance is PN-73 located approximately 30 m from the proposed road modifications (R.W Corkery & Co, 2022). Details of PN-73 and its location are shown in **Table 6–43**.

Table 6–43 Nearby Registered Site of Heritage Significance (PN-73)

No.	Item	Description	Image
PN-73	Drainage Channel [McCulloch Stormwater Drain]	Constructed around 1948 in conjunction with the road services, the drainage canal is 4 m wide and 2 m deep with sloping stone side walls constructed without mortar. It is a general stormwater drain and has been braced in some sections with railway lines across the top. Numerous drainage pipes lead into this drain which are in excellent condition and appear to be functional.	

Source: OzArk (2017) *and R.W Corkery & Co* (2022)

Statutory Considerations

Table 6–44 provides the SIG 1.1 self-assessment considerations and a response prepared by the Applicant relating to the National heritage values of the City of Broken Hill.

This self-assessment has found that the activities associated with T09 and T10 would not result in the identified National heritage values of the City of Broken Hill being lost, degraded or damaged or notably altered, modified, obscured or diminished. The activity would not have a significant impact on the heritage values of the National Heritage Place, and therefore, an EPBC Referral is not required.

Table 6–44 Historic Heritage Assessment of Impact – SIG 1.1 Considerations Broken Hill

SIG 1.1 Considerations	Response
Are there any matters of national environmental significance located in the area of the proposed action (noting that 'the area of the proposed action' is broader than the immediate location where the action is undertaken; consider also whether there are any matters of national environmental significance adjacent to or downstream from the immediate location that may potentially be impacted)?	Yes. The action is located within the City of Broken Hill which is listed for its National Heritage Values (Place ID: 105861).
Considering the proposed action at its broadest scope (that is, considering all stages and components of the action, and all related activities and infrastructure), is there potential for impacts, including indirect impacts, on matters of national environmental significance?	No. The road modifications associated with T09 include the construction of a new access track which will generally follow the alignment of existing farm tracks but will require widening to a nominal width of 5.5 m. T10 includes the construction of a temporary gravel track. These actions are not considered contributory to the loss of National heritage values of Broken Hill.
Are there any proposed measures to avoid or reduce impacts on matters of national environmental significance (and if so, is the effectiveness of these measures certain enough to reduce the level of impact below the 'significant impact' threshold)?	No mitigation measures are proposed as there are no impacts to National heritage values.
Are any impacts of the proposed action on matters of national environmental significance likely to be significant impacts (important, notable, or of consequence, having regard to their context or intensity)?	There is no potential for impacts to National heritage values of Broken Hill.

6.6.4 Mitigation and Management

The following mitigation and management measures will be adopted during the construction and decommissioning phase of the Project to ensure minimal impacts on historic heritage:

- An Historic Heritage Unanticipated Finds Protocol (HHUFP) will be developed. The HHUFP will be implemented during construction, operation and decommissioning of the Project. If items of potential historic heritage significance are discovered during the Project, then the HHUFP will be enacted;
- All construction personnel and contractors will be briefed on the requirements of the Heritage Act and the HHUFP prior to the commencement of works; and
- Any relevant assessments in relation to the road modifications in South Australia will be undertaken in accordance with the requirements of relevant South Australian regulatory authorities.

6.7 Soils

This section discusses potential impacts to soil during construction, operation and decommissioning of the Project. Appropriate mitigation measures are identified to ensure potential impacts to soil resulting from the Project are avoided and / or minimised.

A Soils, Land and Agriculture Impact Assessment (SLAIA) has been prepared for the Project by Minesoils Pty Ltd (Minesoils). The SLAIA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

This section and the SLAIA included in **Appendix M**, addresses the SEAR under “key issues” “Land” which required a soil survey to determine the soil characteristics and consider the potential for erosion to occur.

6.7.1.1 Landform, Soils and Geology

The Project Area is located within the Murrumbidgee Catchment around 40 km south of the Murrumbidgee River and is characterised by an almost flat topography dominated by open plains of native grasslands and semi-arid shrublands.

The Nyangay Creek, Eurolie Creek and Wargam Creek are located in the Project Area as shown in **Figure 5-1.** The Coleambally Outfall Drain also lies within the Project Area, this is an open gravity-fed irrigation channel used to supply irrigation water to nearly 500 farms in the wider region.

The geology of the region consists of deposits called the Shepparton Formation which are mainly derived from rivers and streams and also include aeolian (i.e. windblown) deposits. Further details on the geology of the Project Area are provided in **Section 2.4.3**.

The ‘Australian Soil Classification’ (Isbell, R. F.,2021) is the classification system currently used to describe and classify soils in Australia. Soil classifications within the Project Area are shown in **Figure 6-9** and include:

- Vertosols – high agricultural potential with high chemical fertility and water-holding capacity but they require significant amounts of rain before water is available to plants;
- Rudosols – low agricultural potential with strong acidity and low water-holding capacity; and
- Chromosols – moderate agricultural potential with moderate chemical fertility and water-holding capacity.

The Project Area does not contain any mapped Acid Sulphate Soils (ASS) according to the ‘NSW Acid Sulphate Soil Planning Map’ (NSW Government, 2020).

6.7.1.2 Contamination

A search of the EPA’s Contaminated Lands Register and list of sites notified to the EPA under Section 60 of the CLM Act in April 2024 did not return any information on reported contamination or any regulatory notices issued for the land within the Project Area (NSW Environment Protection Authority, 2024).

The contaminated land planning guidelines ‘Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land’ (Department of Urban Affairs and Planning 1998), identify agricultural and horticultural activities as activities which can potentially cause contamination. The Project Area is located on land that is zoned RU1 under the Hay LEP and the Conargo LEP and is currently used for agricultural purposes including grazing of sheep and cattle, and some irrigated cropped areas.

6.7.2 Methodology

6.7.2.1 Soil Survey

A soil and land resource survey to determine the soil characteristics and consider the potential for erosion to occur has been undertaken for the Project Area. The survey included:

- A desktop review of the relevant available registers and other publicly available information to identify existing geology/geomorphology and soil qualities, and soil limitations, within and surrounding the Project Area; and
- Site inspection and physical soil survey designed to making observations concerning the topography, vegetation cover, shallow soil types and areas of existing erosion across the Project Area.

The site inspection and physical soil survey completed in November 2023 determined the Project Area to be generally stable, largely treeless, open plain landform with 90 to 100% surface cover predominantly in the form of low shrubs and native pasture for grazing.

Minor areas of scald and bare earth were observed as a result of agriculture land use, saline soil conditions, and aeolian processes experienced on the plains. The results of the physical soil survey are discussed in the following sections.

Soil Types

The physical soil survey involved the collection of soil samples at 40 locations within the Project Area as shown on **Figure 6-9**. The results from the soil survey found three dominant soil types across the Project Area; Dermosol/Vertosol Complex, followed by Sodosols and Arenosols. The Dermosol/Vertosol Complex covers the majority of the Project Area, and Sodosols are located adjacent to the Arenosols to the south-west and north-west of the Project Area.

Soil Erodibility

The site inspection included an assessment for indicators of erodibility and determined there is a minor wind erosion and sedimentation risk associated with the topsoils currently present in the Project Area. This was due to the nature of the landscape and exposure characteristics.

Soil samples collected during the soil survey underwent the Emerson Aggregate Test to classify the behaviour and stability of soil aggregates when immersed in water to determine the potential for erosion. The representative laboratory-tested soils indicted there is a high potential risk for erosion where soils are disturbed by the construction of the Project through higher impact activities such as earthworks and inundated with water. In addition, there is potential for wind erosion to occur when soils are disturbed, or vegetation removed.

The Project Area is characterised by a flat topography and as a result the risk of erosion from high velocity surface water flows is considered low.

Acid Sulphate Soils

Site inspection confirmed no indicators of ASS presence such as soil gleying, odour, marine sediments or organic materials. Considering the Project Area's elevation, distance from the coast, lack of physical ASS indicators and lack of ASS mapping for NSW, the potential risk for ASS occurring on site is very low.

Contamination

No evidence of contamination, including the fertiliser application was noted in the Project Area during the site inspection. Herbicides are used in the Project Area for weed control, however the use is minimal and on an as needs basis.

6.7.3 Impact Assessment

6.7.3.1 Construction

Soil Disturbance

Construction would temporarily expose the natural ground surface and sub-surface through the removal of vegetation, general earthworks and soil disturbance.

Earthworks and ground disturbance activities will expose and disturb soils, which if not managed adequately, could result in:

- Erosion of soils around WTG/tower foundations;
- Erosion from soil stockpiles and subsequent sediment runoff;
- Erosion of drainage lines and subsequent sediment runoff;
- Increases in salinity levels in soil;
- Dust generation resulting in air quality impacts; and
- Mobilisation of contaminated sediments and contamination of surface water runoff, with resultant potential for environmental and human health impacts.

The potential for dust impacts is considered in **Section 6.17**.

Contamination

During construction works, there is the potential for soil to become contaminated through accidental chemical or fuel spills, leaks from construction plant and equipment and from in appropriate storage of hazardous materials.

Given the level of disturbance required for the Project the risk of exposing previously unknown contamination is considered low.

Earthworks required for the Project will be limited to locations for temporary construction facilities, and permanent operational infrastructure such as substations and ancillary infrastructure. Earthworks will also be required for WTG foundations, the need for heavy earthworks will be minimised as much as practicable. Given, the level of surface disturbance and the history of the Project Area, the likelihood of exposing unknown contaminated land is considered minimal.

6.7.3.2 Operation

Operation is not likely to result in any significant impacts on soils. The risk of soil erosion during operation would be minimal, as all areas impacted during construction will be sealed or rehabilitated and landscaped to prevent soil erosion from occurring.

6.7.3.3 Decommissioning

Once the Project has reached the end of its operational life, all Project infrastructure will be decommissioned and removed from the Project Area. This will include removal of the substations and other ancillary and aboveground infrastructure. However, any below ground infrastructure at a depth of 0.5 m or greater may remain in-situ, as this will be a sufficient depth to allow opportunity for agricultural activities following decommissioning and avoid disturbance of soils and increase their susceptibility to erosion, unless removal is requested by the landowner.

Removal of the above infrastructure will involve ground disturbance, and result in greater areas of exposed soils, making them susceptible to erosion and sedimentation with associated impacts.

Similar to construction, there is the potential for soil to become contaminated through accidental chemical or fuel spills, leaks from construction plant and equipment and from inappropriate storage of hazardous materials.

While decommissioning activities will involve some ground disturbance, the extent of exposed soils is expected to be minimal compared to the construction phase where some heavy earthworks may be undertaken. Progressive soil restoration and rehabilitation of groundcover will also be undertaken during in accordance with a decommissioning and rehabilitation management plan.

6.7.4 Mitigation and Management

6.7.4.1 Construction

- Measures to minimise potential impacts to soil will form part of the CEMP and will include:
  - Prior to commencement of work, a site-specific erosion and sediment controls plan will be prepared in accordance with the 'Blue Book' – Managing Urban Stormwater: Soils and Construction Guidelines' (Landcom, 2004) and updated throughout construction so it remains relevant to the activities. The Erosion and Sediment Control Plan measures will be implemented prior to commencement of work and maintained throughout construction;
  - Erosion and sediment control measures will be established prior to any clearing, grubbing and site establishment activities and will be maintained and regularly inspected (particularly following rainfall events) to ensure their ongoing functionality. Erosion and sediment control measures would be maintained and left in place until the work is complete, and areas are stabilised;
  - An unexpected finds procedure detailing procedures to manage any unexpected contaminated material found onsite;
  - Progressive restoration and rehabilitation of groundcover following any activities that involve soil disturbance; and
  - Consider the application of gypsum to sodic subsoils which are inadvertently exposed, this will provide the soil with a stronger aggregate and hold structure when wet. This is especially relevant to stockpiled sodic soils.

6.7.4.2 Operation

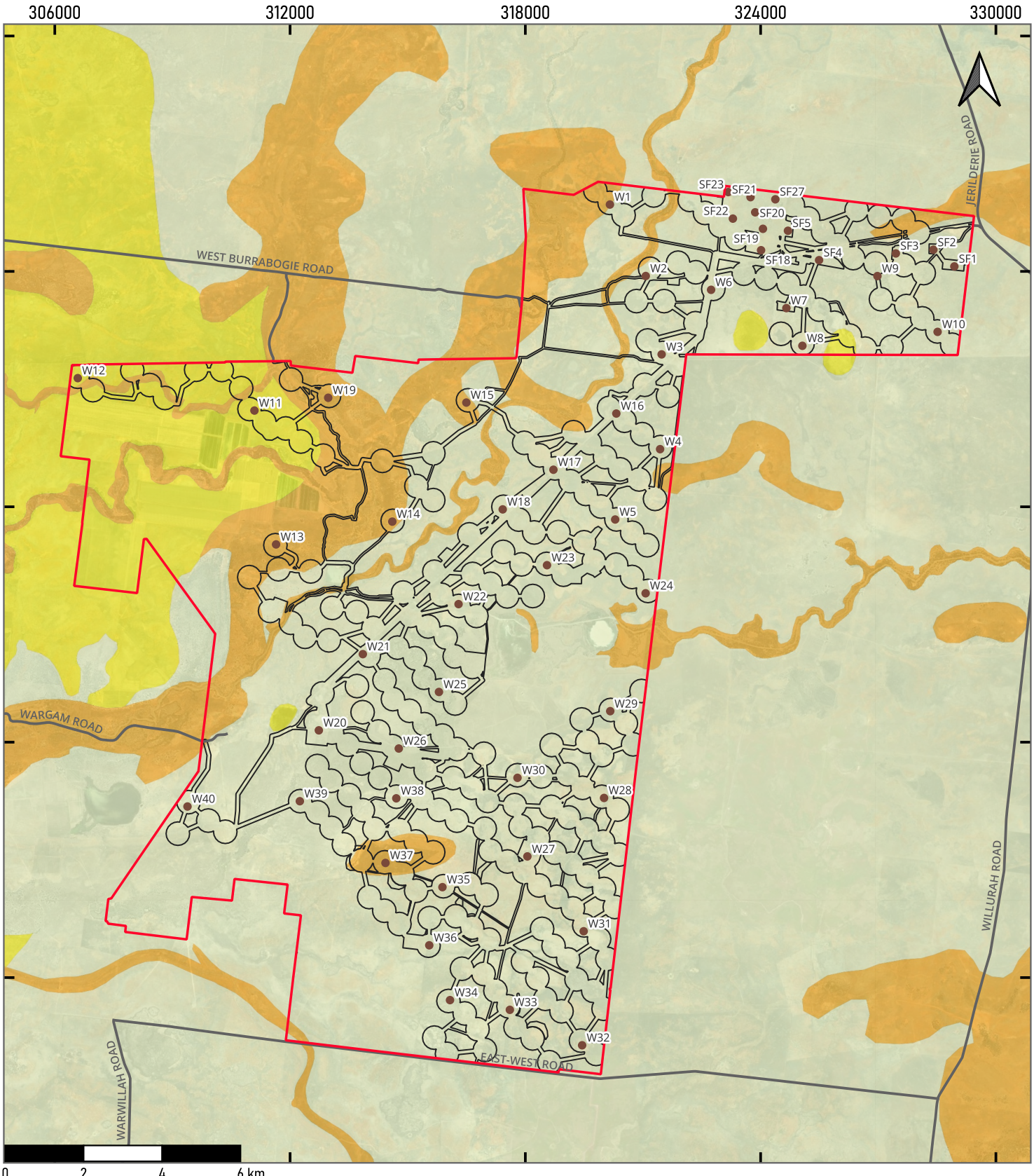
Measures to minimise potential impacts to soil will form part of the OEMP and will include:

- Progressive restoration and rehabilitation of groundcover following any activities that involve soil disturbance (i.e. replacement of infrastructure and equipment); and
- Measures to manage any bare areas and erosion that develop beneath the solar arrays over time.

6.7.4.3 Decommissioning

A detailed Decommissioning and Rehabilitation Plan (DRP) will be prepared for the closure of the Project. The DRP will detail all aspects of decommissioning and removal of all infrastructure unwanted for post Project land use.

Some infrastructure may remain for post Project land use purposes (i.e. constructed internal roads may be kept as part of the agricultural infrastructure), which may require temporary erosion and sediment control measures) in consultation with the landholder.



Pottinger Wind Farm

Figure 6-9 Land and Soil Capability

SOMEVA RENEWABLES

Legend

Project Area

Survey Area

Existing Infrastructure

Main Roads

Soil Capability DPE

Class IV Moderate to Severe Limitations

Class V Severe Limitations

Class VI Very Severe Limitations

Soil Survey Locations

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:135000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), SEED (2023)

Prepared By: EL Reviewed By: TS
Version: 2.1
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

6.8 Agriculture

This section discusses potential impacts on agricultural resources and agricultural production during construction, operation and decommissioning of the Project. Appropriate mitigation measures are identified to ensure potential impacts to agriculture resulting from the Project are avoided and / or minimised.

An SLAIA has been prepared for the Project by Minesoils. The SLAIA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

The SLAIA addresses the SEAR which includes an assessment of the agricultural impacts.

Potential impacts on soils are discussed in **Section 6.7**

The pathway adopted for this assessment is Appendix A of the Solar Guidelines in lieu of guidelines relating to the assessment of soil, land, and agriculture for wind farm projects. The level of assessment required is proportionate to the agricultural capability of the land which may be affected by the Project.

6.8.1 Background

The SLAIA requires an understanding of the land zoning, climate and rainfall, regional landform, regional agricultural land use, agricultural enterprises and agricultural infrastructure to accurately assess potential impacts.

The Project is in the eastern region of the Murray Basin on the Riverina Plain approximately 60 km south of Hay. As discussed in **Section 2.4.3,** the Project Area can be very hot in the summer months while winter nights can be very cold with cool to mild days.

The Riverina Plain supports a diverse range of agricultural industries that place a high value on the region's reliable water supplies. Agriculture in the region includes livestock grazing, the production of temperate fruit (apples, pears and cherries), intensive poultry and pigs and irrigation cropping (cotton, rice and maize). Within the Hay Shire LGA, livestock grazing is the dominant land use accounting for 98% of agriculture.

The grazing of Merino sheep is the current and historically dominant livestock enterprise on the Project Area. General agricultural improvements, including stock fences and gates, stock yards (immediately adjacent to Project Area), shedding and unsealed access tracks are provided to support this land use.

6.8.2 Methodology

In the absence of guidelines for soil, land and agriculture for wind farm projects, the assessment was undertaken in accordance with the Solar Guidelines.

The Solar Guidelines include requirements to undertake a soil survey and verify land and soil capability in accordance with Land and Soil Capability Assessment Scheme (LSC Scheme) (EOH, 2012). The 'Agricultural Assessment Requirement Pathway' (NSW DPIE, 2022) was adopted for this assessment from the LSSE Guidelines.

Under the Agricultural Assessment Requirement Pathway, a Level 3 agricultural impact assessment is required for the Project due to the type of Project the Project Area being within RU1.

6.8.2.1 Soil Survey and Site Verification

A desktop investigation of soil landscapes, soil types and soil erodibility has been undertaken and verified by physical site verification. The results of this desktop investigation and physical verification are discussed in **Section 6.8.3.**

Inherent Soil Fertility

NSW regional soil mapping was reviewed to determine the inherent soil fertility of the Project Area. The mapping describes soil fertility in NSW according to a five-class system: Low (1), Moderately Low (2), Moderate (3), Moderately High (4), High (5).

The Project Area is dominated by soils with Moderate (3) fertility as shown on **Figure 6-9.** Soils with 'Moderate' fertility usually require fertilisers and/or have some physical restrictions for arable use.

Land and Soil Capability

The LSC Scheme defines land capability as the inherent physical capacity of land to sustain a range of land uses and management practices in the long term without degradation to soil, land, air and water resources. The LSC scheme considers the biophysical features of the land and the management of hazards to provide a rating from 1 to 8:

- Class 1 Extremely high capability lands: land has no limitations. No special land management practices required. Land capable of all rural land uses and land management practices; and
- Class 8 Extremely low capability land: Limitations are so severe that the land is incapable of sustaining any land use apart from nature conservation. There should be no disturbance of native vegetation.

Assessment by the consideration of LSC Scheme mapping and soil sample laboratory analysis, determined the Disturbance Area contains:

- 26 ha of Class 3 (high capability land);
- 31 ha of Class 4 (moderate capability land);
- 610 ha of Class 5 (moderate-low capability land);
- 198 ha of Class 6 (low capability land); and
- 201 ha of Class 7 (very low capability land).

Class 3 and 4 have moderate to moderately high limitations and are capable of sustaining high impact land uses such as cropping with cultivation, cropping, high intensity grazing and horticulture Class 5 and 6 have high to very high limitations for high-impact land uses which will restrict land uses to grazing, some horticulture (only class 5), forestry and nature conservation. Class 7 will have extreme limitations which restrict most land uses which generally cannot be overcome.

Figure 6-9 illustrates LSC mapping relevant to the Project Area.

Strategic Regional Land Use Policy Mapping

The 'NSW Government's Strategic Regional Land Use Policy' (DPIE 2012) defines and identifies strategic agricultural land across NSW. Strategic agricultural land includes land with unique natural resource characteristics, known as Biophysical Strategic Agricultural Land (BSAL) and clusters of significant agricultural industries known as critical industry clusters (CICs).

No BSAL or CIC is mapped within the Project Area. The nearest BSAL is located 200 km east of the Project Area.

State Significant Agricultural Land

The NSW DPI is currently undertaking a mapping program to identify State Significant Agricultural Land (SSAL). A map of SSAL is an essential component of agricultural land use planning, enabling clearer local planning with informed prioritisation of future land uses.

There is no SSAL mapped within the Project Area.

6.8.3 Impact Assessment

6.8.3.1 Productivity and Enterprises

The temporary impact of the Project on productivity of agricultural land based on the change in land use for the duration of the Project is up to $155,636 per year. Due to the minimal disturbance to the landform, following the life of the Project, 1,059 ha of land removed from agriculture will be returned to agricultural use, with no reductions in land and soil capability. Agricultural enterprises can then re-commence at an equivalent agricultural productivity.

Agricultural productivity of land outside of the Project Area will not be affected by the Project as the associated agricultural resources will not be affected.

6.8.3.2 Land Use Conflict Risk Assessment

The Land Use Conflict Risk Assessment (LUCRA) identifies and assesses the potential for conflict to occur between neighbouring land uses. Land use conflicts occur when one land user is perceived to infringe upon the rights or impact the values or amenity of another.

When compared against adjoining and surrounding land uses, the Project has 27 risk items which were considered. Mitigation and management measures within the EIS will minimise the level of risk associated with land use conflict for the majority of these risk items. However, seven risk items remain a medium risk, relating to:

- Construction disturbance;
- Visual amenity;
- Devaluation of land;
- Biodiversity;
- Increased traffic;
- Aerial spraying; and
- Biosecurity.

Two high risks for land use conflict related to concern from aerial farm service providers for their safety due to WTG structures and associated turbulence and cumulative impacts from several nearby renewable developments. The LUCRA is contained in **Appendix M.**

6.8.3.3 Impacts on Agricultural Land

Wind farm projects generally present a very low risk of permanent and irreversible impacts to agricultural land. During the life of the Project, agricultural land use will continue within the Project Area outside of the disturbance footprint. However, for the purposes of the report, the agricultural impacts of the Project have been assessed conservatively, under the assumption that agriculture will cease within the disturbance area for the duration of the Project.

This scenario will result in the temporary loss of 1,059 ha of land used for agricultural production, and a permanent loss of 7 ha (1,066 ha total) associated with the switching station which may remain on the Project Area following the decommissioning phase. These temporary and permanent losses considered negligible in the context of the land area subject to agriculture use in the Hay Shire and Edward River LGA.

The Project will not impact upon adjacent agricultural land uses, nor will it fragment or displace existing agricultural industries. The Project will not have any permanent impact on agricultural land.

6.8.3.4 Impacts on Agricultural Resources

Land and Soil Capability

The Project will not have any major effects on LSC due to the minimal, localised and sporadic nature of landform modification required.

Mitigation and management measures provided in **Section 6.8.4** will facilitate the rehabilitation and return the land to an equivalent LSC class, with the exception of the switching station footprint area of 7 ha, which will be permanently removed from the LSC classification.

Water

The Project was determined as unlikely to incur groundwater impacts due to not requiring extraction of groundwater and having anticipated depth of construction that does not intersect the water table. A hydraulic analysis was completed as part of the EIS determined impacts to existing watercourses are manageable and confirmed low potential for flood inundation over the land. Water use required for the Project will be minimal and brought in by tanker when needed.

Surface water and flooding impacts are discussed in **Section 6.9** and are expected to be negligible.

Agricultural Infrastructure

Negative impacts to agricultural infrastructure are considered negligible, including impacts to the road network that connects agricultural land, markets, services and suppliers.

6.8.3.5 Other Agricultural Impacts

Weed and Pest Species

Weed and pest species have the potential to be transported to the Project Area in imported materials or tracked via machinery. The removal / degradation of existing vegetation can increase the likelihood of pest species successfully invading.

The presence of weed species has the potential to be a major long-term hindrance to agricultural endeavours within the locality and region, as well as rehabilitation efforts within the Project Area. Weeds in general will be managed in accordance with mitigation and management measures outlined in **Section 6.8.4.**

Any feral animal (including cats, rabbits, pigs, and dogs) in the Project Area will be managed in accordance with mitigation and management measures outlined in **Section 6.8.4.**

Biosecurity

An assessment of the biosecurity risks presented by the Project was undertaken with consideration of the ‘Draft NSW Biosecurity Strategy’ (DPI, 2021). The risk of spreading foot and mouth disease was considered during the development of the EIS.

Section 6.8.4 provides mitigation measures to address the elevated threat of foot and mouth disease. The Project will not have any impact on biosecurity of agricultural resources and enterprises in the local area.

Cumulative Impacts

Suitable conditions for grazing and agricultural production create dual land use opportunities in the REZ for agriculture and renewable energy generation. This opportunity for the maintenance of sheep grazing will minimise cumulative Project impacts in the area (see **Section 6.21**).

The majority of proposed development in the local and regional context of the Project is renewables development. Accordingly, the cumulative impact on agriculture for the region is considered to be low given changes to agricultural land use and agricultural productivity are anticipated to be negligible to minor for each renewable project.

6.8.4 Mitigation and Management

The following mitigation and management measures will be implemented to minimise agricultural impacts associated with the Project:

- Following construction, agricultural practices will continue across as much of the Project Area outside of the disturbance footprint at historical stocking rates;
- On Project decommissioning, the entire Project Area will be re-established with agricultural land uses and returned to an equivalent of its current agricultural productivity, unless otherwise agreed with the landowner and/or regulatory authorities;
- A weed and pest management plan will form part of the CEMP and OEMP prepared for the Project and will include:
  - Environmental monitoring programs where required;
  - Feral animal monitoring and control in accordance with the Livestock Health and Pest Authority procedures, as required;
  - Key management plans will assist in managing impacts on agricultural land will be stipulated in conditions of development consent;
  - Monitoring programs and routine inspections to identify and control potential weed infestations;
  - Biosecurity measures to control risks in relation to pests, weeds and diseases during construction and operation. Controls will include adherence to government Foot and Mouth Disease awareness, prevention and preparedness programs and guidance; and
- Stock fences, farm dams and access tracks to be retained and maintained to accommodate the post-Project land use.

6.9 Hydrology and Flooding

A Water Resource Impact Assessment (WRIA) has been prepared for the Project by Engeny Australia Pty Ltd (Engeny). The WRIA was prepared with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

The scope of the WRIA includes:

- Desktop review of the Project Area terrain data, aerial imagery, design plans and previous flood investigations;
- Hydraulic modelling of 5%, 1% Annual Exceedance Probability (AEP) and Probable Maximum Flood (PMF) events for the Project Area; and
- Identification of the relevant management and mitigation measures for erosion and sedimentation control.

Potential impacts on water resources (including groundwater resources) are discussed in **Section 6.10**

6.9.1 Background

6.9.1.1 Surface Water

As discussed in **Section 2.4.3**, the Project Area is located within the Murrumbidgee Catchment of the Murray Darling Basin around 40 km south of the Murrumbidgee River. The Nyangay Creek, Eurolie Creek and Wargam Creek are located in the Project Area as shown in **Figure 6-9.** The Coleambally Outfall Drain also lies within the Project Area, this is an open gravity-fed irrigation channel used to supply irrigation water to nearly 500 farms in the wider region.

The Strahler stream order classification is used within NSW to describe the hierarchy of streams from the top to the bottom of a catchment. A first order stream has no other streams flowing into it. When two streams with different orders join, the resulting stream has the same order as the highest order of the two joining streams. The Strahler stream order classification for streams within the Project Area includes:

- Eurolie Creek: Fourth order watercourse;
- Nyangay Creek and Coleambally Outfall Drain: Ninth order watercourse;
- Wargam Creek: Third order watercourse noting this ephemeral stream begins within the Project Area and flows toward the South West Woodland Nature Reserve and leaves the Project Area as a third order watercourse; and
- Various other unnamed smaller (first and second order watercourse) ephemeral drainage lines, private irrigation channels and dams are located in the Project Area.

Under the FM Act, waterways which are third order or above may be considered key fish habitat. Watercourses in the Project Area are considered key fish habitat based on their Strahler stream order classification and accordingly the following guidelines are considered in the WRIA:

- 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings' (DPI 2003); and
- 'Policy & Guidelines for Fish Habitat Conservation & Management' (DPE, 2013).

The Project will involve works on "waterfront land" which is defined under the WM Act as any river, lake or estuary, and the land within 40 m of the riverbanks, lake shore or estuary mean high-water mark. As the Project is classified as SSD, a water management work approval under section 90, or a controlled activity approval for certain activities which are carried out on waterfront land under section 91 of the WM Act is not required, where the development consent for the SSD authorises the carrying out of those works. Notwithstanding this, the Project will be designed and constructed in consideration of the 'Guidelines for Controlled Activities on Waterfront Land' (DPE, 2022) and 'Guidelines for instream works on waterfront land' (DPE, 2022).

There are no wetlands of international importance or nationally important wetlands located in the Project Area. Swamps and dams located within the Project Area as show on **Figure 2-5** include Wekenbergal Swamp, Burra Burroon Swamp and Longbottoms Dam.

6.9.1.2 Flooding

Flooding within the Project Area is dominated by flows from Eurolie Creek, Nyangay Creek, Wargam Creek and the Coleambally Outfall Drain and is also prone to significant overland flows due to upstream catchments. Average flood depths across the Project Area are up to 0.3 during a 1% AEP event, with a peak flood depth of up to 4.5 m within ponded areas (refer **Figure 6-10**).

The existing flood hazard of the Project Area has been assessed in accordance with 'Australian Rainfall and Runoff: A Guide to Flood Estimation' (ARR2019) using defined assessment criteria and six-flood hazard categories which are based on the anticipated depth and velocity of the flood water. The nominated flood hazard category varies throughout the Project Area, the main drainage channels recording a hazard level of up to H5 (i.e. unsafe for vehicles and people, all building types considered vulnerable to failure) and the remaining Project Area recording either a hazard level of H2 (unsafe for small vehicles) or H3 (unsafe for vehicles, children and the elderly).

6.9.1.3 Methodology

Detailed flood modelling was undertaken for 1%, 5% and the PMF events. AEP is a measure of the likelihood a flood level or flow will be equalled or exceeded in any given year. The PMF is the largest flood that could be conceivably expected to occur at a particular location. Flood modelling was undertaken in accordance with the ARR2019 and with consideration of the relevant provisions of the 'NSW Flood Risk Management Manual (DPE, 2023).

Due to the flat landscape within and surrounding the Project Area, catchment delineation to inform the hydrological model was difficult. As a result, two separate hydrologic models were used to determine flows at a local and regional catchment level.

The hydraulic modelling was completed using a two-dimensional (2D) TUFLOW flood model. The model determined flood levels, depths velocities and flood hazard for each of the modelled AEPs, critical storm durations and temporal patterns. The hydraulic model was run for both existing and climate change conditions. The PMF rainfall depth was estimated from the Probable Maximum Precipitation (PMP) rainfall depth.

6.9.2 Impact Assessment

6.9.2.1 Construction

Surface Water

The Project will not involve modification or realignment of the of any existing watercourses traversing the Project Area, minimising impacts to flow paths and Strahler stream ordering. Construction of Project infrastructure (i.e. access tracks, transmission cables and WTG hardstands) are proposed on waterfront lands (i.e. within 40 m of any watercourses) which may result in some disturbance to minor flow/drainage paths.

Table 6–45 provides the Project infrastructure proposed on waterfront land. Most of this infrastructure is proposed on minor unnamed ephemeral waterbodies and/ or irrigation channels. The exact footprint and location of this infrastructure will be reviewed during detailed design and works on waterfront lands will be avoided where possible. Existing access tracks will be used where possible during construction to limit the requirement for new crossings of flow/drainage paths.

Table 6–45 Proposed Infrastructure within Waterfront Land

Infrastructure	Infrastructure Description	Watercourse name	Strahler Stream Order
WTG	WTG141	Coleambally Outfall Drain	9th
	WTG 43	Tributary of Eurolie Creek	2nd
	WTG2, WTG4, WTG5, WTG14, WTG72, WTG78, WTG79 and WTG80.	Unnamed localised waterbody	N/A
	WTG18, WTG19, WTG164, WTG166, WTG215, WTG219, WTG231, WTG234, WTG247 and WTG266	Irrigation channel	N/A
Access Track	Access Track between WTG 20 and WTG 21	Coleambally Outfall Drain	9th
	Access Track to WTG 27	Coleambally Outfall Drain	9th
	Access Track between WTG 26 and WTG 27	Coleambally Outfall Drain	9th
	Proposed Access Track to/from WTG 43	Tributary of Eurolie Creek	2nd
	Proposed access track to WTG14, WTG19 and between WTG1 and WTG2, WTG3 and WTG4, WTG2 and WTG4., WTG5 and WTG6, WTG8 and WTG9, WTG72 and WTG73, WTG80 and WTG81, WTG132 and WTG136	Unnamed localised waterbody	

Infrastructure	Infrastructure Description	Watercourse name	Strahler Stream Order
	Proposed access track between WTG163 and WTG164, WTG165 and WTG166, WTG188 and WTG189, WTG193 and WTG194, WTG213 and WTG214, WTG182 and WTG183, WTG204 and WTG205, WTG18 and WTG19, WTG266 and WTG277, WTG247 and WTG255, WTG254 and WTG255, WTG257 and WTG258, Site Access D and Project Area	Irrigation channel	N/A
Ancillary infrastructure	Substation and Temporary Construction, Batching and Laydown Area	Irrigation channel	N/A

Filling of existing farm dams is not proposed to allow installation of WTGs and will therefore not induce impacts to surface water flow regimes.

Potential impacts to surface water quality will be associated with disturbance to soils which can potentially lead to sediments or pollutants mobilising in runoff and entering local waterway, the spill of hydrocarbons, release of concrete by-products and /or the discharge of untreated wastewater.

Flooding

Due to surface water flows in the Project Area being dominated by overland sheet flows, temporary ancillary infrastructure required for construction is proposed within the 5% AEP, 1% AEP and PMF flood extents. Flood modelling indicates some of the temporary construction compounds, batching and laydown areas will experience a flood depth of up to 0.9 m during a 1% AEP event (refer **Figure 6-10**).

As noted in **Section 6.9.1**, flood hazard categories of up to H3 is expected across some of the Project Area which indicates areas within the Project Area will be unsafe for vehicles during a flood event.

Flooding has the potential to interfere with construction and poses a safety hazard for workers onsite. The Project has potential to create the following hazards in the event of a localised flood:

- Electrical hazards to staff, emergency workers and assets due inundation of infrastructure;
- Pollution risks from leakage of stored pollutants (hydrocarbons, pesticides, solvents); and
- Physical damage from the mobilisation of components in flood waters.

Due to the location of major waterways with respect to the Project Area and the limited connectivity to adjacent watercourses, temporary components required for construction are not considered susceptible to becoming mobile and entering waterways.

6.9.2.2 Operation

Surface Water

Potential impacts to surface water quality will be associated with soil erosion and sedimentation of downstream watercourses and crops and any spills of hydrocarbons or other pollutants used to support transportation and operation of substations and /or the discharge / spill of wastewater. Suitable drainage features will be constructed along internal roads to minimise the risk of polluted water leaving the Project Area or entering the waterways.

Any surface water will drain via the existing ephemeral drainage line / waterways. Ancillary infrastructure is proposed within proximity of mapped watercourses, however, is not expected to change surface water flow path regimes.

Flooding

During operation, the location of permanent infrastructure has the potential to create safety hazards consistent with those identified during construction.

Modelled flood behaviour determined peak flood depth and velocity within the Project Area associated with the new Project infrastructure.

The key findings of the flood modelling scenarios include:

- Most of the WTGs are below the estimated 0.3 m flood depth in an 1% AEP event, 54 WTGs are located above the 0.3 m flood depth with a maximum recorded depth of 0.9 m at WTG 72. WTGs are resistant to flooding at the tower base to several metres in depth, as a result modelled depths are therefore not considered to result in material impacts to the WTGs;
- Peak flood velocities throughout the Project Area do not exceed 0.5 m/s during the 5% AEP and 1% AEP events, except within defined channels such as Eurolie Creek. As a result, peak flood velocities are not likely to provide significant erosion risk;
- Peak flood impacts are estimated around the southern substation with a maximum flood depth of 0.45 m during a 5% AEP event, 0.55 m during a 1% AEP event and 1.03 m during a PMF event;
- The BESS, main substation and switching station are located within flood the 5% AEP, 1% AEP and PMF flood extents. The switching station, BESS and main substation are critical items and require protection up to the PMF level;
- Several access tracks are located within the 5% AEP, 1% AEP and PMF flood extents; and
- Climate change sensitivity modelling undertaken by modelling the 0.5% and 0.2% AEP design flood events under existing conditions indicates that there is generally little difference in flood extent across the Project Area for the two climate change scenarios.

6.9.2.3 Decommissioning

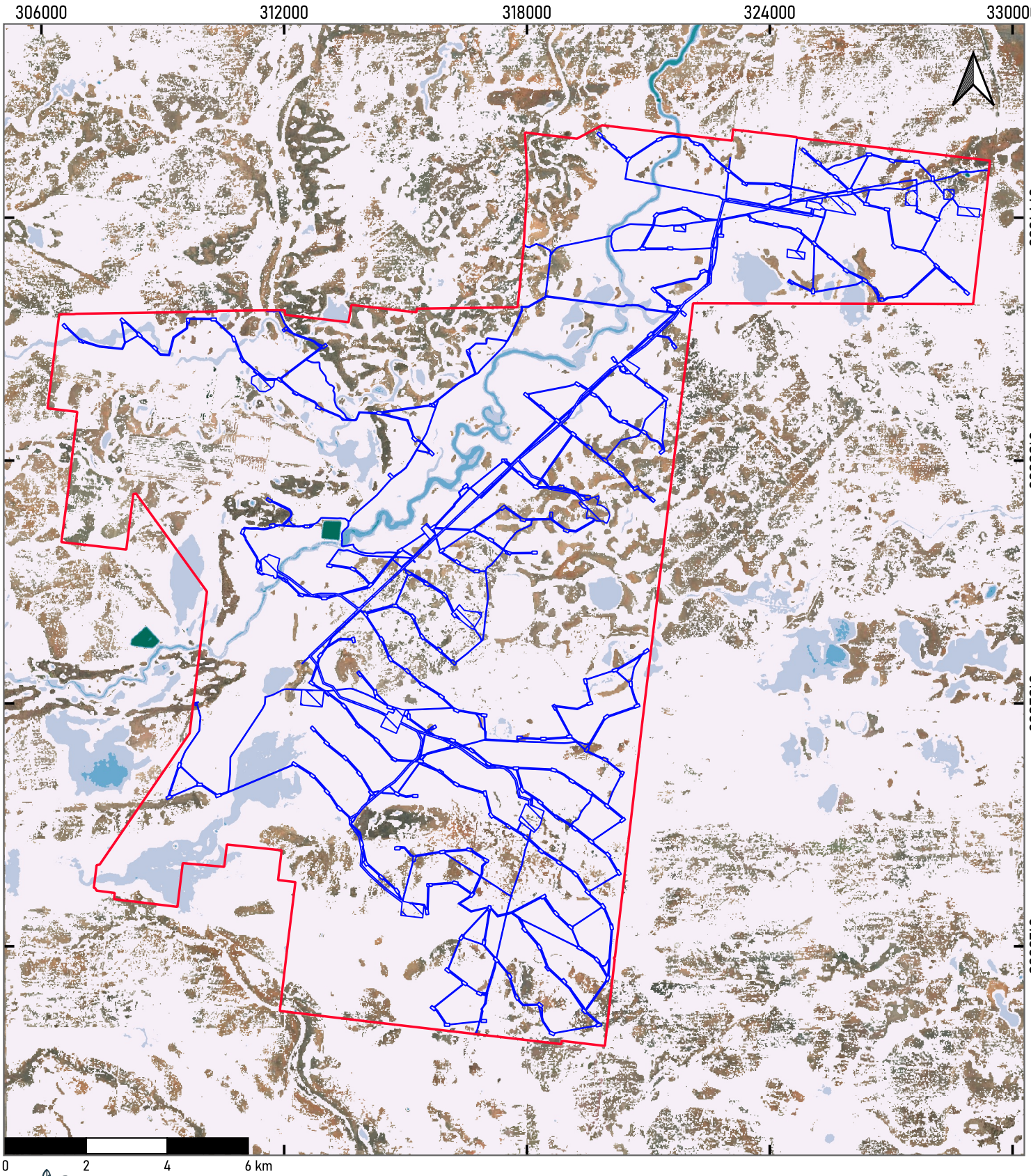
During the decommissioning, the potential impacts on hydrology and flooding will be similar to or less than construction. It is likely the risk and area of disturbance during decommissioning would be less than construction due the existing access tracks and reduced ground disturbance required.

6.9.3 Mitigation and Management

The following management and mitigation measures will be incorporated int the CEMP, OEMP and DRP:

- The access track to WTG 27 and between WTG20 and WTG21, WTG26 and WTG27 and WTG165 and 166) will be designed, constructed and maintained in consultation with CICL to ensure flows are maintained and there are negligible impacts the Coleambally Outfall Drain;
- The detailed design will incorporate the use existing water crossings where possible and will locate WTG to minimise works on “waterfront land”. If a waterway crossing is required, these will be designed, constructed and maintained to consider relevant guidelines;
- Measures to minimise potential impacts to in-stream and overland flooding will be incorporated into the detailed design including:
  - Flood sensitive infrastructure including the BESS, switching station and main substation will be elevated above the PMF level. The amount of fill required to raise this infrastructure above the PMF flood level will be minimised through the use of pads, platforms or another alternative design options that will enable floodwaters to pass underneath and not impede or displace floodwaters;
  - The location and extent of Project infrastructure within the 1% AEP flood extent will be minimised;
  - Power poles for the proposed transmission line will be located away from flow paths where possible; and
  - WTGs located within a flood affected area are suitably designed for the predicted flood depths;

- Flooding risks at the Project Area will be managed through the implementation of an Emergency Response Plan (ERP). The ERP will detail what staff should do in the event the Project Area is flooding, the responsibilities of the site manager during a flood event to avoid unnecessary risk to people or property;
- Develop and implement a suitable monitoring regime to assess potential surface water and groundwater quality impact, particularly following large flow events;
- Erosion and sediment control measures will be implemented and maintained at all work sites in accordance with the principles and requirements in the 'Blue Book'; and
- Measures to minimise potential impacts to soil and water will include:
  - Measures to minimise/manage erosion and sediment transport both within the disturbance footprint and offsite including requirements for the preparation of erosion and sediment control plans (ESCP) where disturbance to soil is required;
  - Measures to manage waste including the classification and handling of spoil;
  - Measures to manage stockpiles including locations, separation of waste types, sediment controls and stabilisation;
  - Storage of hydrocarbons and other liquid chemicals within bunded areas away from watercourses or area subject to high levels of overland sheet flow;
  - Concrete wash from concrete batching plants to be appropriately contained and disposed of. Bunded areas of the batching plant to be designed to contain peak rainfall events and to be remediated after the completion of the construction phase;
  - Measures to manage accidental spills including the requirement to maintain materials such as spill kits;
  - Refuelling requirements for all vehicles and equipment in designated areas; and
  - An unexpected finds, in the event of exposing previously unknown contaminated land during construction and as part of ongoing operation of the infrastructure.



Pottinger Wind Farm

Figure 6-10 1% AEP Flood Event

SOMEVA RENEWABLES

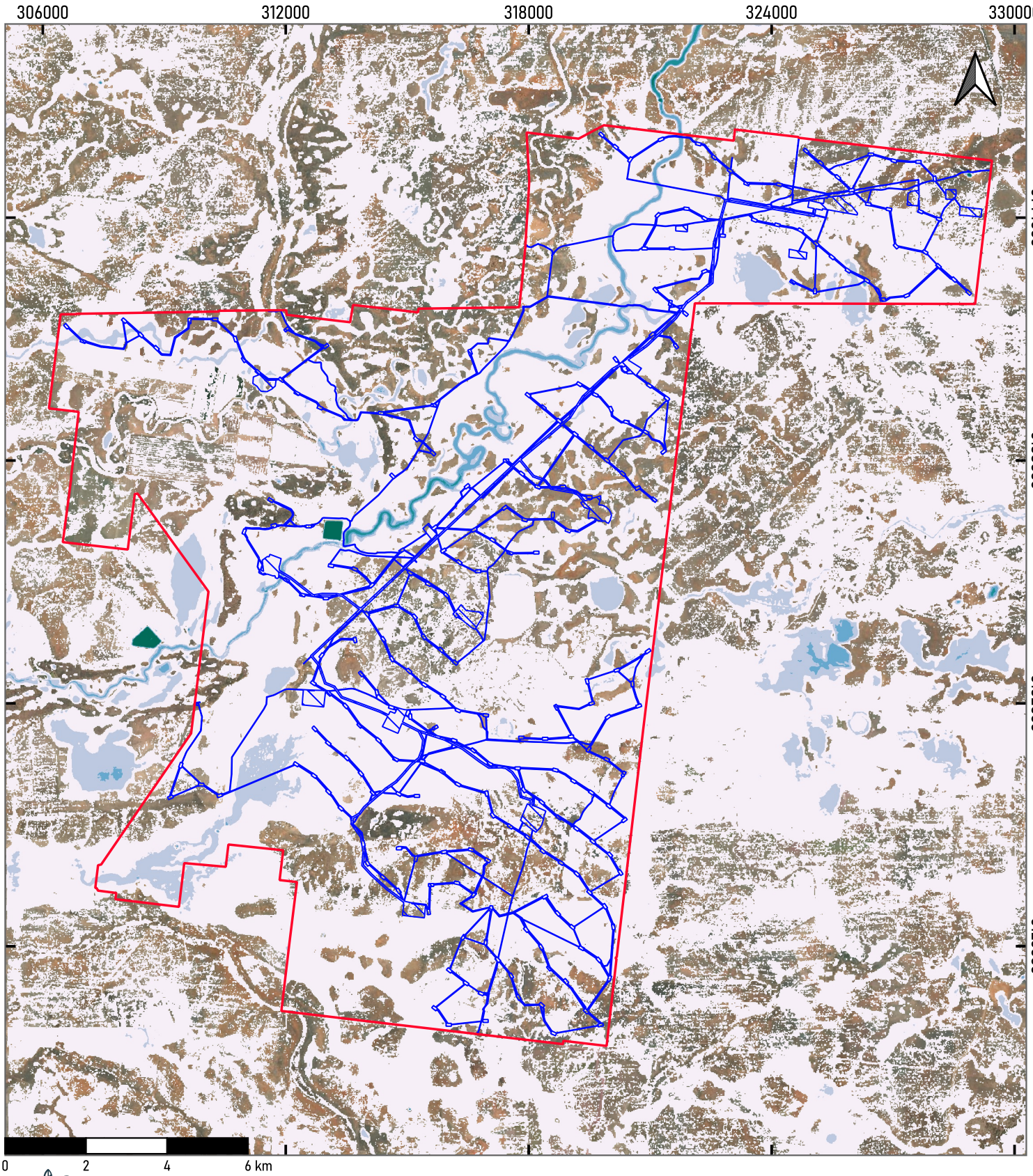
Legend

Project Infrastructure
- Project Area
- Disturbance Boundary

1% AEP Flood Event
Band 1 (Gray)
- <= 0.7384
- 0.7384 - 1.4768
- 1.4768 - 2.2152
- 2.2152 - 2.9536
- > 2.9536

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed by: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.



Pottinger Wind Farm

Figure 6-11 5% AEP Flood Event

SOMEVA RENEWABLES

Legend

Project Infrastructure
- Project Area
- Disturbance Boundary

5% AEP Flood Event
Band 1 (Gray)
- <= 0.6572
- 0.6572 - 1.3143
- 1.3143 - 1.9714
- 1.9714 - 2.6286
- > 2.6286

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:130000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022)

Prepared By: EL Reviewed by: TS
Version: 3
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

6.10 Water Resources

This section discusses potential impacts to water resources, including groundwater and surface water during construction, operation and decommissioning of the Project. Appropriate mitigation measures are identified to ensure potential impacts to water resources resulting from the Project are avoided and / or minimised. A full assessment is provided WRIA prepared by Engeny and included in **Appendix N**.

This section and the WRIA address the following SEAR under “key issues” “water”:

A site water balance for the development and details of water requirements and supply arrangements for construction and operation.

The scope of the WRIA includes:

- Desktop review of water resources in the Project Area;
- Identification of water supply options for the Project; and
- Identification of potential impacts from the Project on the identified water resources.

Potential impacts on flooding and hydrology are discussed in **Section 6.9**.

6.10.1 Background

6.10.1.1 Surface Water Resources

As discussed in **Section 2.4.3**, the Project Area is located within the Murrumbidgee Catchment of the Murray Darling Basin. The Murrumbidgee Catchment covers an area if 84,000 km^2 and comprises 8% of the total area of the Murray-Darling Basin. The Project Area is located 40 km south of the Murrumbidgee River. The Nyangay Creek, Eurolie Creek and Wargam Creek as well as the Coleambally Outfall Drain are located in the Project Area as shown in **Figure 2-5.** Various other ephemeral drainage lines, private irrigation channels and dams are located in the Project Area.

The WM Act is the key piece of legislation for water resource management in NSW. Under the Act, Water Sharing Plans (WSPs) are developed to protect the environmental health of water sources and to secure sustainable access to water for all users. The WSPs specify maximum water use allocations and provided details to licensed and unlicensed water users on water availability. The use of surface water resources in NSW, apart from some exemptions for basic landholder rights must be authorised by a Water Access Licence (WAL).

Surface WSPs that apply to the Project Area for the management of surface water is the ‘Water Sharing Plan’ for the ‘Murrumbidgee Regulated River Water Source 2016’ (WSP).

In 2023, a total of 26 WALs had been issued for the Murrumbidgee Regulated River Water Source. The CICL has the WAL for ground and surface water use throughout the Murrumbidgee Basin, including the Coleambally Outfall Drain which is within the Project Area. The Applicant does not currently hold any WALs.

Landholders are able use water for domestic consumption and non-intensive stock watering under the basic landholder rights provisions of the WM Act, without the need for a WAL or water use approval. However, a water supply work approval is required for construction and use of the bore and/or dam to hold water. The Project is not able to use water for domestic consumption under basic landholder rights provisions.

Basic landholder rights also allow landholders to capture and store a proportion of the rainfall runoff from their land in one or more harvestable rights dams without requiring a WAL, water use approval or water supply work approval. Harvestable rights calculations for the Project Area are based on average annual runoff rates and are expressed as a maximum harvestable right dam capacity for a landholding. The maximum capacity of harvestable rights applicable to existing dams in the Project Area is 1,188 ML.

6.10.1.2 Groundwater Resources

The Australian Groundwater Explorer tool identified eight groundwater bores within the Project Area, two are operational and primarily used for stock and domestic purposes and shown on **Figure 2-7.**

Monitoring bores upstream (Monitoring Bore ID GW036235) and downstream (Monitoring Bore ID GW030103) of the Project Area indicate groundwater levels are between approximately 18 to 25 m below ground level (mbgl) and flow from a westerly to south-westerly flow direction, consistent with surface water drainage.

Groundwater within the Project Area is managed under the *Water Sharing Plan for the Murrumbidgee Alluvial Groundwater Sources 2020.* The Project Area is located within the Lower Murrumbidgee Shallow and Deep Alluvium water sources, the annual extraction limits for this groundwater source are provided in **Table 6–46.**

The Project Area supports terrestrial Groundwater Dependent Ecosystems (GDE) which is further discussed in **Section 6.4.** GDEs are ecosystems that require access to groundwater to meet all or some of the water requirements necessary to maintain their plant and animal communities and ecological processes.

Table 6–46 Annual Extraction Limits for Murrumbidgee Valley Alluvial Groundwater Sources

Water Source	Extraction Limit (ML / year)
Lower Murrumbidgee Shallow	26,875
Lower Deep Alluvium	273,625

6.10.1.3 Water Quality

'The State of the Catchments' 2010 Riverine Ecosystems Report' (DECCW 2010) (SOC) for the Murrumbidgee Catchment describes general water quality conditions for turbidity and total phosphorus in accordance with the water quality objectives provided in the 'Australian and New Zealand Guidelines (ANZG) for Fresh and Marine Water Quality (ANZG, 2018)'. In addition, fish, macroinvertebrates, and hydrology are used to indicate water quality conditions.

The water quality findings relevant to the Project Area are recorded at the Hay Weir, at Yanco Creek in Morundah and at Wakool River in Kyalite which is 150 km downstream of the Project Area. The findings indicate exceedances at all three locations for turbidity and exceedances for total phosphorus at the Hay Weir and Yanco Creek. Findings also suggest macroinvertebrates are in moderate condition while fish are in poor to very poor conditions due to the limited native fish species in the area.

Water quality testing undertaken at the West Burrabogie groundwater bore located within the Project Area, indicates groundwater does not meet potable water quality standards.

6.10.2 Methodology

6.10.2.1 Water Supply Options

The Project has four viable options available for water supply during construction, operation and decommissioning stages, which include:

- Extraction from the CICL Scheme under agreement with associated dwellings;
- Harvested runoff from farm dams under agreement with associated landholder and in accordance with the maximum harvestable rights for the Project Area;
- Reuse of treated water from an onsite wastewater treatment system for non-potable uses; and
- Groundwater from licenced bores under agreement with associated landholders.

Potable water and amenities will be supplied by on-site rainwater tanks, with additional water needs met through external water imports. Ongoing coordination between the Project and landholders will ensure water availability for stock.

Water supply for the Project may also be sourced from sediment basins established for construction work. If required, a supplementary water supply can be purchased and transported to the Project Area by tanker. Should the supplementary water supply be covered under a WSP, the Project will require a WAL and other relevant approvals.

An on-site wastewater treatment system will be installed to treat wastewater from the site office and temporary accommodation facilities. The treated water will be reused where possible during construction to fulfill non-potable construction and operation demands such as dust suppression, earthworks and concrete conditioning. The design and capacity of the onsite wastewater management system will be determined during the detailed design phase and will consider best practice guidelines and standards.

6.10.3 Impact Assessment

6.10.3.1 Construction

Water will be required for the following activities during construction:

- Construction of roads, hardstand and miscellaneous construction work;
- Dust suppression;
- Vehicle and equipment washdown;
- Potential watering of revegetated areas; and
- Potable supply to site amenities for construction personnel.

Water volumes which will be required during construction have been estimated based on and understanding of the construction requirements and schedule as shown in **Table 6–47.**

Table 6–47 Site Water Demand Construction

Water Demand	Total Demand (ML)
Dust suppression	7.2
Concreting works	424.1
Road Construction / Compaction	162
Vehicle and Equipment Washdown	5.3
Potable Water	23.8
WTG Cleaning	0.2
Total	**622.6**

The construction water requirements are dependent on wind and rainfall, less water will be required if there is adequate rainfall during the construction period, providing natural dust suppression.

Construction activities are anticipated to have minimal interaction with the existing groundwater table, which lies between 18 to 25 mbgl, well below the required depth for infrastructure footings and underground cables.

Potential impacts to water quality may result from spill of wastewater, hydrocarbons or other pollutants used to support transportation and site activities. Due to the high infiltration potential of soils in the region, and flat topography, there is potential for spills to pool and subsequently infiltrate soil causing potential impacts to water quality. The risk of any spills impacting groundwater quality is considered low due to the depth between the surface and groundwater table provided the management and mitigation measures in **Section 6.10.4** are implemented.

Construction of the Project will also disturb soils and potentially lead to sediment or other pollutants being present in runoff causing potential impacts on water resources. **Section 6.10.4** provides management and mitigation measures to mitigate potential impacts on water resources.

Wastewater management is discussed in **Section 6.18.4**. Amenity facilities will be pumped out via tanker and delivered to the most appropriate sewage treatment facility, or as agreed with HSC and/or ERC during construction.

The on-site wastewater management system will be designed to prevent interaction with natural surface and groundwater systems.

Potential impacts groundwater dependent ecosystems are discussed in **Section 6.4.**

6.10.3.2 Operation

Operational water requirements for the Project are minimal. Water will mainly be required for washdown of vehicles, equipment and plant, as well as stock and vegetation management as needed. Water would also be required for site amenities and fire protection.

The on-site wastewater management system will be maintained for the operational amenities. This will be constructed and managed in accordance with the relevant council requirements.

6.10.3.3 Decommissioning

During the decommissioning stage, the potential impacts on water resources will be less than construction. Water demand requirements are minimal and limited to potable water for site amenities and for dust suppression and vehicle and equipment washdown during decommissioning activities.

6.10.4 Mitigation and Management

Measures to minimise potential impacts to water resources will form part of the CEMP and OEMP and will include:

- All required water licensing and approvals will be coordinated with associated landholders and/or relevant regulators (e.g. Council, others) if the source is needed to support water supply arrangements during construction, operation and/or decommissioning;
- The onsite wastewater treatment system will be designed and operated in accordance with relevant standards and guidelines and will include the requirement to collect and treat wastewater from site offices and temporary accommodation facilities for re-use on site to fulfill non-potable construction, operation and decommissioning demands; and
- A detailed DRP will be prepared for the closure of the Project. The DRP will include controls to minimise use of water resources during decommissioning activities.

Management and mitigation measures for potential impacts to water quality are provided in **Section 6.9.3**.

6.11 Traffic

6.11.1 Background

A Traffic Impact Assessment (TIA) was prepared by Amber Organisation Pty Ltd to assess the site access and the construction, operational and decommissioning traffic impacts on the local roads and community.

The TIA was undertaken in accordance the revised SEARs provided in **Appendix C,** stakeholder engagement as summarised above and detailed in **Section 5**, and the 'RTA Guide to Traffic Generating Developments' (RTA Guide) (Road and Traffic Authority, 2002) and relevant Austroads Guide. It has also been prepared in consultation with TfNSW, HSC, EWSC and SA DIT.

This section summarises the key findings of the TIA which is provided in **Appendix O**.

6.11.2 Methodology

The key objectives of the TIA were to:

- Assess peak traffic generating potential from construction, operational and decommissioning phases of the Project;
- Analyse distribution of vehicles accessing the site having regard to the surrounding road network and the nearby population centres which include Hay, Deniliquin and Coleambally;
- Summarise and assess the cumulative impacts of nearby developments;
- Assess the traffic generated by the Project having regard to intersection performance and mid-block traffic;
- Conduct a heavy vehicle route assessment associated with the delivery OSOM WTG and tower components from the Port of Adelaide;
- Conduct an OSOM vehicle route assessment for the delivery of larger plant to the Project Area;
- Assess turn treatments that will be required to be provided as part of the development as well as a Sight Distance Assessment as part of an overall intersection assessment;
- Assessment of the designs for site access through swept path and sight distance assessments; and
- Provide details of the mitigation measures relating to traffic management measures, road upgrades, rating of the access route and identify areas of road to be utilised by the Project traffic.

Key traffic terminology used in this section and in the TIA is defined in **Table 6–48.**

Table 6–48 Traffic Terminology

Terminology	Definition
Light Vehicles	The use of light vehicles will be associated with transporting the workforce to/from the Project. A conservative vehicle occupancy of 1.5 people per car has been adopted to calculate the light vehicle traffic generation noting the workforce would be encouraged to carpool. Shuttle buses may be considered as an option to transport staff to/from the Project Area however these vehicles have been excluded to represent a worst-case scenario for the purposes of the assessment
Heavy Vehicles	
Rigid Trucks	Rigid Trucks will be used to deliver raw materials and smaller plant and have a typical length between 8 and 13 m
Truck and Dog	Truck and Dog vehicles consist of a rigid truck towing either a dog trailer or a pig trailer and are not more than 19 m in length. A dog trailer is a trailer with axles at either end of the trailer, a pig trailer has the axles centred on the trailer. These vehicles will be utilised to transport the majority of quarry materials to/from the site
Semitrailers	Semitrailers will be used to transport larger equipment and materials. These vehicles consist of a truck and a single trailer with a total length of 19 m.
B-Doubles	B-Doubles will also be used to transport larger plant. B-Doubles consist of a truck with two trailers and have a maximum length of 26 m

6.11.3 Impact Assessment

6.11.3.1 Traffic Assessment

The traffic generated by the Project can be separated into three stages being the construction, operation and decommissioning with peak traffic generation occurring in the construction stage.

Traffic Generation

The peak hours for construction traffic will occur at the start and end of the day when workers are transported to and from the Project Area. Generally, workers will arrive onsite between 6 am and 7 am and depart between 5 pm and 7 pm. While workers generally have staggered finish times which results in the evening peak hour being less pronounced, for a conservative assessment it was assumed that the evening peak hour trips were the same as the morning peak and the evening peak hour aligns with the peak hour on the road network.

The modelling of construction traffic anticipated that the Project would generate 1,210 light vehicles and 750 heavy VPD as identified in **Table 6–49.**

The Project was modelled to generate approximately 675 vph in the morning and evening peak hour construction periods. This number will reduce to 450 vph during average construction periods.

OSOM vehicles were modelled to contribute the smallest percentage of trips to the Project Area during construction. OSOM vehicles will be subject to separate permit applications and regulations.

Operational traffic for the Project is expected to be minimal. The only traffic will be associated with maintenance and operation services. Modelling determined that the Project is expected to be operated by up to 50 maintenance staff resulting in a periodic increase in traffic of up to 67 vehicle movements per day. This would result in a negligible change to the traffic environment. Some commercial vehicles for delivery of parts would occur occasionally.

Decommissioning of the Project will typically involve the dismantling and removal of all above ground infrastructure.

Table 6–49 Traffic Generation During Construction Period

Vehicle Type		Average Construction Periods		Peak Construction Period	
		Vehicles per Day (vpd)	Peak Hour Volume (vph)	Vehicles per Day (vpd)	Peak Hour Volume (vph)
Light Vehicles		810	400	1,210	600
Heavy Vehicles	Rigid Trucks	104	10	158	16
	Truck and Dog	306	31	462	46
	Semitrailers	64	6	94	9
	B-Doubles	24	2	36	4
	Subtotal	*498*	*50*	*750*	*75*
Total		**1,308**	**450**	**1,960**	**675**

Traffic Distribution

Vehicles accessing the Project from each direction are expected to utilise the following roads which are illustrated in **Figure 3-12:**

- From the north (Hay): Vehicles will utilise Cobb Highway and then each of the respective local roads to access all site entrances.
- From the south (Deniliquin, Jerilderie or Conargo):
  - Light vehicles will utilise the local road network consisting of Conargo Road, Carrathool Road, Willurah Road and Jerilderie Road to access Site Entrance B.
  - Light and heavy vehicles will utilise Cobb Highway and then each of the respective local roads to access site entrances A, C and D.
- From the east (Coleambally): Vehicles will utilise Kidman Way and the local road network consisting of Four Corners Road, North Boundary Road and Jerilderie Road to access Site Entrance B.

Vehicle distributions were estimated based upon population, proximity to the Project Area and availability of materials. **Table 6–50** provides a breakdown of the access distribution for the Project.

Table 6–50 Vehicle Distribution

Vehicle Type		Distribution (%)		
Light Vehicles		**North**	**South**	**East**
Light Vehicles	Light vehicles will be associated with workers travelling to/from the site	42.6	49.9	7.5
Heavy Vehicles		**North**	**South**	**East**
Rigid Trucks	These vehicles will predominantly be water trucks and vehicles transporting materials such as concrete and fencing supplies which would likely be sourced within the surrounding area	40	50	10
Truck and Dog	These vehicles will transport quarry material from the local area	40	50	10
Semitrailers	These vehicles will transport larger equipment and materials from the local area	40	50	10
B-Doubles	Plant will be transported from the Port of Adelaide to the Project Area via Deniliquin	0	100	0

Cumulative Traffic Impacts

With the primary traffic impact determined to be during construction commencing in Q4 of 2026 and taking 55 months to complete, potential traffic conflicts with nearby developments were identified.

Table 6–51 identifies nearby developments which have the potential to generate additional vehicle movements along Cobb Highway and/or the local road network in the vicinity of the Project Area. A description of each is provided in **Section 6.21**. The estimated traffic volumes for these developments are not currently available as the EIS stage TIA has not yet been prepared.

Table 6–51 Cumulative Traffic Impacts with nearby Developments

Project	Potential Vehicle Conflict
Pottinger Wind Farm	Potential for construction of both Projects to overlap. The Projects may utilise shared infrastructure, resources and transport routes. The traffic generated from both Projects may interact along Cobb Highway, Jerilderie Road and other local roads to the south and east.
Bullawah Wind Farm	Potential for construction to overlap. The traffic generated from both Projects may interact along Cobb Highway, Jerilderie Road and other local roads to the south and east.
The Plains Solar Farm	Potential for construction to overlap. The traffic generated from both Projects may interact along Cobb Highway and West Burrabogie Road.
The Plains Wind Farm	Potential for construction to overlap. The traffic generated from both Projects may interact along Cobb Highway and West Burrabogie Road.

Traffic Assessment

An assessment was carried out for the key intersections and mid-block road sections identified within the proposed travel routes for the Project and summarised below.

Cobb Highway and Jerilderie Road Intersection Performance

A SIDRA intersection analysis was undertaken for the development to determine traffic volumes at the Cobb Highway and Jerilderie Road intersection in the morning peak hour of construction (6 am to 7 am) and the evening peak hour of construction (5.30 pm to 6.30 pm). Traffic volumes were determined by:

- Existing surveyed traffic volumes in Appendix B of the TIA adjusted by an estimated 1.5% compounded annual growth rate over 7 years to reflect the end of the construction period in 2031; and
- Construction traffic.

The SIDRA analyses are provided within the **Appendix O** and summarised in **Table 6–52**.

Table 6–52 SIDRA Analysis Results Summary

Approach / Movement		Morning Peak Hour			Evening Peak Hour		
		Average Delay (sec)	95% Queue (m)	Level of Service	Average Delay	95% Queue (m)	Level of Service
Jerilderie Road	Left Turn	8.2	0.1	A	7.9	5.1	A
	Right Turn	8.2		A	8.3		A
Cobb Highway North	Left Turn	8.4	0.0	A	8.2	0.0	A
	Through	0.0		A	0.0		A
Cobb Highway South	Through	0.0	0.1	A	0.0	0.0	A
	Right Turn	17.8		A	7.7		A

The findings of the SIDRA analysis determined the following:

- The intersection is expected to operate with minimal queue lengths on all legs;
- The overall average delay at the intersection is below 7 seconds during the peak hours which is considered to be minor; and
- The intersection is expected to continue to operate with good level of service.

The resulting peak hour volumes generated by the Project at the Cobb Highway and Jerilderie Road intersection performance identify the AM Cobb Highway left turn movement onto Jerilderie Road as having 183 light vehicle movements per hour. The heavy vehicle movements were modelled as being 14 vph. During the PM peak, these heavy and light vehicle movements will be in an opposite direction via Jerilderie Road to Cobb Highway.

Operation of the intersection was determined to achieve a good level of service with minimal queueing and delays expected during peak construction.

Kidman Way / Four Corners Road

The intersection of Kidman Way and Four Corners Road was modelled to accommodate 80 vph during peak periods. The intersection traffic volumes will be expected to increase by approximately 52 vph with Project traffic. The total volumes at the intersection will be lower than each of the Cobb Highway intersections which operate with a good level of service and minimal queuing and delays. Accordingly, the additional traffic (approximately one vehicle every minute) will have a negligible impact on the operation of the intersection.

Conargo Road / Carrathool Road

The intersection of Conargo Road and Carrathool Road is a T-intersection which provides priority for vehicles travelling in a north-south alignment between Carrathool Road and the southern leg of Conargo Road. Project traffic will travel through the continuing leg of the intersection to/from Deniliquin (81 vehicles per hour) and will therefore not generate any turning movements to access the regional road network. A small proportion of the Project traffic in the order of 9 vehicles per hour is expected to travel to/from Jerilderie and will be required to perform a left or right turn at the intersection.

6.11.3.1.1 Mid-block Assessment

The maximum volume for a “Level of Service A’ for a level terrain rural road with approximately 15% heavy vehicle traffic is in the order of 530 vehicles per hour based upon the ‘RTA Guide to Traffic Generating Developments’ (RTA, 2002). An assessment was carried out on mid-bock road sections in **Table 6–53.**

All roads will therefore continue to operate with a good level of service based on the RTA Guide standards.

Table 6–53 Mid-block Traffic Assessment

Road	Class	Current Peak Hour Traffic (vph)	Project Peak Hour Traffic (vph)	Expected Peak Hour Traffic – 2031
Jerilderie	Local Road	9	194 – north of site access 127 – south of site access	204 – north of site access 137 – south of site access
Willurah Road	Local Road	2	105	107
Four Corners Road	Local Road	3	52	66
North Boundary Road	Local Road	12	52	55

6.11.3.2 Heavy Vehicle Route Assessment

A Heavy Vehicle Route Assessment has been completed from the Port of Adelaide (delivery of plant) to the Project Area. This assessment excludes OSOM vehicles. The proposed construction traffic access route is shown on **Figure 3-12.**

All roads on the access route utilise designated B-double vehicle routes with the exception of Jerilderie Road and North Boundary Road between Jerilderie Road and Bullawah Road which are unrated components of the access route and require approval from HSC.

Table 6–54 provides a summary of the access roads used for the transport of plant to the Project.

Table 6–54 Traffic Road Names and Jurisdictions

Road Name	State	Jurisdiction	B-Double Approved
Corio Quay Road	Victoria	DTP	Approved
Station Street			
Princess Freeway			
Western Ring Road			
Hume Freeway			
Northern Highway			
Cobb Highway	Victoria New South Wales	DTP (Vic) TfNSW (NSW)	
West Burrabogie Road (Site Entrance A)	HSC	HSC	Unrated
Warwillah Road & East-West Road (Site Entrance D)	New South Wales	ERC	

Unsealed sections of road to be utilised by Project traffic will include:

- Willurah Road;
- Four Corners Road;
- North Boundary Road;
- East-West Road;
- Wargam Road; and
- West Burrabogie Road.

Unsealed roads would typically be considered for sealing when they accommodate between 200 and 500 vehicle trips per day. Given the expected traffic volumes on each of the roads per day and in consideration the proposed traffic increase is only temporary, it is considered acceptable for all roads to remain unsealed.

6.11.3.3 OSOM Vehicle Route Assessment

OSOM vehicles are required to deliver larger plant to the Project such as earthmoving equipment and WTG components. OSOM vehicles that travel to the Project are divided into two categories:

- Vehicles that comply with the relevant regulations and are able to operate on the approved NSW OSOM Load Carrying Vehicles Network; and
- Vehicles that are non-compliant with the OSOM Load Carrying Vehicles Network.

The following is the split of OSOM vehicles expected to access the Project Area:

- 759 vehicles to transport blades during construction and decommissioning;
- 253 vehicles to transport Nacelles construction and decommissioning;
- 1771 vehicles to transport tower sections construction and decommissioning;
- 39 vehicles to transport transformers construction and decommissioning; and
- 360 x OSOM vehicles associated with the transportation of large civil plant during the construction period.

Approximately 3,182 OSOM vehicles would be required to access the Project Area during the construction period. All OSOM vehicles will travel outside of the peak periods and would be subject to the road upgrades and mitigation measures.

Special Purpose Vehicles

Vehicles built for a purpose other than carrying goods such as a mobile crane, a concrete pump or a drill rig are defined as Special Purpose Vehicles and are considered Class 1 restricted vehicles if they exceed one or more of the general mass and dimension limits.

Special Purpose Vehicles are expected to access the Project Area during construction and decommissioning. The majority of OSOM vehicles would comply with the exemption notices and be able to operate on the approved NSW OSOM Load Carrying Vehicles Network. State and local roads along the access route can accommodate the OSOM vehicle movements to be generated during Project construction.

Vehicles Requiring an Escort

Vehicles that would not comply with the exemption notice include:

- Tower and blade delivery vehicle; and
- Modular building delivery vehicles.

The largest components to be transported to the site are the WTG blades and tower sections. The blades would be transported in one piece and form the longest component, while the towers are comprised of several sections which can be assembled on-site however, each section forms a wide cylindrical load shape.

The Port of Adelaide will be utilised as the origin point for the delivery of all large plant (excluding WTG components) required for the Project. WTG components will be delivered from the Port of Adelaide. The OSOM route to the Project Area from the Port of Adelaide is approximately 1,100 km for the blades and 1.200 km for the towers. A road network route assessment was undertaken which determined:

- 22 identified truck rest areas that could be used along the route; and
- 24 points of interest for further assessment.

The assessment of the access route identified that the vehicle is able to access the Project Area with minor civil works, signage relocation and suitable traffic management measures.

OSOM vehicles associated with the Project are able to utilise the routes with permits to be applied for with the TMP. Any OSOM movements are to be timed so they do not coincide with other OSOM vehicles within the surrounding area.

Road Upgrades

A number of road upgrades will be required for OSOM WTG transport vehicles in order to allow the vehicles to successfully access the site from the Port of Adelaide. **Section 3.4.4** describes the indicative location of road upgrades.

6.11.3.4 Intersection Assessment

Turn Treatments

Morning peak hour (6 am – 7 am) workforce access to the Project Area is proposed to generate the turn facilities at State Road intersections. An assessment was undertaken for the following intersections to ensure vehicles are able to turn from the State Road network:

- Cobb Highway / Jerilderie Road;
- Cobb Highway / West Burrabogie Road;
- Cobb Highway / Wargam Road / Symons Crescent;
- Cobb Highway / Warwillah Road; and
- Kidman Way / Four Corners Road.

The Austroads Guide specifies the turning treatments required at intersections.

Cobb Highway / Jerilderie Road

The intersection of Cobb Highway and Jerilderie Road forms a T-intersection which does not currently provide turn-movements.

All Project traffic travelling through the intersection is modelled to arrive from the north and turn left from Cobb Highway into Jerilderie Road. An assessment was only undertaken on the left turn movement as any vehicle approaching the Project from the south would adopt an alternative route.

The modelled left turn volume at the intersection will exceed the maximum value provided in the Austroads Guide (Austroads, 2021). Realigning the intersection would not be suitable to accommodate the left turn volumes as the Project is a temporary change in traffic conditions and Cobb Highway is a major state road.

A swept path assessment for B-double vehicles was undertaken for the modelled channelised left turn. The assessment modelled that a B-double vehicle can turn to/from Cobb Highway with the inclusion of the turn movements. The intersection is suitably designed and is able to accommodate the vehicles proposed to access the Project Area.

Cobb Highway / West Burrabogie Road

The intersection of Cobb Highway and West Burrabogie Road forms a T-intersection which does not currently provide turn-movements.

Project traffic will arrive from the north and south along Cobb Highway. The turn treatment assessment carried out for both north and south movements determined basic right and left turn treatments are required to accommodate the volume of traffic.

A swept path assessment to confirm the intersection can accommodate two-way movement of semi-trailers or B-Doubles concluded the intersection is able to accommodate vehicle access with the inclusion of the proposed turn treatments as shown in **Figure 3-7**.

Cobb Highway / Wargam Road / Symons Crescent

The intersection of Cobb Highway Wargam Road / Symons Crescent forms a cross intersection which does not currently provide turn-movements.

Project traffic will be limited to light vehicles arriving from the north and south along Cobb Highway. The intersection forms a cross intersection with Symons Crescent which services the Booroorban Hotel and two residential dwellings. Turning movement surveys carried out at the intersection indicate that no vehicles were recorded turning in or out of Symons Crescent during the AM peak hour for Project traffic (6:00 am-7:00 am) when the workforce would be travelling to the Project Area. Accordingly, the assessment has been carried out for the left and right turn movements into Wargam Road only. The turn treatment assessment determined basic left turn treatment will be required to accommodate the volume of traffic.

A swept path assessment to confirm the intersection can accommodate two-way movement of semi-trailers or B-Doubles concluded the intersection is able to accommodate vehicle access with the inclusion of the proposed turn treatments as shown in **Figure 3-9.**

Cobb Highway / Warwillah Road

The intersection of Cobb Highway and Warwillah Road forms a T-intersection which does not currently provide turn-movements.

Project traffic will arrive from the north and south along Cobb Highway. The turn treatment assessment carried out for both north and south movements determined basic right and left turn treatments are required to accommodate the volume of traffic.

A swept path assessment to confirm the intersection can accommodate two-way movement of semi-trailers or B-Doubles concluded the intersection is able to accommodate vehicle access with the inclusion of the proposed turn treatments as shown in **Figure 3-9.**

Kidman / Four Corners Road

The intersection of Kidman Way and Four Corners Road forms a T-intersection which currently does not provide any turn treatments.

A turn treatment assessment was prepared using the estimated 2030 traffic volumes at the intersection based on a 1.5% annual growth rate and the Project traffic volumes at the intersection. No turning movement count data was available for the intersection and the assessment conservatively estimated the level of turning volume onto Four Corners Road based on the mid-block survey data for each road.

Traffic volumes at the intersection are minimal and any updated data would not change the conclusions of the assessment. All Project traffic travelling through the intersection will arrive from the north and turn right from Kidman Way into Four Corners Road. Only a right turn assessment was carried out.

Based upon the assessment, a basic right turn treatment is required. The turn treatment is based on an estimated traffic growth rate and even with a higher growth rate, the Basic Right Turn treatment would not be expected to change.

A swept path assessment for B-double vehicles was undertaken for the modelled channelised right turn. The assessment modelled that a B-double vehicle is able to turn to/from Kidman Way with the inclusion of the turn movements. The intersection is suitably designed and is able to accommodate the vehicles proposed to access the Project Area.

6.11.3.5 Sight Distance Assessment

An assessment of the Safe Intersection Sight Distance (SISD) was also carried out at the aforementioned intersection to ensure safe entry into the State Road network.

A minimum sight distance should be provided along a major road at any intersection in accordance with the ‘Austroads Guide to Road Design Part 4a: Unsignalised and Signalised Intersections (Austroads Guide)’ (Austroads, 2021).

The available sight distance at each intersection exceeds the requirements of the Austroads Guide given the relatively flat and straight alignment of the road network with vegetation generally limited to low-level ground cover. Vehicles are expected to be able to safely enter the road network at each intersection.

6.11.3.6 Project Access

The proposed site access location are as follows:

- Site Entrance A – West Burrabogie Road;
- Site Entrance B – Jerilderie Road;
- Site Entrance C – Wargam Road;
- Site Entrance D – East-West Road; and
- Site Entrance E – Emergency access.

All adjoining roads are subject to a speed limit of 100 km/hr. A design speed of 110 km/hr has been adopted which requires an SISD of 300 m for each approach based on a reaction time of 2.5 seconds. The available sight distance at each site access exceeds the requirements of the Austroads Guide. Vehicles are expected to be able to safely enter the road network from each site access.

A swept path assessment was undertaken for the access to the Project Area which demonstrates that the access was designed for simultaneous B-Double movement to accommodate the largest OSOM vehicle expected to access the site (i.e. WTG blade transport vehicle). Project Area access is suitably designed and is able to accommodate the vehicles expected to access the site.

6.11.4 Mitigation and Management

A TMP will be prepared prior to the commencement of construction for the Project in consultation with relevant regulators.

The TMP will be prepared and implemented in accordance with the 'Australian standard 1742.3' (NSW State Government, 2017) and the *Work Health Safety Regulation 2017* (A TMP would provide additional information regarding traffic volumes and distribution of construction vehicles which was not available at the time of the TIA including:

- Road transport volumes, distribution and vehicle types;
- The origin, destination and routes for:
  - Employee and contractor light vehicles;
  - Heavy vehicles;
  - OSOM vehicles;
- A map of the primary haulage routes highlighting critical locations;
- An induction process for vehicle operators and regular toolbox meetings;
- A complaint resolution and disciplinary procedure; and
- Local climatic conditions that may impact road safety of employees throughout all Project phases.

Decommissioning traffic would be similar to traffic generation during the construction period. A Decommissioning TMP will be prepared prior to decommissioning in conjunction with the relevant authorities.

The following mitigation measures will be included within the TMP to minimise the impact of construction traffic along the road network.

Information and Communication

The Project will implement a community information and awareness program which will assist in managing traffic impacts. A program of consultation will be initiated to ensure local residents are aware of construction traffic accessing the Project. The program may include the following as appropriate for each stage:

- Press releases in local newspapers;
- Specific emails, newsletters and individual letter drops to neighbouring residents along the access route to the Project;
- The provision of a website providing details of the status of works and contact details for complaints or enquiries;
- Provide key contact personnel and contact details, including out of hours contact information to residents, schools, public activities and business operating alongside the local route; and
- Neighbours of the Project will be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.

Signage

If deemed necessary, specific warning signs advising the changed traffic operations and presence of heavy vehicles are to be appropriately located on approaches to and from the transport routes on Council roads. These should warn existing road users. Day warning notices where signs are activated on a specific day to warn local road users of construction activities may also be applied.

Management of Vehicular Access

Management of vehicular access to and from the Project Area is essential to maintain the safety of the general public as well as the labour force. The following code is to be implemented as a measure to maintain safety within the Project Area:

- Utilisation of only the designated transport routes;
- Construction vehicles are to abide by finalised schedules as agreed by the relevant authorities; and
- All vehicles associated with Project construction, operation and/or decommissioning will enter and exit the Project Area via the designated site access locations.

Emergency Access

An emergency access location is proposed at the eastern end of West Burrabogie Road (E) which will only be used if required for emergency purposes. There will be no regular pedestrian or vehicular access via the emergency access location during construction works. The gate will be locked at the commencement of the construction phase and will remain locked for security purposes once the Project is operational.

Site management documentation during construction and operation, such as the Project specific emergency management plan, will identify this location as ‘emergency access only’.

The emergency access will be used during emergency situations such as bushfire or flooding, and emergency procedures will be outlined in the Project’s specific emergency management plan. During an emergency the access would be utilised by light vehicles associated with the Project workforce, landowners and emergency response vehicles.

The emergency access gates are proposed to be set back at least 15 m from the edge of the West Burrabogie Road carriageway which would allow an emergency vehicle to safely pull off the road when unlocking the gate in an emergency situation.

On-Site Mitigation Measures

On-site mitigation measures which target safety and the reduction of on-site transport impacts will include:

- On-site speed restrictions;
- Appropriate dust suppression measures;
- Maintenance program for on-site access tracks to ensure safe access;
- Loading and unloading is proposed to occur within the work area. No street or roads would be used for material storage at any time;
- Sufficient car parking is to be provided on-site to ensure vehicles do not park on the surrounding road network; and
- All car parking and loading areas to be designed in accordance with the relevant Australian Standard (2890 series) and Council requirements.

Driver Protocols

A Driver Code of Conduct will be implemented as a safety measure and include:

- All vehicles would enter and exit the site in a forward direction;
- Heavy vehicle movements should avoid peak school bus times to limit the interaction of larger vehicles and vulnerable road users;
- Safety initiatives for impacts to residential areas and/or school bus zones;
- Utilisation of only the designated transport routes;
- Deliveries are coordinated throughout the day to avoid B-Doubles meeting along the unrated component of the access route;
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities; and
- All permits for working within the road reserve must be received from the relevant authority prior to works commencing.

Oversize / Overmass Operating Protocols

Management of vehicular access to and from the Project is essential in order to maintain the safety of the general public as well as the labour force. Driver protocols for delivery of larger plant and equipment shall include the following:

- The arrangements for the delivery of OSOM loads and WTG components to the Project should avoid peak periods of traffic on the network as far as practicable and minimise disruption and disturbance to residents;
- OSOM load permits for WTG components shall be appended to the TMP;
- Pilots shall be in radio contact with other trucks to ensure passing occurs at safe and convenient locations;

- In the event of a breakdown, accident or road failure, the transporter crew shall do the following:
  - Park the pilot vehicles in locations where they maximise safety, considering overhanging components, and blind bends on approaches;
  - Contact emergency services (including Police) as is appropriate in the case of an accident;
  - Contact the project manager;
  - Contact the Council or other road controlling authority as may be appropriate in the case of the incident;
  - Contact the site manager to advise all other project traffic, and local traffic via CB radio as appropriate in the case of the incident; and
  - Follow all instructions from Police and the road controlling authority.
- In the case of an accident, the vehicles involved should not be moved until instructed by Police;
- Utilisation of only the designated transport routes; and
- Construction vehicle movements are to abide by finalised schedules as agreed by the relevant authorities.

Rail Crossings

Written approval will be sought from the relevant rail authorities for all level crossings as part of the TMP. Preliminary advice from the rail authorities indicates that a track protection officer is likely to be required to supervise each crossing due to the length and nature of the load.

Vulnerable Road Users

A review of the OSOM access routes has been undertaken to identify locations where vulnerable road users may be present on the road network. The assessment focuses on facilities such as schools and hospitals that are attended by vulnerable road users including children or people with disabilities.

Heavy Vehicle Route

In relation to heavy vehicle usage:

- Durin construction, pre-condition survey of the relevant sections of the existing road network will be undertaken in consultation with Council prior to construction;
- During construction, the sections of the road network utilised by the Project are to be monitored and maintained to ensure continued safe use by all road users;
- Any faults attributed to construction of the Project will be rectified; and
- A post-condition survey will be undertaken to ensure the road network is left in a condition equivalent to that at the start of construction.

6.12 Telecommunications

6.12.1 Background

A Telecommunication Impact Assessment (TCIA) was prepared for the Project by Middleton Group Engineering Pty Ltd and is summarised below and included in **Appendix P.**

The TCIA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

The TCIA was prepared to assess the impacts and proposed mitigation for telecommunications services from the proposed construction, operation and decommissioning phases of the Project.

6.12.2 Methodology

A desktop study was undertaken which mapped WTG locations, telecommunications services and an evaluation of the impact of the WTGs on these services. The assessment impacts of the Project on:

- Point-to-point microwave links;
- Meteorological radar;
- Mobile voice-based communications;
- Wireless and satellite internet services;
- Broadcast and digital radio;
- Broadcast, digital and satellite television; and
- Trigonometry stations and GPS.

6.12.3 Impact Assessment

6.12.3.1 Point-to-point links

WTGs have been identified to potentially impact on point-to-point communications through the following mechanisms:

- Near field effects;
- Distraction; and
- Reflection or scattering effects.

Communications sites registered with ACMA have not been identified within the Project Area. Two point-to-point links are located within close proximity of the Project Area and are identified in **Table 6–55.**

Table 6–55 Telecommunication Links in Close Proximity to the Project Area

Point-to-Point link number	BSL / Licence No	Site 1	Site 2	Length (km)	Frequency (MHz)	Owner
TC1	11300366/1	NSWTA 100m Guyed Mast 75 Warwillah Road Site ID: 10026558	Transgrid 80m Guyed Mast off 1494 Jerilderie Rd Site ID: 35103	46.3	7435	NSW Government Telecommunications Authority
TC2	1207619/1	Murrumbidgee Shire Council 76.6m Guyed Mast Argoon, off Kidman Way Site ID: 402871	Essential Energy 35m Lattice Tower 75 Warwillah Rd Site ID: 35605	101	404.28	NSW Rural Fire Service

Near-field Effects

Near-field effects occur in the vicinity of the transmitter and receiver. The inductive fields of objects up to several hundred metres from the transmitter receiver which can impact the near-field effects.

No WTGs are proposed within or close to the ACMA towers that could result in near-field effects.

Reflection and Scattering Effects

Reflection and scattering relate to the interference by an object that reflects the signal from the transmitter to the receiver. The path can then be lengthened between transmitter and receiver creating temporal modulation.

There are no transmitters or receivers within 2 km of the Project Area.

Diffraction

Diffraction is where an object modifies a wave, by obstructing the path of travel. WTGs have the potential to impact the Fresnel zones of the ray line.

The Fresnel zones for the ray lines were calculated using an equation (refer Section 5.3.3 of TCIA). The equation determines that obstacles in the first Fresnel zone will adversely impact the signal, whereas beyond the first Fresnel zone, the impact is reduced.

An assessment of the point-to-point links near the Project Area was then undertaken. This assessment is provided in **Table 6–56.**

Table 6–56 Link Details

Point-to-point link number	BSL / Licence number	Fresnel zone 1 max (m)	Fresnel zone 2 max (m)
TC1	11300366/1	21.60	30.548
TC2	1207619/1	136.82	193.49

Link 1

Link 1 passes through the Project Area and between WTG 1 and 2. The assessment that was carried out used the lowest frequency signal between the two points and determined that the Fresnel zones between the two sites was not affected and no WTG contacts the link's maximum Fresnel zones.

The link between site 1 and site 2 was not likely to cause telecommunication interference which was confirmed during consultation with the NSW Telecommunications Authority.

Link 2

Link 2 passes through the Project Area and between WTGs 255, 260, 267 and 272. The assessment that was carried out used the lowest frequency signal between the two points and determined that the Fresnel zones between the two sites have a potential to be affected by WTG 260.

The analysis is conservative, stating that the actual Fresnel zone size of Link 2 in the vicinity of WTGs 255, 260, 267 and 272 may be smaller than that assessed. Despite this, a further 3D analysis was conducted, and it was determined that WTG 260 is unlikely to cause interference to Link 2.

6.12.3.2 Meteorological Radar

Some wind farm projects can be visible on the Bureau of Meteorology's (BoM) radars, registered as static echoes. The assessment referenced the World Meteorological Organisation (WMO) recommendations for WTG siting, stating that each should be located beyond 5 km from meteorological radars and preferably beyond 20 km. The Operational Programme for the Exchange of Weather Radar Information (OPERA) and the radar programme of European Meteorological Services Network (EUMETNET) assert that no WTG should be deployed within:

- 5 km radius of a C-band radar; and
- 10 km radius of a S-band radar.

An impact study should be submitted if WTGs are sited within:

- 20 km radius of C-Band radars; and
- 30 km radius of S-band radars.

The nearest radar was determined to be a C-Band radar, being the Yarrawonga radar, which is 145.3 km from the Project Area. The Project was therefore determined to comply with the WMO standards. Excellent coverage from three radars within 250 km of the Project Area was highlighted which suggests that good visibility of weather events will be achieved. This was supported by consultation with BoM who advised that there are no expected impacts to BoM assets.

6.12.3.3 Mobile based Voice Communications

No mobile based phone stations were mapped within a 2 km buffer from WTGs. Signals are not significantly impacted where towers are more than 1 km from WTGs. The Project would be unlikely to cause significant impact on the operation of mobile phone base stations.

Some signals from the mobile service providers were detected in the Project Area. It was assessed that in the immediate vicinity of the WTGs that some reduction in signal may occur. This can be mitigated by relocating the mobile phone receiver by a distance of tens of metres. No significant impact on the signal is forecast beyond the Project Area.

6.12.3.4 Wireless and Satellite Services

Satellite services were determined only to be impacted by receivers where sited in extremely close proximity to WTGs which may impedes their view of the sky. Satellites such as these were identified as providing connections to pay-tv, wireless internet and satellite phone coverage as well as TV coverage where there is not terrestrial service available.

All associated dwellings are beyond 2 km of a WTG excluding DAD_01 and should this dwelling be constructed the signal quality from satellite services may be impacted. No non-associated dwellings were identified to be impacted by the Project.

6.12.3.5 Trigonometrical Stations and GPS

The report identified the trigonometrical stations and survey marks which are used for surveying or distance measuring. GPS antennas and Electronic Distance Measuring may be installed at some stations.

If a line of site blockage occurs, moving laterally one to two metres will alleviate the blockage. Six survey marks were identified within 2 km of a WTG. The closest distance between survey marks and the WTG was identified as 219 m (at WTG 268).

Detailed design will ensure WTG268 and its associated disturbance avoids the survey mark as shown on **Figure 2-7.** However, should this not be possible, assistance from a registered surveyor will move or remove the survey marks in consultation with relevant regulators.

No significant effects of survey marks will be felt as no locations are shared with WTG's and survey marks.

Global Navigation Satellite System (GNSS) network maps were provided by Geoscience Australia. The electro-magnetic interference (EMI) impact of the Project to the GNSS stations was analysed and determined that there were no GNSS stations within the Project Area. It was determined that the GNSS services will not likely be impacted by the Project.

6.12.3.6 Broadcast, Digital Radio and Television

Amplitude Modulation (AM) signals can be influenced by WTGs. The TIA identified that a 2 km radius consultation zone exists around AM transmitters.

Frequency modulated (FM) signals are more robust around obstructions such as buildings and Projects with a 1 km radius consultation zone highlighted as applying to FM transmitters.

Digital signals require a 2 km radius around transmitters for both radio and digital television.

No AM, FM, DTV or Temporary Licence transmitters were located within 20 km of a WTG. No digital radio transmitters were identified in the vicinity of the site.

6.12.3.7 Cumulative impacts

Cumulative telecommunication impacts were assessed for the following:

- Bullawah Wind Farm; and
- The Plains Wind Farm.

Cumulative impacts were deemed unlikely with the only potential cumulative impact stemming from the Fresnel zone impingement on point-to-point links. The Project was assessed as unlikely to add to the cumulative impact from the wind farms on the point-to-point links passing through the Project Area.

Impacts on other telecommunications services are identified in **Table 6–57**.

A minimal cumulative impact may be felt from the other nearby wind farms which was modelled to primarily impact mobile-voice based and BOM radars due to the high number of WTGs. Stakeholder engagement was recommended as a means to mitigate interference with BOM assets.

Table 6–57 Cumulative Impacts on Telecommunications Services

Telecommunication service	Cumulative Impact (Y/N)	Comment
Meteorological radar	Y	This impact is to be discussed with BoM during stakeholder engagement and any interference, as determined by the BoM will need to be mitigated through collaboration with the respective applicants.
Mobile voice-based communications	N	In the immediate vicinity of the group of wind farms, some reduction in signal may occur, as is normally expected. This can be mitigated by relocating the mobile phone receiver in the order of tens of metres.
Wireless and satellite internet services	N	The cumulative effect is influenced by factors such as the density of WTGs, their proximity to telecommunication infrastructure, and the specific characteristics of the communication signals involved. There is unlikely to be an increased impact on these services because of cumulative effects.
Broadcast and digital radio	N	The impact on these services depends on whether a WTGs from one of the wind farms falls within the buffer zone of this service. There is unlikely to be an increased impact on these services because of cumulative effects.
Broadcast, digital and satellite television	N	The impact on these services depends on whether a WTGs from one of the wind farms falls within the buffer zone of this service. There is unlikely to be an increased impact on these services because of cumulative effects.
Trigonometry stations	N	The impact on these services depends on whether a WTG from one of the wind farms falls within the buffer zone of this service. There is unlikely to be an increased impact on these services because of cumulative effects.

Telecommunication service	Cumulative Impact (Y/N)	Comment
GPS	N	The impact on these services depends on whether a WTG from one of the wind farms falls within the buffer zone of this service. There is unlikely to be an increased impact on these services because of cumulative effects.

6.12.3.8 Micro-siting

The 300 m micro-siting radius sought by the Project determined the following conclusions:

- No additional ACMA links or sites, beyond the two links which currently fall within the Project Area, were assessed to possibly interfere with the WTG layout; and
- A 300 m micro-siting allowance will have no material impact on wireless and satellite services, broadcast and digital radio/television and GPS.

Micro-siting of some WTGs was found to potentially have an impact on telecommunications assets (however this is consistent with predictions prior to consideration of micro-siting), including:

- WTG 1 and WTG 2 have the potential to impact upon Fresnel zone Link 1;
- WTGs 255, 268 and 272 have the potential to impact upon Fresnel zone Link 2; and
- WTG 268 is within 300 m of a survey mark (Figure 13 of the TCIA report).

6.12.4 Mitigation and Management

During detailed design, a final review of the WTG locations will be undertaken to ensure that any changes to WTG locations will not cause any potential impact.

The Applicant has consulted with relevant stakeholders to ensure the Project has no material impacts on telecommunications services.

As an outcome of consultation with Telstra a detailed analysis of the full power coordination impact (Low Frequency Induction (LFI) and/or Earth Potential Rise (EPR)) will be undertaken for the Project during detailed design. This includes the location of the switchyard, the route and potential of any associated HV transmissions lines and the LFI and EPR impact on any Telstra plant they may affect.

The Applicant will also liaise with the BoM in the event of severe weather conditions to assist in matters of community safety, inform the BoM of any changes in the Project layout and notify the BoM at least two weeks prior to any planned shut-down to allow the BoM to calibrate its weather radar system.

6.13 Aviation

6.13.1 Background

An Aviation Impact Assessment has been prepared by Aviation Projects and is included in **Appendix Q.** A summary is provided below.

The key objectives of the assessment were to:

- Consider the potential aviation impacts associated with the Project, including:
  - Potential impacts on certified aerodromes within 30 nautical miles (nm), and uncertified aerodromes within three nm;
  - Potential impacts on air routes published in the Aeronautical Information Publication (AIP);
  - Nominate the surrounding airspace classification; and
  - Nominate overlapping radar navigation systems;

- Undertake a qualitative risk assessment to determine the need for aviation hazard lighting;
- Consider the potential cumulative effects of other existing or proposed renewable energy projects;
- Consider the consultation undertaken with relevant aviation agencies summarised in **Section 5**; and
- Define mitigation measures to manage potential impacts during construction, operation, and decommissioning.

A site visit was conducted in September 2023 to ground truth potential aviation safety aspects of the area to the south-east of Hay and confirm the locations of certified airports and uncertified aerodromes, or ALAs.

WTG micro-siting during detailed design and construction has been considered in the AIA, with the estimate of the overall maximum height being based on the highest ground level within 300 m of the nominal positions.

6.13.2 Methodology

The AIA was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** which include the 'National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft' (National Airports Safeguarding Advisory Group, 2012) and stakeholder engagement summarised in **Section 5**.

6.13.2.1 Certified Aerodromes

Hay Airport relative to the Project Area is shown in **Figure 1-1.** The 30-nm radius area represents the boundary of the 25-nautical mile minimum sector altitude (MSA) plus a 5-nautical mile buffer area, within which obstacles are assessed to determine minimum safe altitudes. There are no other certified aerodromes within a 30 nautical mile radius and / or operational ALAs located within a 3 mile radius of the Project Area.

Obstacles within 15 nm and within 30 nm (MSA plus 5-nautical mile buffer) of the Hay airport define the height at which an aircraft can fly in poor visibility conditions under instrument flight rules (IFR) when within 10 nautical miles and 25 nautical miles, or when weather conditions do not allow the pilot to see the ground.

The 25-nautical mile MSA for Hay Airport is set at 1,700 feet AMSL with a 'procedures for air navigation services – aircraft operations' (PANS-OPS) surface elevation of 716 feet AMSL.

Two GPS based instrument approach procedures are published for the use of IFR aircraft arriving at Hay Airport ('RNP RWY 04' and 'RNP RWY 22'). An assessment of the PANS-OPS surfaces associated with these two approach procedures has determined that they are not located overhead the Project Area.

For the existing Code 3 non-precision runways, the maximum lateral extent of the Obstacle Limitation Surface (OLS) is up to 5.5 km radius for the conical surface and 15 km from each runway for take-off and landing.

6.13.2.2 ALAs

No operable non-associated ALAs were identified for assessment within the assessable 3 nm radius.

6.13.2.3 Surrounding Airspace

The Project is located wholly within Class G airspace and would not impact any controlled or designated Special Use Airspace.

6.13.2.4 Grid and Air Routes

'Manual of Standards 173' required that the published Lowest Safe Altitude (LSALT), for a particular airspace grid or air route, provides a minimum of 1,000 feet clearance above the controlling (highest) obstacle within the relevant airspace grid or air route tolerances.

The Project Area is located within four Grid LSALT areas including:

- North-west – 1,700 feet AMSL, with a protection surface of 700 feet (ft) AMSL;
- North-east and south-east – 2,200 feet AMSL, with a protection surface of 1200 feet AMSL; and
- South-west – 2,100 feet AMSL, with a protection surface of 1,100 feet AMSL.

A 7 nm protection area on either side of an air route is used to assess the LSALT for an air route. There are several air routes within 7 nm of the Project Area.

6.13.2.5 Aviation Navigation and Radar

The nearest aviation navigation aid is located at Griffith Airport, at a significant distance of 64 nm north-east of the Project. As such, no impact from the Project is predicted.

The closest radar facility is the Mount Bobbara Route Surveillance Radar (RSR), which is located 317 km to the south-east. As such, no impact from the Project is predicted.

6.13.2.6 Other Aviation Activities

Other aviation activities may intermittently occur over the Project Area such as aerial spraying or bushfire control.

Aerial agricultural operations, including fertiliser, pest, and crop spraying, are generally conducted under day visual flight rules (VFR) usually between 6.5 feet and 100 feet above ground level. There are no known aerial agriculture operations conducted at night in the vicinity of the Project.

Aerial firefighting operations (firebombing in particular) are conducted under day VFR, sometimes lower than 500 feet (152.4 m) above ground level with certain conditions such as smoke and haze reducing visibility. Most aerial firefighting organisations have formal risk management programs to assess the risks associated with their operations and implement applicable treatments to ensure an acceptable level of safety can be maintained.

There may be some high-speed low-level military jet aircraft, transport and helicopter operations conducted in the area.

Low level military flight operations require a considerable pre-flight assessment of the planned route or operation to enable aircrew to be aware of the terrain and obstacle environment that could create a hazard to the operation.

Relevant assessment has been undertaken for each and assessment was conducted around 300 m micrositing of WTGs.

6.13.3 Impact Assessment

6.13.3.1 Hay Airport

Project WTGs are located within the 25 nm MSA for Hay Airport, with the highest WTGs at a maximum elevation of 1,233.6 ft AMSL, infringing the 25 nm MSA by 534.6 ft. WMT at 666 ft does not infringe the 25-nm MSA. This infringement would require the 25 nm MSA for the Hay Airport to be increased from 1,700 feet AMSL to 2,300 feet AMSL. This is considered a minor impact.

The 25nm MSA determines the altitude that aircraft commence the instrument approach from the Initial Approach Fix (IAF). As the 25 nm MSA for Hay Airport needs to be increased to 2,300 feet AMSL, the commencement altitudes must also be increased to 2,300 feet AMSL, requiring an editorial amendment to each instrument approach procedure. The 10-nautical mile MSA, would not be impacted by the Project.

The Project would not impact on the OLS for Hay Airport as the closest WTGs in the Project area are beyond the horizontal extent of the OLS, including the OLS that would be applied to the proposed extension of Runway 04/22 to 2,300 m.

6.13.3.2 ALAs

No operable non-associated ALAs were identified for assessment within the assessable 3 nm radius and therefore no Project impacts to ALAs are predicted.

6.13.3.3 Wake Turbulence

A nominal 220 m rotor diameter has been used for the wake turbulence analysis undertaken for this assessment, and based on this scenario, the effects of wake turbulence could be noticeable up to 3,520 m from the WTGs.

A conservative area of 10-rotor diameters could be considered a worst-case assessment of the extent where wake turbulence would be felt by pilots operating downstream of a WTG. Based on this assessment scenario, the wake turbulence zone expected for WTGs with a rotor diameter of 220 m would be up to 2,200 m from the WTG.

Adverse turbulence from any source is most critical during the initial climb after take-off, until the aircraft is established in a climb and at the appropriate speed, and similarly during final approach where the aircraft is configured for landing and operating at a slow speed prior to landing.

No operable non-associated ALAs are predicted to be impacted by wake turbulence associated with the Project.

6.13.3.4 Grids and Air Routes

The impact analysis undertaken concluded that all four GRID LSALTs would need to be increased to 2,300 feet AMSL to accommodate the Project. A summary of findings of the impact analysis is provided in **Table 6–58.**

Impact analysis of the surrounding air routes found that two air route LSALTS close to the project would need to be amended to accommodate the WTGs. A summary of the findings of the assessment is provided in **Table 6–59.**

Table 6–58 GRID LSALT Impact Analysis

Grid LSALT	Protection Surface	Highest WTG (ft AMSL)	Impact on GRID LSALT	Potential Solution	Impact on Aircraft
1700 ft AMSL	700 ft AMSL	1,233.6	533.6 ft infringement	Raise to 2,300 ft AMSL	Minor
2100 ft AMSL	1100 ft AMSL	1,233.6	133.6 ft infringement	Raise to 2,300 ft AMSL	Minor
2200 ft AMSL	1200 ft AMSL	1,233.6	33.6 ft infringement	Raise to 2,300 ft AMSL	Minor

Table 6–59 Air Route LSALT Impact Analysis

Air Route	Waypoint Pair	Route LSALT (ft AMSL)	Protection Surface (ft AMSL)	Impact on Air Route	Potential Solution	Impact on Aircraft
H247	NATYA to TOBOB	2,000	1,000	Highest WTG will exceed by 234.6 ft	LSALT raised by 300 ft to 2300 ft AMSL	N/A
W762	TREST to VINOP	2,200	1,200	Highest WTG will exceed by 34.6 ft	LSALT raised by 100 ft to 2300 ft AMSL	N/A
H21	NATYA – WG VOR	3,200	2,200	Nil	N/A	N/A

6.13.3.5 Local Aerial Application Operators

Aerial agriculture pilots are subject to rigorous training and assessment requirements to obtain and maintain their licence to operate under these conditions. The Aerial Application Association of Australia (AAAA) has a formal risk management program which is recommended for use by its members.

Agricultural and firefighting activities or other scenarios that require low level flight must only be undertaken in good conditions (high visibility) in accordance with aviation regulations, during which WTGs can be considered as highly visible structures.

As such, safe aerial application operations would be possible on properties within the Project Area and on neighbouring properties.

The use of helicopters enables aerial application operations to be conducted in closer proximity to obstacles than would be possible with fixed wing aircraft due to their greater manoeuvrability.

6.13.3.6 Emergency Services

Royal Flying Doctor Service

Royal Flying Doctor Service (RFDS) and other emergency services operations are generally conducted under the IFR, except when arriving/departing a destination that is not serviced by instrument approach procedures, in which case they would be operating within the provisions of day or night VFR.

Aircraft arriving or departing from Hay Airport can conduct flights under the IFR using the two published instrument approach procedures.

Emergency aviation service organisations have formal risk management programs to assess the risks associated with their operations and implement applicable treatments to ensure an acceptable level of safety can be maintained.

Aerial Firefighting

Aerial firefighting operations are conducted under Day VFR, sometimes below 500 ft AGL. Under certain conditions visibility may be reduced/limited by smoke/haze.

Aerial firefighting organisations have formal risk management programs to assess the risks associated with their operations and implement applicable treatments to ensure an acceptable level of safety can be maintained. For example, pilots require specific training and approvals, additional equipment is installed in the aircraft, and special procedures are developed.

Each fire is assessed according to the unique conditions present in and around the fire.

The Australian and New Zealand National Council for Fire and Emergency Services (AFAC) has developed a national position on wind farms and operations in relation to bushfire prevention, preparedness, response, and recovery in Wind Farms and Bushfire Operations, version 3.0, dated 25 October 2018. This position includes the following regarding emergency response:

> *"Wind farm operators should be responsible for ensuring that the relevant emergency protocols and plans are properly executed in an emergency event. During an emergency, operators need to react quickly to ensure they can assist and intervene in accordance with their planned procedures.*
>
> *The developer or operator should ensure that:*
>
> – *liaison with the relevant fire and land management agencies is ongoing and effective*
>
> – *access is available to the wind farm site by emergency services response for on-ground firefighting operations; and*
>
> – *WTGs are shut down immediately during emergency operations – where possible, blades should be stopped in the 'Y' or 'rabbit ear' position, as this positioning allows for the maximum airspace for aircraft to manoeuvre underneath the blades and removes one of the blades as a potential obstacle.*
>
> *Aerial personnel should assess risks posed by aerial obstacles, wake turbulence and moving blades in accordance with routine procedures".*

Based on the position adopted by AFAC, the Project is not expected to interfere with aerial firefighting and emergency response if liaison with the relevant fire and emergency is ongoing regarding access and emergency procedures to be adopted.

Hazard Marking and Lighting

The AIA risk assessment concluded that aviation lighting is not likely to be required for WTGs and permanent WMTs to provide an acceptable level of safety.

WMTs will be marked in accordance with the requirements set out in 'Manual of Standards (MOS) 139 Section 8.10 (as modified by the guidance in NASF Guideline D)' (MOS139) will be implemented.

For temporary WMTs, WMTs installed prior to the WTGs, and those that are not close to a WTG, there will be an acceptable level of aviation safety risk associated with the potential for an aircraft collision provided obstacle lighting is fitted with medium intensity lighting at the top of the mast to ensure visibility in low light and deteriorating atmospheric conditions.

Other Aviation Risks

Based on an extensive review of accident statistics data and feedback from stakeholders, five potential risks have been identified associated with the Project in relation to aviation safety or potential visual impact:

- Aircraft to collide with a WTG, controlled flight into terrain (CFIT);
- Aircraft to collide with a WMT (CFIT);
- Potential for a pilot to initiate manoeuvring to avoid colliding with a WTG or wind monitoring tower, resulting in collision with terrain;
- Hazards associated with the project to invoke operational limitations or procedures on operating crew; and
- Impacts of obstacle lighting on neighbours (if required by CASA).

The key findings of the AIA risk assessment are summarised in **Table 6–60.** The residual risk relates to the remaining level of risk with the implementation of the mitigation in **Section 6.13.4**.

Table 6–60 Aviation Risk Assessment Summary

Identified risk	Consequence (untreated)	Likelihood (untreated)	Risk rating (untreated)	Residual risk (treated)	Recommended treatment
Aircraft collision with wind turbine generator (WTG)	Catastrophic	Unlikely	8 – unacceptable	7 - tolerable Acceptable without obstacle lighting	Communicate layout details to local and regional operators. Publish details in ERSA for surrounding aerodromes before, during and following construction.
Aircraft collision with WMT	Catastrophic	Unlikely	8 - unacceptable	7 - tolerable Acceptable without obstacle lighting	Marking in accordance with MOS 139 Chapter 8 Division 10 Obstacle Markings, specifically 8.110 (5), (7) and (8). Communicate layout details to local and regional operators. Publish details in ERSA for surrounding aerodromes.
Avoidance manoeuvring leads to ground collision	Catastrophic	Unlikely	8 - unacceptable	7 - tolerable Acceptable without obstacle lighting	Communicate layout details to local and regional operators. Publish details in ERSA for surrounding aerodromes before, during and following construction.
Effect on crew	Minor	Possible	5 - tolerable	5 - tolerable	Communicate layout details to local and regional operators. Publish details in ERSA for surrounding aerodromes before, during and following construction.
Visual impact from obstacle lights	Moderate	Almost certain	8 - unacceptable	7 - tolerable Acceptable without obstacle lighting	Zero risk of visual impact if obstacle lighting not installed.

Cumulative Impacts

Consideration has been given to potential cumulative effects of other proposed renewable energy projects (see **Section 6.21**) nearby on safe operation and navigation, planned and future aircraft operations in the area, air routes and aerial application, and firefighting activities.

The potential cumulative impacts associated with these projects will differ across the area REZ, but the main safety aspect is for pilots to be made aware of windfarms prior to their planned operations in the area.

It is reasonable to consider that WTGs proposed for these projects would be the defining obstacle with potential to cause cumulative impacts in the surrounding area. Generally, across the REZ proposed WTGs with maximum heights up to 950 feet AGL will require due consideration by pilots when operating to some of the private and uncertified aerodromes that are located within 3 nm of the WTGs.

Pilots will need to consider:

- Wind direction and likely downwind turbulence from WTGs created in the nominal circuit area; and
- Departure and arrival flight paths to remain clear of WTGs.

Landowners who engage aerial application companies will need to ensure that the pilots are aware of the locations of WTGs to ensure the safe operation of their aircraft at those ALAs within or close to the WTGs, and at nearby neighbouring properties.

The cumulative effects of the identified developments in the area are not expected to have an impact on aircraft conducting “travel flights” in the airspace over the REZ, as they will generally be flying at altitudes well above the WTGs for fuel efficiency and passenger comfort reasons.

Whilst some IFR protection surfaces and air route LSALTs will need to be increased to accommodate the windfarms (in some areas), the impact to their operations is considered reasonable and minimal and will not impact existing flight paths and descent gradients.

There is expected to be minimum impact on night flying operations under the VFR because minimum altitudes required to be flown will be at least 1,000 feet above the maximum height of the WTGs (until within the 3 nm approach of the destination aerodrome).

Aerial application activities will require careful consideration of the local area in which they are about to operate, but as most of these operations are conducted in very light wind conditions to ensure chemical containment within the property boundary to which they are being applied, the WTGs may not be turning. The WTGs would just be another obstacle to consider and plan the flight operation around.

6.13.4 Mitigation and Management

The following mitigation measures will be included in the CEMP and implemented for the Project:

- Consult with and provide relevant Project information to Airservices Australia including:
  - ‘As constructed’ details of WTGs and WMT coordinates and elevations;
  - Obstacles above 100 m AGL (including temporary construction equipment) for notification to pilots by NOTAM, until they are incorporated in published operational documents;
  - To address the infringement of the Hay Airport 25-nautical mile MSA PANS-OPS surface, and associated increase to the two Hay Airport instrument approach procedures;
  - To address the infringement impact to the grid LSALTs, requiring an increase to 2,300 feet AMSL for the relevant grids; and
  - To address the LSALT impact of air routes H247 and W762, which will need to be raised;
- Provide relevant information to CASA including locations of WTGs and wind monitoring towers (temporary and permanent);
- Consult with landowners and aerial operators (as relevant) for the unidentified non-associated ALA and local aerial agricultural operators. Details of the Project, including location and height information of WTGs, WMT and overhead powerlines will be provided to facilitate flight planning upon request;
- Consult with relevant aerial firefighting and emergency response stakeholders including NSW Fire and Rescue, NSWRFS regarding access and emergency procedures to be adopted in the event of an emergency;
- The rotor blades, nacelle and the supporting tower of the WTGs will be painted white; and
- Permanent and temporary WMTs will have aviation marker balls or highly visible flags or sleeves placed on the outside of the guy wires and paint markings will be applied in alternating contrasting bands of colours to at least the top third of the masts in consideration of MOS 139.

6.14 Preliminary Hazard Analysis

6.14.1 Background

Hazards and risks associated with the Project have been assessed in accordance with the *State Environmental Planning Policy (Resilience and Hazards) 2021* and "Applying SEPP 33 – Hazardous and Offensive Development' (Applying SEPP 33) (DoP, 2011). Under these requirements a preliminary screening assessment was completed to determine whether the Project was classified as a hazardous and offensive development under Chapter 3 of 'Applying SEPP 33'.

The Project will have a BESS Facility which is likely to utilise lithium-ion batteries that can be a safety risk for occupants and installers, potentially leading to electric shock, fire, flash burns, explosion or exposure to hazardous chemicals or gases. As a result, the preliminary screening assessment determined the Project is a potentially hazardous or offensive development and a Preliminary Hazard Analysis (PHA) is required to assess the hazards of the Project.

The PHA was prepared for the Project by Riskcon Engineering Pty Ltd and is included within **Appendix R.** It evaluated risks for the Project and provided recommendations.

The PHA was prepared with consideration to the SEARs described in **Section 1.1** in accordance with the Hazardous Industry Planning Advisory Papers (HIPAP) No. 6 (Ref. [1] and No. 4 [2] and with consideration of the scope and scale of the Project.

As a result of the detailed hazard assessment of the incidents with potential to have offsite impacts, none were observed to have offsite impacts. Based upon the analysis, it was concluded that the risks were not considered to exceed acceptable risk criteria, thereby classifying the Project as potentially hazardous.

Other hazards including telecommunications, aviation, blade throw, and bushfire are assessed in **Section 6.12**, **6.13**, **6.15** and **6.16,** respectively.

6.14.2 Methodology

The scope of the PHA included:

- A Multi-Level Risk Assessment as the basis to determine the level of risk assessment required being either:
  - Qualitative – no major off-site consequences and societal risk is negligible;
  - Partially Qualitative – Off-site consequences but with low frequency of occurrence; and
  - Quantitative – where Qualitative and Partially Qualitative analyses are exceeded.
- A Risk Assessment Study Approach considering:
  - Hazard analysis which determined the potential for an incident to have an off-site impact;
  - Consequence analysis for incidents qualitatively identified in the hazard analysis to have a potential offsite impact;
  - Frequency analysis which identified the frequency of incidents which did not have a simple management solution;
  - Risk assessment and reduction which determined the risk of incidents identified in consequence and frequency analysis by comparing them to risk criteria in HIPAP No. 4 (Ref. [2]); and
  - Reporting on the outcomes of the PHA.

The assessment considered the proposed 300 m micrositing of WTGs. The PHA prepared a hazard identification table which provides a summary of potential hazards, consequences and safeguards at the site and was prepared in accordance with the recommended approach in HIPAP No. 6.

The impact criteria considered:

- Fire impacts – incidents that result in 4.7 kW/m^2 at the Project Area, are carried forward for further assessment;
- Explosion – incidents that exceeding an explosion overpressure of 7 kPa at the Project Area are carried forward for further assessment;
- Toxicity – toxic bi-products of combustion may be generated by a fire has been assessed;
- Property Damage and Accident Propagation – incidents that result in a heat radiation less than 23 kW/m^2 and explosion overpressure less than 14 kPa at the Project Area are screened from further assessment; and
- Societal Risk – where there is a significant intensification of the population in the vicinity of a project, the change in societal risk needs to be taken into account. In the case of the Project, there is currently no significant intensification of population around the Project Area, therefore societal risk has not been considered in this assessment.

The PHA identified the following potential hazardous scenarios for the Project as listed in **Table 6–61**.

Table 6–61 Identified Potentially Hazardous Scenarios

Hazard	Detailed hazard assessment required	Carried forward for further assessment
Li-ion battery fault, thermal runaway and fire	Yes	No
Victorian Big Battery fire review	Yes	No
Li-ion battery fire and toxic gas dispersion	Yes	No
Electrical equipment failure and fire	Yes	No
Transformer internal arcing, oil spill, ignition and bund fire	Yes	No
Transformer electrical surge protection failure and explosion	Yes	No
Electromagnetic field Impacts	Yes	No
National Health and Medical Research Council Review	Yes	No

6.14.3 Impact Assessment

6.14.3.1 Li-ion Battery Fault, Thermal Runaway and Fire

Li-ion battery fault, thermal runaway and fire scenarios were assessed for a hazard with a detailed hazard assessment conducted. Li-ion battery technology has evolved to the extent that historical issues with lithium dendrites forming have been reduced, resulting in a safer battery overall.

Despite improvement in battery technology, there remain several degradation mechanisms that are still present within the battery which can result in thermal runaway, including:

- Chemical reduction of the electrolyte at the anode;
- Thermal decomposition of the electrolyte;
- Chemical reduction of the electrolyte at the cathode;
- Thermal decomposition by the cathode and the anode; and
- Internal short circuit by charge effects.

Due to these mechanisms for degradation, Li-ion batteries are equipped with several safety features to prevent the batteries from charging or discharging at voltages which result in battery degradation, leading to shorting of the battery and thermal runaway, including:

- Shut-down separator (for overheating);
- Tear-away tab (for internal pressure relief);
- Vent (pressure relief in case of severe outgassing); and
- Thermal interrupt (overcurrent/overcharging/environmental exposure).

The PHA identified that the LFP technology is unlikely to cause fire during thermal runaway provided the protection systems are in place and operating. If a fire were to develop within a BESS container it would not transfer to nearby containers due to the fire safety design features. Accordingly, this incident was not carried forward for further analysis in the PHA.

6.14.3.2 Victorian Big Battery Fire Review

A review of recent large scale BESS fires was undertaken to determine whether similar incidents could potentially occur with the Project.

An assessment of the Victorian Big Battery (VBB) was undertaken as part of the PHA. The VBB fire was mainly caused by strong wind blowing flames from one Megapack into the unprotected vent atop an adjacent Megapack. This resulted in the ignition of the plastic fan which was able to impact the battery modules directly beneath the fan.

Fire safety precautions learnt from the VBB incident have been incorporated into the Project description at **Section 3** including:

- The vent atop the containers shall be made of metal instead of plastic and covered by a metallic mesh shield; and
- The placement of the fans shall be such that batteries or flammable materials shall not be located directly beneath ventilation openings.

Based upon the designs incorporated within the container considering the VBB fire, the available area assessment and the separation distance assessment, the propagation between two units is considered unlikely. This potential incident is therefore not carried forward for further analysis.

6.14.3.3 Li-ion battery fire and toxic gas dispersion

The PHA assessed the scenario of a Li-ion battery fire and toxic gas dispersion. If a BESS failure occurs resulting in a fire, toxic biproducts of combustion may form. A literature review was conducted on lithium-ion battery fires to identify the toxic gases which may be generated in the event of a fire and included the following:

- Carbon dioxide;
- Carbon monoxide; and
- Fluorine gases.

A review of each of these toxic gases was conducted within the PHA and determined the following:

- Carbon dioxide – based upon a review of the sensitive areas, and the similar BESS fires, it is not considered that the formation of carbon dioxide in a fire would be sufficient to result in downwind impacts sufficient to cause injury or fatality. The PHA identifies that carbon dioxide toxic gas dispersion was not carried forward for further analysis;

- Carbon monoxide – based upon the potential for fire to occur within the BESS units which could form carbon monoxide if there is insufficient oxygen to sustain complete combustion. However, it is noted that the combustible load within the BESS which could result in the formation of carbon monoxide is relatively low compared to the available oxygen in the surrounding atmosphere. The formation of carbon monoxide at levels which would result in a substantial downwind impact are not considered credible and subsequent analysis of this incident is not required; and
- Fluoride gases – in the event of a fire, the vented gases and other components such as the polyvinylidene fluoride binders may form gases various fluoride gases. For a toxic gas dispersion, a battery fire is necessary as the initiating event. The potential for a fire is considered unlikely provided the protection systems are installed and operating. As the initiating event is considered unlikely, this incident was not carried forward for further analysis.

6.14.3.4 Electrical Equipment Failure and Fire

An assessment of the electrical equipment failure and fire was conducted in the PHA for the Project. The PHA states that in the event of a fire, it may begin to propagate to adjacent combustible materials which include electrical equipment in the switch room. Failures of this equipment may cause overheating and arcing.

The type of equipment used within the project is ubiquitous throughout the world and across industry segments and is therefore not a unique fire scenario.

Based upon a fire within switch rooms, the fire would be considered to be relatively slow in growth and would be unlikely to result in substantial impacts in terms of offsite impact or incident propagation. Therefore, this incident was not carried forward for further analysis.

6.14.3.5 Transformer Internal Arcing, Oil Spill, Ignition and Bund Fire

The PHA identified the hazards relating to scenarios for internal arcing, oil spill, ignition and bund fire. The PHA identified that the transformers contain oil which is used to insulate the transformers during operation. In the event that oxygen enters the reservoir containing the oil, autoignition occurs generating sufficient heat to ignite the oil in the bund.

Notwithstanding this, transformers are ubiquitous units with a low potential for failure. The separation distance to the Project Area and other adjacent units would be unlikely to result in incident propagation and offsite impacts. Therefore, this potential incident was not carried forward for further analysis within the PHA.

6.14.3.6 Transformer Electrical Surge Protection Failure and Explosion

The transformer electrical surge protection failure and explosion was assessed within the PHA. Oil is used as an insulation measure for high electrical currents that pass though transformers. Extreme energy surges such as lighting strikes may cause the protection measures to fail and result in gas bubbles of hydrogen and methane where temperatures exceed autoignition of gases.

If oxygen enters the transformer, the concentration of flammable gases falls within the explosive limits which are above their autoignition temperatures resulting in an explosion.

Protection measures against this generally include devices which shunt electrical surges safely to ground. Despite this, surge detection and protection devices are not universally installed nor do they protect against all events such as in the case of a major lightning strike or significant oil deterioration, leakage of water into the transformer, and physical damage such as a fallen tree.

The PHA asserts that there is potential for an explosion to occur which may result in offsite impacts, however these units are ubiquitous and have a low failure potential. The PHA was not carried this event forward for further analysis.

6.14.3.7 Electromagnetic Field Impacts

Impacts resulting from Electromagnetic fields (EMFs) were assessed as part of the PHA. EMFs are associated with a range of sources and are both naturally occurring and man-made. BESS create EMFs from operational electrical equipment, such as transmission lines transformers and the electrical components found within BESS units, inverters etc.

The International Commission on Non-Ionizing Radiation Protection (INCIRP) provided guidelines around exposure limits for prolonged exposure. The guideline limits the exposure to 2,000 milligauss (mG) for members of the public in a 24-hour period.

Transmission power lines emit a measurement range of 10-200 mG. Based upon the typical levels which may be generated by transmission equipment, the cumulative effect would not exceed the 2,000 mG limit for prolonged exposure. In addition, the closest residence is over 1 km away from the EMF generating sources at the BESS. The PHA asserts that the potential for EMF to exceed the accepted daily levels is considered negligible.

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) advises that the strength of radiation decreases exponentially the further away from the radiation source an object is located. For example, radiation from the transmission power lines and becomes indistinguishable from background radiation within 50 m of a high voltage power line and within 5 – 10 m of a substation.

As the strengths of EMF attenuate rapidly with distance, the ICNIRP reference level for exposure to the general public will not be exceeded and impact to the general public in surrounding land uses is negligible.

As the potential for exposure to EMF exceeding the international guidelines is negligible, this incident was not carried forward for further analysis within the PHA.

6.14.3.8 National Health and Medical Research Council Review

An Information Paper on the relationship between wind farms and human health, prepared by the National Health and Medical Research Council (NHMRC), was considered in the PHA. Three concerns about the operation of wind farms were highlighted:

1. Noise generated by the WTGs;
2. Shadow flicker from the turning of the wind blades; and
3. Electromagnetic radiation.

Noise impacts resulted in hearing loss, disturbed sleep and annoyance. In prolonged instances these might extend to health complications such as high blood pressure, heart disease and potentially vibroacoustic disease in some individuals. Despite these findings, the report, which focused primarily on noise impacts, highlights that there is a lack of strong evidence which supports the causation between the noise generated from WTGs and human health.

The PHA highlighted that the Information Paper struggled to determine whether the issues highlighted stemmed solely from the noise emissions of WTGs or if other factors contributed. The NHMRC suggested that any observed impact on human health may be attributed chance rather than a direct correlation. Further evidence suggested that there were unlikely to be significant effects on physical or mental health beyond distances greater than 1,500 m from wind farms. As the closest Project WTG is over 2 km and 3 km away from the nearest associated and non-associated dwelling (respectively) potential human health impacts from WTG noise are expected to be negligible.

The Information Paper lacked sufficient information on shadow flicker despite the paper highlighting that residents who lived in a 5 km radius of a WTG are more likely to experience annoyance compared to those living further away. Visual stimulus produces less pronounced potential effects than noise or EMF. Further investigation was identified as being required to understand the potential health implications of shadow flicker.

As determined by the findings of the Information Paper and the location of residential receivers adjacent to the Project Area, the effects were determined to be negligible, with adverse health impacts considered negligible, the potential incident has not been considered for further analysis.

6.14.4 Mitigation and Management

The following mitigation measures will be incorporated into the CEMP and OEMP:

- BESS to be tested in accordance with UL9540A;
- Testing to demonstrate clearances required to prevent propagation of fires between separated units;
- BESS to be installed in accordance with manufacturer and UL9540A report recommended clearances based on testing;
- BESS to be installed with fire protection systems specified by the manufacturer and UL9540A report;
- Detailed design to validate the system to be installed in the Project Area ensuring recommended clearances are met;
- UL testing information shall be made available to the certifying authority. It is noted that a confidentiality agreement may be required;
- The vent covers of the BESS shall be constructed of non-combustible material; and
- The vents shall not be located above battery packs within the BESS container.

6.15 Blade Throw

6.15.1 Background

Blade throw refers to an incident where structural failure results in either a whole blade, or parts of a blade detaching and being thrown into the surrounding area while the WTG is in operation. Detachment may occur where blades are damaged by lightning strike, storms or erosion and material fatigue.

It is also possible for structural failure to occur without resulting in a blade throw incident, such as if a blade or part of a blade detaches and falls to the ground close to the WTG while the rotor is not operating. In these cases, the danger risk to the surrounding area is low.

Modern WTGs and components supplied by major manufacturers are designed and certified to recognised standards to ensure structural integrity and safe operation over the lifetime of the WTG.

There are currently no Australian or New Zealand standard for the design of large WTGs (rotor swept area above 200 m^2). However, 'International Standard IEC 61400' (International Electrotechnical Commission, 2005) (IEC), considers most aspects of the lifecycle of the WTG from site conditions in design and construction to WTG installation, testing, and operation:

- *IEC 61400-1* establishes the minimum requirements for the design of WTGs and WTG components to avoid structural failure and the consequential risk of personal injury or damage to property;
- *IEC 61400-4* provides guidance on the analysis of loads in relation to the design of gear and gearbox elements;
- *IEC 61400-5* specifies requirements to ensure the engineering integrity of wind WTG blades as well as an appropriate level of operational safety throughout the design lifetime;
- *IEC 61400-12* specifies the procedures for measuring the power performance characteristics and testing of WTGs connected to the electrical power network;
- *IEC 61400-23* specifies the requirements for testing the structural integrity of WTG blades; and
- *IEC 61400-24* describes the requirements for lightning protection systems installed on WTGs.

In addition to meeting the minimum design and manufacturing standards, sophisticated control systems are incorporated into modern WTGs that are designed to shut down the WTG during adverse operating conditions or when faults or abnormalities are detected during operation.

Control systems include monitoring and protection systems to prevent over-speed operating conditions (where the rotor could accelerate beyond its rated operating speed), or other conditions that may indicate structural failure such as abnormal vibration, rotor imbalance, or reduced power output.

Modern WTGs also incorporate lightning protection systems designed to isolate damage from lightning strike to the surface of the blades, where it can be seen and repaired as part of the wind farm operation and maintenance schedule.

The operational monitoring and maintenance schedules at wind farms are designed to prevent and minimise faults and implement early fault detection to mitigate the risk of danger. The safeguards and the minimum design and operation standards discussed above mean that blade throw incidents at modern wind farms are rare.

6.15.2 Methodology

This blade throw assessment was compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

The SEARs and the Draft Wind Energy Guideline do not provide guidance on the methodology that should be used to assess blade throw risks, or the blade throw risks that would be considered acceptable. In the absence of relevant guidance, consideration of blade throw risks is based on a review of available literature.

Publicly available records of blade throw incidents are currently limited and there is generally an absence of records noting throw distance, fragment size, wind WTG model, operating conditions, or information about the consequence of the incident. However, there is literature available publicly that documents generally conservative interpretations of historical blade throw data and theoretical modelling to consider blade throw risk.

The ‘Dutch Wind WTG Risk Zoning Handbook’ (Rijksdienst voor Ondernemend Nederland, 2014) (the Dutch Handbook) provides guidance on blade throw risk and forms the basis of the ‘Dutch Wind WTG Risk Zoning Guide’ (DNV GL Netherlands, 2020).

Dutch Handbook provides a methodology for analysis of blade throw risks and a methodology for conducting a conservative high-level risk assessment which can be used as a screening assessment to evaluate the potential risks for a wind farm.

The methodologies presented in the Dutch Handbook were developed based on conservative assumptions and research into the likely frequency of a blade throw incident occurring, distances that a blade or part of a blade may be thrown, and the resulting risk of impact to people and properties in the surrounding area.

The results presented in the Dutch Handbook are generally consistent with other available literature, and the methodologies have been used to inform assessments in other jurisdictions and so provide an appropriate basis for consideration of blade throw in Australia.

6.15.3 Impact Assessment

The WTGs will be designed, manufactured, and installed in accordance with relevant international standards to ensure structural integrity and safe operation over the lifetime of the Project. Additionally, operational control systems, and monitoring and maintenance schedules at the wind farm would minimise faults or damage and ensure early detection and rectification.

Considering the above, the risk of serious or dangerous problems developing and causing a blade throw incident is expected to be rare. The likely frequency of potential blade throw events, and the implications of an incident occurring are discussed below.

6.15.3.1 Blade Throw Frequency

Blade throw frequencies determined for the Dutch Handbook, which consider limitations and uncertainty associated with historical data are summarised in **Table 6–62.** Frequencies are estimated per year per WTG based on historical data available.

Table 6–62 Frequency of Blade Throw Incidents Occurring

Blade Throw Scenario	Estimated Frequency (per year per WTG)		Recommended Frequency for Use in Blade Throw Analyses
	Based on data recorded from 1984 to 2000	Based on data recorded from 2001 to 2010	(per year per WTG)
Detachment and throw of whole blade or large portion of blade			
All operating conditions [1]	6.3×10^{-4}	6.3×10^{-4}	1 incident per year per 1,190 WTGs (8.4×10^{-4})
Normal operating conditions (rated rotor speed) [2]	3.1×10^{-4}	6.2×10^{-4}	1 incident per year per 1,190 WTGs (8.4×10^{-4})
Mechanical braking conditions (1.5 times the rated rotor speed) [2]	3.1×10^{-4}	Included with normal operating condition	Not applicable to modern WTGs
Over-speed conditions (2 times the rated rotor speed) [3]	Less than 5.0×10^{-6}	Less than 5.0×10^{-6}	1 incident per year per 200,000 WTGs (5.0×10^{-6})
Detachment and throw of blade tip or another small blade fragment			
All operating conditions [1]	1.2×10^{-4}	Not explicitly considered	1 incident per year per 3,846 WTGs (2.6×10^{-4})
Over-speed conditions (2 times the rated rotor speed) [3]	5.0×10^{-6}	Not explicitly considered	1 incident per year per 200,000 WTGs (5.0×10^{-6})

[1] Derived directly from the number of recorded incidents. For the detachment and throw of an entire blade under all operating conditions, the actual rate of blade throw incidents observed in data recorded from 2001 to 2010 was slightly less than 6.3×10^{-4}. However, for the sake of conservatism, the researchers conducting the review chose to retain the blade throw frequency derived in the previous analysis.

[2] Assumed, based on probability of a blade throw incident under all operating conditions expected proportion of incidents occurring for WTGs operating under normal conditions, under mechanical breaking, and under over-speed conditions.

[3] Assumed, based on expected likelihood of complete failure of the WTG over-speed protection system.

The Dutch Handbook recommends that frequencies presented in **Table 6–62** are likely to be conservative because some of the historically recorded incidents would have been associated with WTGs that would not have been certified to current standards. This means that they are unlikely to have been operated with control systems that would apply to the Project.

Statistical data in the Dutch Handbook shows a downward trend in the frequency of recorded incidents, which supports this. It shows the five-year average for throw of an entire blade decreasing from approximately one incident per year, per 2,857 WTGs in 2001 to 2005, to less than one incident per year per 4,000 WTGs for the period 2006 to 2010.

Based on this acknowledgement of conservatism, it is reasonable to assume that the potential frequency of blade throw incidents for the Project could be closer to the frequency noted for the period 2006 to 2010, which is less than one incident per year per 4,000 WTGs.

6.15.3.2 Blade Throw Distance

There are several factors that influence how far a blade or part of a blade can be thrown including, WTG size and tip height, rotor diameter, and with speed at the blade tip being the most influential factor. More specifically the difference between normal operating conditions (operating at or below the rated operating speed) and over-speed operating conditions.

Several theoretical studies have been documented that consider the likely area of impact associated with a potential blade throw incident. The study that is most relevant to the WTG parameters proposed for the Project (a tip height of up to 280 m and a rotor diameter of about 190 – 200 m) is a study by Sarlak and Sørensen in 2016 (H. Sarlak and J. N. Sorensen, 2016), which modelled WTGs with a range of parameters with tip heights from between 150 m to 441 m, and rotor diameters from 100 m to 294 m. The findings of the Sarlak and Sørensen study are summarised in **Table 6–63.**

The Sarlak and Sørensen study considered blade throw incidents under both normal and over-speed operating conditions and assumed that if part of a blade was thrown, it would be equal to 20% of the whole blade's length.

Table 6–63 Summary of Theoretical Blade Throw Distances (Sarlak and Sørensen, 2026)

WTG Parameters Modelled			Approximate Maximum Theoretical Throw Distance	
Diameter (m)	Tip height (m)	Tip speed (m/s)	Whole Blade	Part of a Blade (20% of the whole blade length)
Operating under normal conditions (rated rotor speed)				
100	150.0	70.0	140	450
147	220.5	70.0	180	500
208	312.0	70.0	200	580
294	441.0	70.0	210	610
Operating under normal conditions (maximum rated rotor speed)				
100	150.0	100.0	200	510
147	220.5	100.0	220	860
208	312.0	100.0	250	930
294	441.0	100.0	300	1,000
Operating under overspeed conditions (2 to 2.5 times the rated rotor speed)				
100	150.0	150.0	390	780
147	220.5	150.0	450	1,450
208	312.0	150.0	480	1,800
294	441.0	150.0	500	2,000

The findings of the Sarlak and Sørensen study show that an approximate theoretical throw distance for the Project's WTG parameters would be:

- Normal operating conditions:
  - 200 m for a whole blade;
  - 580 m for part of a blade;
- Normal operating conditions (maximum speed):
  - 250 m for a whole blade;
  - 930 m for part of a blade;
- Over-speed operating conditions (unlikely):
  - 480 m for a whole blade; and
  - 1,800 m for part of a blade.

The theoretical maximum throw distance documented in the Sarlak and Sørensen study do not consider the probability of the modelled scenarios occurring (e.g. the combination of WTG behaviour and wind conditions aligning to maximise the throw distance).

Considering the above, the probability for a blade or part of a blade being thrown from a WTG under normal operating conditions and reaching a maximum throw distance of 250 m is expected to be very low for the Project.

Furthermore, given that modern WTGs incorporate sophisticated control systems, and the Project would be operating under an operational monitoring and maintenance schedule; the likelihood of a WTG operating under over-speed conditions and reaching a maximum blade throw distance of 480 m is expected to be very unlikely.

6.15.3.3 Blade Throw Risks at Dwellings and other Sensitive Locations

There are no dwellings or other sensitive receivers within the theoretical maximum blade throw distance of 250 m for a whole blade under maximum-speed normal operating conditions.

The closest non-associated dwelling (or other sensitive locations) to Project WTGs is NAD_02 located over 3,100 m to the nearest WTG (WTG 108).

Closest associated dwellings include:

- DAD_01 – 500 m to the nearest WTG (WTG 14);
- AD_02 – 2,200 m to the nearest WTG (WTG 231); and
- AD_01 – 2,700 m to the nearest WTG (WTG 65);

The closest property (DAD_01) and AD_02 are both close to the boundary of the neighbouring Plains Renewable Hub Project, and the closest non-associated dwelling (NAD_02) is associated with the neighbouring Bullawah Wind Farm (and close to several WTGs on that development).

The BESS is over 300 m from the closest WTG (WTG 100), and the substation is about 420 m from the closest WTG (WTG 100).

The O&M Facility is over 700 m from the closest WTG (WTG 04), and the temporary workers' accommodation facility is 410 m from the closest WTG (WTG 08).

6.15.3.4 Blade Throw Risks at a Specific Location

A location-specific risk refers to the risk of injury or death of a person caused by a blade throw incident when they remain in a specified location for a period. The Dutch Handbook modelled the risk of being hit and killed by a blade thrown from WTGs of various sizes, based on conservative assumptions of blade throw frequencies and maximum blade throw distance. The risk was modelled for a location at a distance equal to half the rotor diameter.

Based on the conservative assumptions built into the modelling, researchers found that under normal operating conditions:

- The location specific risk was less than 1-in-100,00 per year at a distance equal to half the rotor diameter' and
- The location-specific risk was less than 1-in-1 million at a distance equal to either the WTG tip height, or the maximum theoretical throw distance.

In an assessment for a similar project with WTG tip heights of up to 250 m, DNV-GL compared the risk of a person being hit by a whole blade or part of a blade presented in the Dutch Handbook to the typical fatality risks associated with several common activities. The findings are presented in **Table 6–64** which also shows a conversion of risks presented in the Dutch Handbook for a person in a specific location for a whole year, into the risk for a person spending a working day (eight hours) close to a WTG.

Based on the modelling for the Dutch Handbook and the assessment undertaken by DNV-GL, the risk of a person at a fixed location 250 m from the nearest WTG continuously for a whole year being hit and killed by a blade or blade fragment is expected to be in the order of less than 1-in-1,000,000. The risk of a person who is at a specific location for one whole working day is expected to be in the order of less than 1-in-1,000,000,000.

Table 6–64 Typical Risks of Common Activities Compared to Blade Throw Risks

Risk	Annual Frequency	
Death to people working in agriculture in Australia per agricultural worker 2001-2011[1]	1-in-6,667	
Death on Australian Roads per head of population 2019[2]		
- Nationally	1-in-22,222	
- Inner regional areas	1-in-12,821	
- Outer regional areas	1-in-7,407	
Death due to lighting strike per head of population 1980-1989[3]	1-in-10 million	
Death from impact by a WTG blade or blade fragment, for an unprotected person remaining at a fixed location at the specified distance for the specified time[4]	Continuously for one year	Continuously for one 8-hour day
- Distance equal to half the rotor diameter	1-in-100,000	1-in-100 million
- Distance equal to tip height or maximum theoretical throw distance for a whole blade under normal operating conditions.	1-in-1 million	1-in-1 billion

[1] *Work-related injuries and fatalities on Australian farms*, Safe Work Australia, 2013

[2] *Road trauma Australia 2019 statistical summary,* Bureau of Infrastructure, Transport and Regional Economics (BITRE), 2020

[3] *"Lightning fatalities in Australia, 1824-1991," Natural Hazards, vol. 8, no. 3,* L. Coates, R. Blong and F. Siciliano,1993

[4] *The Dutch Handbook*.

6.15.3.5 Blade Throw Risks at Nearby Roads

The nearest public road is East-West Road, which runs along the southern boundary of the Project. East-West Road traffic volumes are very low as described in **Section 6.11**. The nearest WTG to East-West Road is WTG 274 with a distance of 180 m.

As discussed in **Section 6.15.3.1**, the potential frequency of blade throw incidents for the Project could be less than one incident per year per 4,000 WTGs, and the risk of death or injury caused by a blade throw incident is low.

Considering the expected low frequency of a blade throw incident and the very low traffic volumes on East-West Road, the likelihood of a vehicle passing through the impact zone at the same time as a blade throw incident occurring is expected to be very low.

6.15.4 Mitigation and Management

The risk of a blade throw incident occurring and causing harm to people and property will be managed through operational procedures designed to maintain structural integrity and safe operation over the lifetime of the Project.

Monitoring and maintenance schedules to ensure early detection and rectification of faults or damage will be including in an OEMP, developed in consultation with relevant regulators.

The following mitigation measures will be incorporated in the OEMP:

- The Project will be designed and constructed in accordance with relevant design, manufacturing, installation, and operations standards. Noting that there are currently no Australian or New Zealand standard for the design of large WTGs (rotor swept area above 200 m^2), the following IEC standards (or latest version) will be applied:
  - 'IEC 61400-1 Wind energy generation systems - Part 1: Design requirements';
  - 'IEC 61400-4 WTGs - Part 4: Design requirements for wind WTG gearboxes';
  - 'IEC 61400-5 Wind energy generation systems - Part 5: Wind WTG blades';
  - 'IEC 61400-12 Wind energy generation systems - Part 12: Power performance measurements of electricity producing WTGs – Overview';
  - 'IEC 61400-23 WTGs - Part 23: Full-scale structural testing of rotor blades'; and
  - 'IEC 61400-24 Wind energy generation systems - Part 24: Lightning protection'.
- Inspection and testing procedures will be initiated and audited during the construction and commissioning phase; and
- Project commissioning will only commence after testing procedures determine the relevant component to be commissioned is compliant and safe for operation.

A comprehensive operations and maintenance schedule will be implemented to ensure that faults are prevented or detected and rectified early to minimise the risk of occurrence of a serious or dangerous problem. This will include inspecting blades for micro-cracks using current best practices. If any cracks above engineering thresholds are detected, the WTG will be immobilised until a replacement blade can be installed.

6.16 Bushfire

6.16.1 Background

A Bushfire Assessment Report (BAR) was prepared for the Project by Bushfire Planning Australia (BPA) and is included in **Appendix S.**

The BAR was prepared to address the relevant SEARs described in **Appendix C** of this EIS, considers the 'National Construction Code' (NCC) general safety construction provisions and to enable the Project to satisfy the aims and objectives of the 'Planning for Bushfire Protection 2019' (PBP, 2019) (NSW Rural Fire Service, 2019).

6.16.2 Methodology

Given the Project Area's location, the *Rural Fires Act 1997* (RF Act) requires each bushfire management committee to prepare a Bushfire Risk Management Plan (BFRMP) for an area.

The Project Area is included within the 'Murrumbidgee Irrigation Area Bushfire Risk Management Plan' (MIABFRMP) (MIA Bush Fire Management Committee, 2006). Within the region, bushfire days occur with conditions including dry north westerly winds, which bring maximum temperatures to 43°C. In ranking high risk human settlements in order of assessed bushfire risk, the Project Area was not identified as an asset in the MIABFRMP.

Historically, the Project Area has been within 10 km of bushfires dating back to 1990. The historical fires have varied with size and impact, however the largest bushfire, known as the 'Hay Plains Fire', began north-west of Murrumbidgee Shire on the Sturt Highway resulting in a burnt out area of 120,000 ha.

PBP 2019 does not identify specific advice for renewable energy facilities like the Project. Despite this, PBP 2019 does have objectives relating to access, water and services, and emergency services and emergency evacuation planning.

In the absence of guidelines for NSW renewable energy facilities, the BAR adopted the Victorian Country Fire Authority's set of guidelines for renewable energy facilities, published in 2023, as model requirements to demonstrate the Project satisfies the aims and objectives of PBP 2019.

6.16.3 Impact Assessment

The BAR conducted a Bushfire Hazard Assessment (BHA) in accordance with the requirements of PBP 2019. The BAR included an assessment of the predominant vegetation surrounding and within the Project Area, Bushfire Protection Measures (BPMs), and the effective slope.

6.16.3.1 Vegetation Assessment

A vegetation classification was conducted over the Project Area and areas in the surrounding 140 m buffer (BHA Study Area). An additional assessment of vegetation within 5 km of the Project Area was also undertaken.

The BHA identified that the majority of the Project Area supports derived grasslands, isolated woodlands and scattered trees. In addition, it contained properties which included grazing the grassland vegetation.

Table 6–65 identifies relevant vegetation type, classification and overall fuel load.

Table 6–65 Bushfire Vegetation Assessment

Vegetation	Vegetation Classification	Overall Fuel Load (t/ha)
Woodlands	Floodplain Transition Woodland	18.9
Forested Wetlands (riverine forest)	Inland Riverine Forest	15.1
Semi-arid Woodlands	Riverine Sandhill Woodland	14.5
Semi-arid Woodlands (grassy)	Inland Floodplain Woodland Riverine Plain Woodland	9.0
Grassland	Riverine Plain Grassland	6.0
Freshwater Wetlands	Inland Floodplain Shrubland	4.4
Arid Shrublands (Chenopod)	Aeolian Chenopod	3.2

6.16.3.2 Slope Assessment

An assessment of the slope on the Project was undertaken within the BHA Study Area in the hazard direction from the Project Area. Under the classified vegetation where there was a fire run greater than 50 m, the effective slope was calculated. The slope was calculated using the following methods:

- Review of LiDAR point cloud data - including DEM (NSW LPI);
- Slope Analysis (5-degree increments); and
- Detail survey of existing contours.

The vegetation within and beyond the BHA Study Area is identified as the same contained within the Project Area, comprising largely of grassland and arid shrubland. All were identified as flat.

6.16.3.3 Bushfire Protection Measures

The Project is referred to as an "Other development" in accordance with PBP 2019. This means any type of development that is not a residential or rural residential subdivision. The NCC does not provide for any bushfire specific performance requirements for 'Other development'. Compliance with PBP 2019 was determined based upon requirements:

- Note the range of available Bushfire Protection Measures (BPMs);
- Satisfy the aims and objectives of PBP 2019;
- Consider any matters listed for the specific purpose; and
- Propose an appropriate combination of BPMs.

In the absence of any development specific criteria, the BPMs for "residential development" were adopted as a precautionary approach to the assessment. This section identifies the BPMs for residential development which are adopted for the Project as a precautionary approach.

Asset Protection Zones

An APZ is an area surrounding a development that is continually managed with vegetation removed to create a buffer zone that mitigates the effect of flame contact within the Project Area. As PBP 2019 does not relate to renewable energy facilities, a 10 m APZ for the structure and associated buildings / infrastructure was nominated. Likewise, the CFA Model Requirements nominate a minimum 10 m firebreak around BESS, large scale wind farms and related infrastructure.

All four vegetation zones have a flat slope. A 10 m APZ was determined to be appropriate for all vegetation types for the Project Area.

The BAR identified that all components of the Project Area will be maintained as an inner protection area to minimise exposure to excessive radiant heat levels. Compliance with all acceptable solutions for the APZ Table within PBP 2019 was achieved.

Landscaping and Vegetation Management

Design and management of landscaped areas in proximity to any buildings or structures within the Project Area has the potential to improve survival chances and protect buildings. Landscaping in and around the hazard will include the following:

- Give priority to species with a low flammability;
- Give priority to species which have a low volume of litter drop during the bushfire season;
- Smooth bark species should be prioritised over skinny barked trees;
- Discontinuous gaps in vegetation should be created to break the progress of a potential fire in the direction of buildings; and

- Where landscaping is required to be provided as a visual screen to dwellings as indicated in **Section 3.4.6.3** it shall be provided no less than 100 m from the dwelling.

The BAR confirmed that the acceptable solution within PBP 2019 is able to be complied with by the Project.

Access

The PBP 2019 requires an access design that enables safe operational access and structures and water supply. This needs to be measured whilst facilitating adequate emergency and operational response. All bushfire prone areas should have an alternative access or egress option dependent upon the:

- Bushfire risk;
- Siting of the development; and
- Chances of the primary access road being obstructed or cut by fire for a prolonged period.

Design specifications detailed in PBP 2019 that are relevant to the Project include:

- All property access roads shall be two-wheel drive all weather roads;
- All property access roads should be through roads. If this is unavoidable, dead ends should be:
  - No more than 200 m in length;
  - Incorporate a minimum 12 m turning circle in either a cul-de-sac or T-head formation; and
  - Be clearly signposted as a dead-end;
- Road surfaces will be capable of carrying fully loaded fire fighting vehicles. This requirement is approximately 15 t for areas with reticulated water and 28 t for all other areas;
- Road curvature is limited to a minimum inner radius of 6 m and by minimal in number. This will allow rapid road access and egress;
- The road design should incorporate a maximum grade of 12.5 degrees;
- A vertical clearance height of 4 m at all times; and
- No services or hydrants should be located within parking bays.

All proposed internal roads for the Project satisfy the requirements for property access roads as required by the PBP 2019. The roads will be designed to suit large heavy vehicles and provide clear egress.

The BAR also identified that the Project is able to demonstrate compliance with the “Acceptable Solutions” within 7.4a of PBP 2019.

Services

An assessment on the provision of services in particular, water, electricity and gas are provided within the BAR and is summarised in the following sections.

The Project will be required to provide a static water supply as the Project Area will not be connected to a reticulated water supply. The Project has a relatively low fire potential with regards to electricity as the site provides no flammable store and contains a high degree of control of the batteries. If required, gas services shall be located to not lead to ignition of surrounding bushland areas.

Water

The BAR identified that the Project Area will not be connected to a reticulated water supply. Consequently, a static water supply is required for firefighting purposes. The following minimum requirements for water supply are provided by the CFA and shall be applied:

- Clearly identifiable water access points must be provided and be unobstructed;
- Static water installations must be in accordance with the relevant Australia Standards;

- Static water tanks must be provided above-ground and be constructed of steel or concrete;
- The static water tanks must be able to be completely refilled within 24hrs either automatically or manually;
- The static water tanks must be located at vehicle access points to the facility and be positioned at least 10 m from any infrastructure for the Project;
- A 65 mm and 150 mm full bore isolation valve must be provided for the hard suction point. The hard suction point must be equipped with a Storz connection, sized to comply with the required suction hydraulic performance;
- The hard suction point must be positioned within 4 m of a hardstand area and provide a clear access for emergency services;
- The hard suction point must be accessible via an all-weather access road. The road must be provided to accommodate a 23 t GVM, 8 m long x 6 m wide;
- Road access and hardstand should be kept clear at all times;
- A hard suction point must be protected from mechanical damage where necessary;
- An external water level indicator will be provided to the tank and visible from the hardstand area;
- Signage indicating “Fire Water” and the tank capacity must be fixed and displayed on each tank; and
- Signage must be provided at each vehicle entrance to the facility.

Electricity and Gas

The Project will be connected to existing high voltage switchyard as well as the local electricity supply for day-to-day operation. As the Project Area is an APZ, vegetation clearance to any connecting transmission lines is required to comply with the relevant guidelines and the local network providers operating procedures.

The Project Area has a relatively low fire potential with no flammable material stored, handled or produced. The Project is designed with a degree of control of the batteries themselves including highly automated shut down and application of fire suppressants.

Gas services are not anticipated to lead to ignition of surrounding bushland areas due to location and the installation and maintenance to the standards of the relevant authorities and Australian Standards.

Construction Standards – Bushfire Attack Level

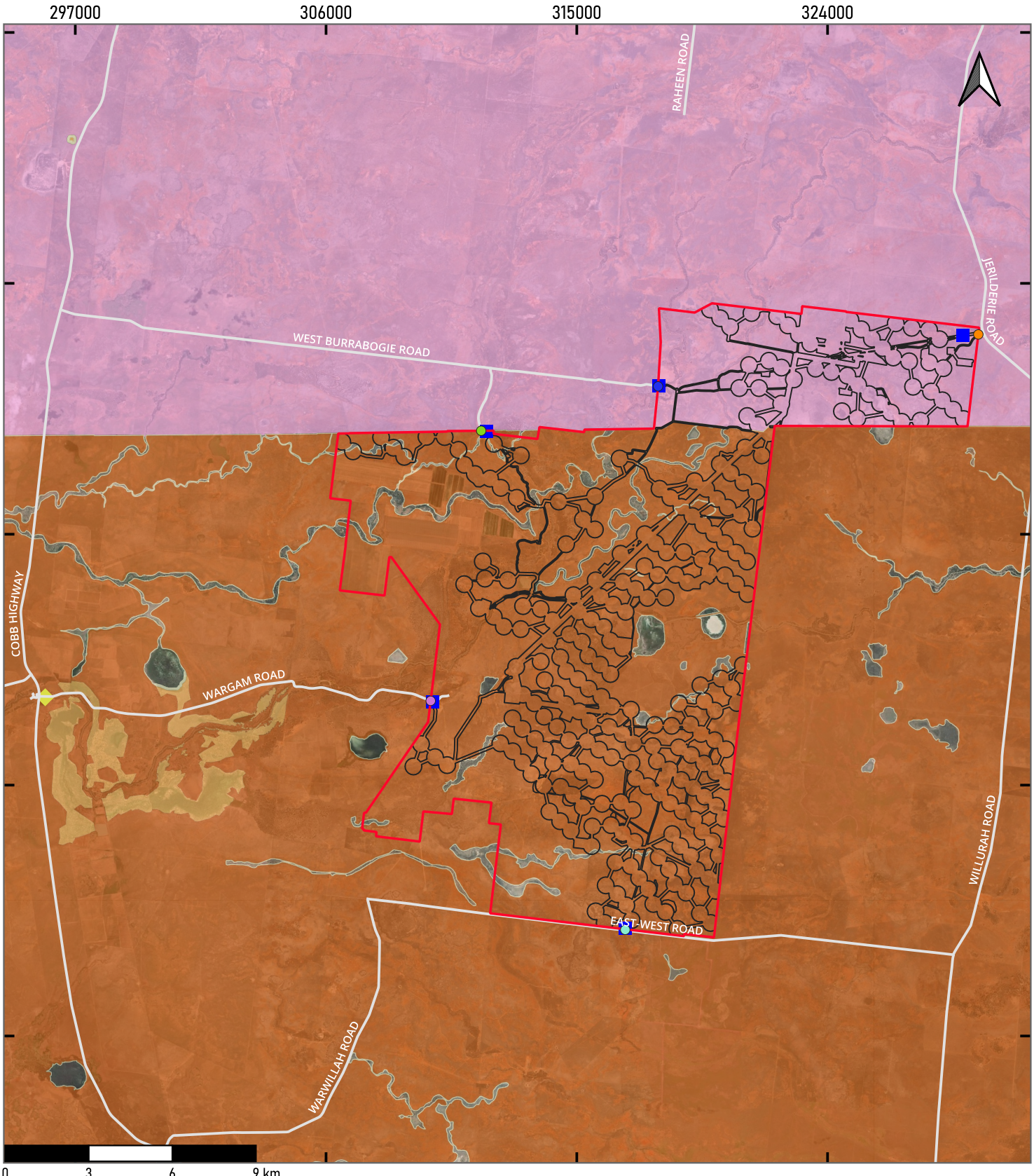
Bushfire Attack Level (BAL) is a rating that is typically applied to residential or Class 9 buildings. However, PBP 2019 does not require BAL ratings to be applied to infrastructure buildings or other non-habitable buildings. Despite this, compliance with Australian Standard 3959-2018 and the NASH standard has been considered against the aims and objectives of PBP 2019 for future industrial buildings.

Whilst BAL ratings are not required to be provided for the Project, the methodology for confirming them is used as a measure for determining the radiant heat flux exposure. This process has been used to guide design and siting of various components. The APZs ensure that no part of the Project Area will be exposed to direct flame contact.

Emergency Services

The NSW RFS is the primary bushfire emergency response agency for any incident affecting the Project Area. The nearest NSW RFS is located at Wargam Road, Booroorban and is located 22 km to the south-east of the Project.

In addition to the NSW RFS, a Neighbourhood Safer Plan (NSP) is a designated place of last resort during a bushfire emergency. The NSP relevant to the Project is the Booroorban Hall on Wargam Road, adjoining the Booroorban RFS station**.** This NSP can be utilised during an emergency only.



Pottinger Wind Farm

Figure 6-12 Bushfire Prone Land

SOMEVA RENEWABLES

Date:	10/05/2024
CRS:	GDA2020 / MGA zone 55
Scale:	1:190000
Basemap:	ESRI Satellite (2022)
Data Sources:	NSW Spatial Portal (2022), NSWRFS (2024)

Prepared By: EL Reviewed by: TS
Version: 2
This figure may contain third party information.
This figure is provided for information purposes only and may not be to scale.

Legend

Project Infrastructure
- Project Area
- Survey Area
- Emergency Access
- Site Entrance A
- Site Entrance B
- Site Entrance C
- Site Entrance D
- Water Tank Location

Existing Infrastructure
- Main Roads
- Firestation - Bush

Bush Fire Prone Land
- Vegetation Category 1
- Vegetation Category 1
- Vegetation Category 3
- Unmapped Area

Emergency Management Planning

The Bushfire Emergency Management and Operations Plan (BEMOP) will be prepared in accordance with 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan' (NSW RFS, 2014) including:

- Property Incident Plan;
- Detailed measures to prevent or mitigate fires igniting;
- 24-hour emergency contact details including alternative telephone contact;
- Work that should not be carried out during total fire bans;
- Site infrastructure plan;
- Firefighting water supply plan;
- Site access and internal road plan;
- Availability of fire-suppression equipment, access and water;
- Implementation of APZ and continued maintenance;
- Storage and location of hazards (Physical, Chemical and Electrical) that will impact on firefighting operations and procedures to manage identified hazards during firefighting operations;
- Notification of the local NSW RFS Fire Control Centre for works with a potential to ignite surrounding vegetation during a bush-fire fire danger period to ensure weather conditions are appropriate;
- Any additional matters as required by the FCC (BEMP review and updates); and
- Appropriate bush fire emergency management planning.

6.16.4 Mitigation and Management

Bushfire mitigation and management measures and assumptions in **Section 6.16.4** will be incorporated into the CEMP and OEMP.

A Fire Management Plan (FMP) and Bushfire Emergency Management and Operations Plan (BEMOP) will be prepared in consultation with relevant regulators.

An acceptable bushfire risk will be reached by the Project, with the existing bushfire risk suitably mitigated through the implementation of the following:

- Provision of a minimum 10 m APZ surrounding the Project farm infrastructure. This includes substations, office, temporary facilities and WTG sites;
- A 10 m APZ defendable space will be provided for access by emergency services surrounding the Project Area;
- Construction of access roads in accordance with Table 5.3b of **Appendix S** and 7.4a of PBP 2019;
- The provision of a minimum of one x 20,000 litre static water tanks shall be provided at each of the four site entrance roads (i.e. Four in total);
- A water storage tank of at least 45,000 L is required to be provided at each construction office / maintenance compound (unless provided with the Pottinger Solar project) and located within the required APZ. The water tanks will be provided adjacent to an internal access road and be directly accessible by firefighting vehicles;
- Landscaping consideration will be given to fuel loads on site and to decrease fire potential hazards;
- All hazardous materials shall be stored in a secure enclosure away from the bushfire hazard;
- An FMP shall be prepared in consultation with RFS Hay Fire Control Centre (or relevant regulator); and
- The operators of the facility will prepare a BEMOP and identify an area of the Project Area that can be used for refuge in the event of a bushfire.

6.17 Air Quality

6.17.1 Background

This section discusses potential impacts to air quality from the Project during construction, operation and decommissioning. Appropriate mitigation measures are identified to ensure potential air quality impacts from the Project are avoided and / or minimised.

The section compiled with consideration of the revised SEARs described in **Appendix C**, guidelines and standards as listed in **Appendix D** and stakeholder engagement summarised in **Section 5**.

The aim of this section is to assess risks of dust generation and propose mitigation measures designed in accordance with the 'Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales' (DECC, 2005) (Approved Methods).

6.17.2 Methodology

An air quality impact assessment undertaken used the following methodology:

- A desktop review of the background air quality environment based on data sourced from Hay Airport Automatic Weather Station (AWS);
- A desktop review of long-term meteorological conditions (including prevailing wind and temperature trends) based on data sourced from Bureau of Meteorology monitoring station at Hay Airport;
- A desktop review of Commonwealth Department of the Environment's National Pollutant Inventory data to identify any projects or facilities that may be contributing to local air quality conditions;
- The identification of non-associated air quality sensitive receivers with the potential to be adversely affected by the Project;
- Identification of the construction and operational aspects of the Project with the potential/risk to generate air pollutant emissions (including dust and exhaust emissions);
- A qualitative assessment of potential air quality impacts at surrounding non-associated sensitive receivers. This assessment was undertaken by comparing the locations of construction and operational air pollutant emission sources and nearby receivers with prevailing weather and ambient air quality conditions; and
- The identification of mitigation measures to address potential air quality impacts.

6.17.3 Existing Environment

Ambient air quality throughout the wider region is influenced by a number of factors, including topography, prevailing meteorological conditions (such as wind and temperature, which vary seasonally) and local and regional air pollution sources (such as motor vehicles, agricultural activities and bushfires). Consequently, regional air quality can be highly variable and impacted by events occurring a significant distance away. Local emission sources, the existing air quality environment, and sensitive receivers are described below.

Local Emission Sources

A search of the Commonwealth Department of the Environment's National Pollutant Inventory (NPI) identified the Project Area is not likely to be affected by emissions from operations at any NPI reporting facility. In total there are three facilities within the Hay LGA that emit 14 substances to the atmosphere. The closest facility (Aero Refuellers Hay) is located 60 km north of the Project Area.

Other local emission sources surrounding the Project Area which could influence local air quality include:

- Vehicle exhaust emissions from traffic along the Cobb Highway and the Sturt Highway;
- Domestic activities, such as wood-fired home heaters and driving on unsealed roads;

- Agricultural farming activities and earthworks creating dust and odours; and
- Natural phenomena (e.g. dust storms and fogs around creeks).

Background Air Quality

Each of Hay and Edward River LGA generally experience good air quality and relatively low occurrences of atmospheric pollution, due mainly to limited urban development and the presence of few polluting industries.

As discussed in **Section 2.4.3**, the Riverina region has an annual average rainfall of 354 mm. The highest average maximum temperature of 35.0°C is recorded in January, while the lowest average maximum temperature of 18.2°C is recorded in July and August. Wind directions experienced in Hay are generally from the south from September to June and from the west during June to September.

An Automatic Weather Station (AWS) located at Hay Airport (60 km from the Project Area) which is part of NSW Rural Air Quality Monitoring Network measures airborne particulate matter PM_{10}, $PM_{2.5}$, and Total Suspended Particles (TSP), which are key pollutants of interest to the Project. Considering the limitations of regional monitoring data this data from Hay Airport AWS is considered representative of ambient pollutant levels at the Project Area. Background monitoring data from Hay Airport AWS from 2020 is provided in **Table 6–66.**

The 'National Environment Protection (Ambient Air Quality) Measure 2016' (NEPM) (Australian Government, National Environment Protection Council, 2016) sets the standards for air quality to provide adequate protection for human health and wellbeing.

In NSW, the Approved Methods provides the assessment criteria for assessing air pollution impacts based on the NEPM. The assessment criteria provided in **Table 6–66**, shows Hay Airport AWS meets the annual assessment criteria.

Table 6–66 Background Air Quality Monitoring (Hay Airport)

Pollutant	Average Period	Assessment Criteria (µg/m^3)	Concentration (µg/m^3)
TSP	Annual	90	13.4
$PM^{2.5}$	Annual	8	4.3
PM^{10}	Annual	25	12.4

Sensitive Receivers

The Project Area is located in a rural setting with agricultural primary production the predominant land use. As shown in **Figure 2-8** sensitive non-associated receivers are located at least 3.1 km from the Project Area and over 50 m of any roads. This includes NAD_02 (associated with another project) and NAD_14 which is an uninhabited derelict property. A detailed description of the existing land use patterns and sensitive receivers surrounding the Project is provided in **Section 6.2**.

6.17.4 Impact Assessment

6.17.4.1 Construction

The primary air quality concern from the Project is the potential for construction dust emissions. The 'Guidance on the Assessment of Dust from Demolition and Construction' (GADDC) (Institute of Air Quality Management, 2014) provides guidance on the assessment of potential air quality impacts associated with construction of the Project.

GADDC provides the potential impacts of construction dust to receivers and factors that can increase or decrease the risk of encountering these impacts. In accordance with the methodology detailed in Section 5 of the GADDC a screening assessment was completed to screen the requirement for a more detailed qualitative construction air quality impact assessment.

The screening assessment determined further qualitative assessment was not required based on the distance of sensitive receivers to construction activities.

Project construction is anticipated to occur over a 55-month period from commencement to commissioning. The peak construction period will be between months 16 and 44. During this phase, dust particles and other air quality emissions will be released from the following activities:

- Earthworks including clearing, erosion and sediment control, site levelling, access tracks, site drainage works, fencing and foundations;
- Construction activities associated with earthmoving and construction equipment;
- Mobile concrete batching plants;
- Drilling and blasting material;
- Rock crushing;
- Vegetation clearance and creation of exposed areas;
- Transport or materials and equipment and haulage activities along unsealed roads;
- Processing and handling of materials;
- Wastewater treatment facilities at accommodation camps and O&M facility;
- Transfer points for construction materials; and
- Loading and unloading of materials.

Vehicular access within the Project Area will be via existing and or new gravel roads. The implementation of the recommended mitigation and management measures in **Section 6.17.5** will ensure the Project will be constructed without any significant impact to local and regional air quality.

The proposed wastewater treatment plant will consist of a generally contained system that will include biological and chemical treatment, filtration and disinfection. Odour emissions are considered unlikely with the management and mitigation measures in **Section 6.17.4**.

Air quality impacts at non-associated receivers are not expected during construction due to the location of these receivers with respect to Project area and the and prevailing weather conditions in the region (i.e. wind speed and direction).

6.17.4.2 Operation

No significant dust generation is expected during operation. Exposed areas and roads will be covered with gravel, treated or rehabilitated. With up to 50 FTE employees during operations and maintenance, vehicle impacts will be significantly less than during construction.

6.17.4.3 Decommissioning

Moderate levels of dust will be generated during decommissioning and rehabilitation as a result of structures being removed and areas being temporarily exposed. This will only occur for a short duration before rehabilitation vegetation is established on exposed areas.

Air quality impacts during decommissioning are anticipated to be less than those during construction and mitigated through the measures detailed in **Section 6.17.5**.

The Applicant will consider best available technologies to avoid and minimise air quality impacts, which may include the potential for decommissioning to be undertaken using future technologies, where practical.

6.17.4.4 Greenhouse Gas Emissions

Minor and direct greenhouse gas emissions are those emissions that are principally the result of the following types of activities, which may include:

- Combustion of fossil fuels required for the construction and maintenance of the Project;
- The manufacture of cement and/or other raw materials required for the Project; and
- Intentional or unintentional releases including equipment leaks or during the use of refrigeration equipment, or methane leakages from gas transport.

Continued use of heavy machinery, equipment and heavy vehicles will be limited to the construction and decommissioning phases and emissions will be localised.

During operations the Project will generate electricity without directly emitting air pollutants that are known to affect the climate and human health. Ongoing maintenance of the Project and the land within the Project Area will require minor, localised vehicle and machinery emissions.

The Project will contribute to the general improvement of air quality locally and broadly through the displacement of greenhouse gas emissions that would otherwise be generated by fossil fuels combustion to generate electricity through coal power stations. The Project will contribute to the reduction of Australia's dependence on CO^2 emitting power sources going forward.

The Project will not produce or permit offensive odours pursuant to section 129 of the POEO Act.

6.17.5 Mitigation and Management

6.17.5.1 Construction and Decommissioning

Measures to minimise potential impacts to air quality will form part of the CEMP and will include:

- Identification of high-risk construction activities with potential to generate dust and the associated control measures for these activities;
- Minimisation of wheel-generated dust emissions / tracking via the application of water and / or coarse gravel (or equivalent) on internal access routes;
- Vehicle loads of material which may generate dust to be covered while using the public road system;
- Managing stockpiles through stabilisation, light watering and the use of covers;
- Progressive revegetation and stabilisation of disturbed areas no longer required for construction;
- Vehicle speeds to be limited when travelling on unsealed roads;
- Works which disturb vegetation, soils and stockpiles to be avoided during strong winds;
- All vehicles and machinery to be used at the Project will be in good condition, fitted with appropriate emission controls and comply with the requirements of the POEO Act, relevant Australian standards and the manufacturer's operating recommendations;
- Plant and equipment to be operated efficiently and turned off when not in use;
- Investigation and use of renewable fuels and power sources, where appropriate;
- Materials to be delivered as full loads, and local suppliers utilised where possible, to minimise haulage emissions;
- Fires and material burning are prohibited; and
- A complaints process and response protocol for any complaints related to air quality.

6.17.5.2 Operation

Measures to minimise potential impacts to air quality will form part of the OEMP and will include:

- Identification of high-risk activities with potential to generate dust and the associated control measures for these activities;
- Fires and material burning are prohibited;
- All vehicles and machinery used at the Project will be in good condition, fitted with appropriate emission controls and comply with the requirements of the POEO Act, relevant Australian standards and the manufacturer's operating recommendations; and
- A complaints process and response protocol.

6.18 Waste Management

6.18.1 Background

The management of wastes is primarily regulated under the *Protection of the Environment Operations Act 1997* (POEO Act), the *Protection of the Environment Operations (Waste) Regulation 2014* (Waste Regulation) and the *Waste Avoidance and Resource Recovery Act 2001* (WARR Act).

Unlawful transportation and deposition of waste is an offence under Section 143 of the POEO Act, and littering is an offence under Section 145 of the POEO Act.

The descriptions and classifications of different types of wastes in NSW are provided by POEO Act, the Waste Regulation, and supporting guidelines including the Waste Classification Guidelines (EPA, 2014).

Waste types generated by the Project are expected to be consistent with those 'pre-classified' under Schedule 1 of the POEO Act. Pre-classified waste types do not require further testing or classification and must be treated according to their classification. Pre-classified wastes include:

- General solid waste (non-putrescible) e.g., glass, plastic, rubber, building and demolition waste, concrete, metal, wood;
- Paper, cardboard and other domestic waste;
- General solid waste (putrescible) (e.g. food waste, organics and animal wastes);
- Hazardous wastes (e.g. contaminated soils);
- Liquid wastes (e.g. wastewater effluent and fuels and lubricants);
- Restricted solid wastes; and
- Special wastes (e.g. asbestos, waste tyres, clinical wastes).

6.18.1.1 RAMJO Riverina Waste Group

HSC is part of the (RAMJO) Riverina Waste Group, a regional group of councils collaborating to develop cost-effective resource recovery and waste reduction programs. The group is one of two waste groups (Riverina Waste Group and the Murray Waste Group) established by the Riverina and Murray Joint Organisation (RAMJO), under the 2018 New South Wales Government consolidation of local councils.

Other councils in the Riverina Waste Group include:

- Carrathool Shire Council;
- Griffith City Council;
- Leeton Shire Council;
- Murrumbidgee Council; and
- Narrandera Shire Council.

The Riverina Waste Group and the Murray Waste Group have several current projects underway, primarily funded by the NSW EPA through initiatives such as the 'Waste Less, Recycle More' and Community Recycling Centres.

The 'Sunset on Solar' Project is an example of one of the Waste Less Recycle More initiatives, funded from the waste levy. It aims to divert end of life solar panels from across southern NSW landfills for further processing.

In addition to the Sunset on Solar Project, RAMJO is partnering with PV Industries and the University of Technology Sydney to trial different and commercially viable methods for the collection, aggregation and assessment of end-of-life solar panels and associated waste at Albury Waste Management Centre, Leeton Waste Management Centre, Buronga Landfill (Wentworth), Moama Waste Management Centre and others across the broader RAMJO region. However, there are currently no initiatives underway focused on recycling of waste generated by wind farms in the region.

6.18.1.2 Recycling and Reuse of Wind Farm Components

In April 2023, the Clean Energy Council published '*Winding Up: Decommissioning, Recycling, and Waste Management of Australian Wind* Turbines' (Clean Energy Council, 2023). The report was developed by the Clean Energy Council's Wind Recycling Working Group and noted that although about 85-94% of a WTG is recyclable (steel, aluminium, copper, and cast iron) and can be recycled in Australia, there are currently very limited commercial or feasible end-of-life options for the composite materials that are predominantly used in the WTG blades (fibreglass or carbon fibre).

Currently end-of-life options for wind farms include:

- Continue to operate WTGs beyond their intended design life;
- Partially repower the WTG by upgrading and optimising technology;
- Fully repower the wind farm by effectively decommissioning and rebuilding;
- Decommission the wind farm.

There are an estimated 31 Australian wind farms that are over 15 years old and approaching the end of their design life, and by 2034, up to 15,000 t of composite waste from WTG blades will have been generated in Australia if these existing wind farms are decommissioned. This could be up to 4,000 t in any given year, and without innovation and clear direction on the management on composite waste, there is a likelihood that these blades may be sent to landfill for disposal (Clean Energy Council, 2023).

Noting the above however, there are innovative solutions to sustainably manage WTG blades emerging globally, with WTG blade manufacturers developing new recyclable blades that use new resin technologies that can be separated from the other parts of the blade such as fibreglass, plastic, wood, and metal, allowing those materials to be reused or recycled.

It would be expected that by the time the Project reaches procurement and construction, and certainly by the time it approaches the end of its operational life, innovative reuse and recycling of wind farm components, and particularly WTG blades, will have advanced significantly and the opportunities for reuse and recycling will be greater than they are currently.

6.18.1.3 Existing Waste Disposal Facilities

Details of existing waste management facilities in the RAMJO Riverina Waste Group area, and the waste streams that can be disposed of at each facility are provided in **Table 6–67.**

There are no existing sewerage utilities accessible to the Project or sewage treatment facilities close to the Project.

Table 6–67 Existing Waste Management Facilities and Streams

Waste Management Facility	Distance (km)	Waste Streams Accepted
Hay Shire Council		
Hay Transfer Station, Thelangerin Road, Hay	65	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Maude Landfill, Yang Yang Street, Maude	120	General household waste, steel
Booligal Landfill, Booligal Road, Booligal	150	General household waste, steel
Carrathool Shire Council		
Hillston Landfill and Community Recycling Centre, Kidman Way, Hillston	220	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Goolgowi Transfer Station, Penney Street, Goolgowi	170	Household waste and general solid waste
Carrathool Landfill, Carrathool Road, Carrathool	85	General household waste, steel
Rankins Springs Landfill, Lake Cargellico Road	260	Residents only
Merriwagga Transfer Station, Melbergen Road	180	General solid waste, general household waste
Griffith City Council		
Tharbogang Waste Management Centre, Hillside Drive, Tharbogang	160	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Yenda Landfill, Twig Road, Yenda	160	General household waste, general solid waste, some liquid waste
Leeton Shire Council		
Leeton Landfill and Recycling Station, Corbie Hill Road, Leeton	165	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Whitton Transfer Station, Naradhun Street, Whitton	140	General solid waste, general household waste
Murrumbidgee Council		
Coleambally Waste Depot, Martin Bell Road, Coleambally	85	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Darlington Point Waste Depot	116	General solid waste, general household waste, some liquid waste
Jerilderie Waste Depot, Rifle Range Road, Jerilderie	120	By appointment only
Narrandera Shire Council		
Narrandera Waste Depot, Red Hill Road, Narrandera	155	General solid waste, general household waste, some liquid waste, special waste, some hazardous waste including batteries
Barellan Waste Depot	155	General solid waste, general household waste

6.18.2 Methodology

The objective of the waste impact assessment was to address the requirements of the SEARs including:

- Identify, quantify, and classify the likely waste streams to be generated throughout all stages of the project, and describe the measures to be implemented to mitigate waste generation, manage, reuse, recycle and safely dispose of this waste.

A desktop assessment consistent with Section 5.8 of the 'Draft Wind Energy Guideline' (DPE, 2022), and the 'NSW Waste Avoidance and Resource Recovery Strategy' (EPA, 2014) was conducted to:

- Identify and classify waste streams likely to be generated during construction, operation, and decommissioning;
- Identify existing waste management facilities in the area and their capacity to accept waste generated by the Project;
- Assess potential impacts on local waste management facilities and the surrounding environment;
- Establish appropriate waste reduction and management measures and opportunities for reuse considering best practice and the waste hierarchy principles outlined in the WARR Act and the principles of ecologically sustainable development (ESD):
  - Avoidance of unnecessary resource consumption;
  - Resource recovery (including reuse, reprocessing, recycling, and energy recovery); and
  - Disposal.

The requirements of relevant waste related legislation have been considered regarding the effective management of wastes on-site including:

- POEO Act;
- Waste Regulation;
- WARR Act;
- *NSW Waste Avoidance and Resource Recovery Strategy* (NSW EPA, 2014);
- *Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities* (NSW EPA, 2012); and
- 'Waste Classification Guidelines' (NSW EPA, 2014).

6.18.3 Impact Assessment

Wind energy projects can generate different waste streams throughout the various phases of their lifecycle. Large volumes of waste would be expected during construction, with waste types largely being non-putrescible general solid waste, with resource recovery potential through recycling or re-use.

The operation of the Project would be expected to produce negligible amounts of waste, except for repair and maintenance activities.

Most of the waste generated across the project lifecycle would be expected during decommissioning, where although 85-94% of a WTG can be recycled, there would be some residual materials that may need to go to landfill. The tower and nacelle comprise mainly steel, copper and aluminium which can all be recycled, however based on current WTG blade technology and opportunities for reuse and recycling, WTG blades or parts of blades may need to be disposed of.

Other minor components that cannot be reused or recycled may also need to be disposed of during decommissioning.

A detailed summary of the waste types, classification, proposed management methods, and estimated annual quantities of wastes produced during construction, operation, and decommissioning will not be available until detailed design. These details will be included in a Waste Management Plan (WMP), prepared prior to construction in consultation with relevant regulators and other nearby waste management facility operators where they may be affected by the Project.

6.18.3.1 Construction

Most waste generated during construction would be classified as general solid waste (non-putrescible). Ancillary facilities and amenities in the site compounds and the temporary workforce accommodation would also produce sanitary wastes and liquid wastes. Other waste streams would include hazardous wastes such as oils, hydraulic fluids and other wastes associated with construction plant and equipment.

Classification of waste streams that are expected to be generated during construction are summarised in **Table 6–68.**

Potential impacts from poor management of waste include pollution of land and water, human and animal health impacts, and decreased amenity. It is proposed that all waste generated during the construction of the development will be segregated in accordance with a construction waste management plan.

Skip bins will be made available onsite to enable waste separation for recycling (e.g. separate skip bins for cardboard recycling and timber collection). General waste bins will be provided for disposal of materials that cannot be cost-effectively recycled.

Table 6–68 Indicative Construction Waste Streams

Waste Type	Waste Stream	Source	Classification
Vegetation waste	Reuse	Clearing and site establishment and landscaping	General solid waste (non-putrescible)
Excess soil	Reuse	General earthworks	General solid waste (non-putrescible)
General Solid Waste (Non-Putrescible) - Mixed	Recycle / general waste	Multiple	General solid waste (non-putrescible)
General Solid Waste (Non-Putrescible) - Office	Recycle / general waste	Office	General solid waste (non-putrescible)
Timber	Reuse / general waste	Packaging and construction	General solid waste (non-putrescible)
Cardboard and paper packaging	Recyclable	Packaging and construction	General solid waste (non-putrescible)
Polystyrene packaging	Recyclable	Packaging	General solid waste (non-putrescible)
Plastic packaging	Recyclable	Packaging	General solid waste (non-putrescible)
Cable	Majority recyclable / general solid waste	Offcuts and potentially faulty or damaged equipment	General solid waste (non-putrescible)
Metal	Recyclable	Offcuts and potentially damaged items	General solid waste (non-putrescible)
Electronics	Reuse, recyclable and general solid waste	Offcuts and unused items	General solid waste (non-putrescible)
Recyclable domestic	Recyclable	Construction workers	General solid waste (non-putrescible)
Other domestic waste	General solid waste	Construction workers	General solid waste (putrescible)
Amenity waste	Sewage	Onsite amenity facilities	Liquid waste
Construction fluids and other plant-related waste	Hazardous waste	Construction activities, maintenance and operation	Hazardous waste
Oil spill clean-up material	Hazardous waste	Construction incidents	Hazardous waste

6.18.3.2 Operation

The operation of the Project is expected to produce minimal to negligible waste. The only waste produced will be a result of site maintenance and general operational activities. Classification of waste streams that are expected to be generated during construction are summarised in **Table 6–69.**

Waste streams would include a small amount of domestic including food scraps, aluminium cans, glass bottles, plastic and paper containers and putrescible and liquid wastes (sewage and wastewater from site amenities) generated by site personnel.

Additionally, any components removed during maintenance or upgrade of equipment, machinery and vehicles would also require disposal (including battery replacement). These activities would occur infrequently.

Some vegetation waste may be produced due to weed management and site maintenance, but this is expected to be minimal and related to maintenance around the operational and maintenance facilities and other ancillary infrastructure. The rest of the Project Area would continue to be used for its existing agricultural land use and vegetation management is expected to be minimal.

Table 6–69 Indicative Operational Waste Streams

Waste Type	Waste Stream	Source	Classification
Vegetation waste	Reuse	Site maintenance	General solid waste (non-putrescible)
Electronics	Recyclable, reuse and general solid	Maintenance and repairs	General solid waste (non-putrescible)
Recyclable domestic	Recyclable	Workers	General solid waste (non-putrescible)
Cardboard	Recyclable	Packaging	General solid waste (non-putrescible)
Timber	Reuse, Recyclable, General solid	Packaging	General solid waste (non-putrescible)
Other domestic	General solid	Workers	General solid waste (putrescible)
Plant and equipment fluids and other maintenance related waste	Hazardous waste / reuse	Maintenance	Hazardous waste
Oil spill clean-up material	Hazardous waste	Maintenance and clean-up activities	Hazardous waste
Metal	Recyclable	Damaged items	General solid waste (non-putrescible)
Dangerous Goods	Hazardous waste, recyclable	Damaged or faulty lithium-ion batteries	General solid waste (non-putrescible)
General solid mixed (non-putrescible)	General solid / recycle	Multiple	General solid waste (non-putrescible)
General solid office (non-putrescible)	Recycle / general solid	Office	General solid waste (non-putrescible)
Amenity waste	Sewage and wastewater	Onsite amenity facilities	Liquid waste

6.18.3.3 Decommissioning

General Waste

Decommissioning is expected to generate the most waste during the lifetime of the Project. Indicative waste streams generated are summarised in **Table 6–70,** and would include the reuse or recycling of materials including:

- As much of the WTG structures and components as possible;
- Concrete and foundation materials;
- Metals from posts, cabling, fencing;
- Vegetation and green waste;
- Buildings; and
- Ancillary infrastructure and components such as the inverters, transformers and similar components.

Table 6–70 Indicative Decommissioning Waste Streams

Waste Type	Waste Stream	Source	Classification
Vegetation waste	Reuse	Rehabilitation of site	General solid waste (non-putrescible)
WTGs – recyclable components	Recyclable, general solid	Decommissioning of wind farm	Recyclable general solid waste (non-putrescible)
WTGs – non recyclable components e.g. blades, resins and composite materials and resins	General solid, composite materials including fibreglass and carbon fibre	Decommissioning of wind farm	General solid (non-putrescible)
Gravel	Reuse	Removal of access tracks and hardstand areas	General solid waste (non-putrescible)
Concrete	Recyclable	Demolition of infrastructure	General solid waste (non-putrescible)
Cable	Majority recyclable, some general solid	Decommissioning of underground cabling	General solid waste (non-putrescible)
Metal	Reuse, recyclable	Disassembly of transformers, tracker piles, inverters and other related equipment, fences etc.	General solid waste (non-putrescible)
Dangerous Goods	Hazardous waste, reuse, recyclable	Decommissioning of lithium-ion batteries	Hazardous waste
General solid office (non-putrescible)	Recycle / general solid	Office	General solid waste (non-putrescible)
Oils and lubricants	Hazardous waste / reuse	Removal of insulating oil from transformers	Hazardous waste
Recyclable domestic	Recyclable	Workers	General solid waste (non-putrescible)
Other domestic	General solid	Workers	General solid waste (putrescible)
Amenity waste	Sewage	Onsite amenity facilities	Liquid waste

In consultation with the landowner at the time of decommissioning and rehabilitation, all above-ground infrastructure and materials would be removed from the site and reused, recycled, or otherwise disposed of at approved facilities. Underground foundations and cables buried at 0.5 m or greater deep or greater would likely remain in situ.

The Project will aim to divert as much end-of-life waste from landfill as possible and engage with HSC and New South Wales EPA to establish economically viable waste reduction and collection methods for all waste generated during decommissioning.

The objective to maximise reuse and recycling of as much waste as possible during decommissioning will be reflected in a WMP.

WTG Blades

As discussed above, it is noted that by the time the Project reaches procurement of WTGs and blades, and before the end of its intended design life, the current research and trials of recyclable WTG blades is likely to be more advanced than it currently is, presenting greater opportunity for reuse and recycling of WTG blades and composite materials during decommissioning.

However, considering a worst-case precautionary assessment based on current technology, with limited opportunity for re-use and recycling of WTG blades, the Project would produce up to approximately 22,971 t of composite material waste at decommissioning, based on the following assumptions:

- A layout of up to 247 wind WTGs;
- Three blades per WTG; and
- A length of up to 100m per blade.

6.18.4 Mitigation and Management

A Waste Management Plan (WMP) will be developed in consultation with relevant regulators and will incorporate the following mitigation measures:

- All waste:
  - Create, adopt and review programs to implement the waste hierarchy, prioritising reuse and minimising environmental harm;
  - Ensure all streams of recyclable and non-recyclable waste is sorted and separated on site, and investigate options for reuse onsite wherever possible prior to transportation to waste management facilities;
  - Specify waste storage areas with designated storage for different types of sorted waste;
  - Investigate potential for reuse and recycling prior to transporting waste off site;
  - Ensure any waste to be disposed of is done so at a licenced waste management facility;
  - Engage with HSC, the RAMJO Riverina Waste Group, and NSW EPA regarding waste streams generated by the Project, opportunities for reuse, recycling, and disposal; and the impact upon local waste management facilities, the community and the environment; and
  - Ensure site workers are inducted and aware of waste management protocols and the waste hierarchy.
- Minimising waste generated by WTG decommissioning:
  - Engage with industry, HSC, the RAMJO Riverina Waste Group, and NSW EPA regarding options for reuse, recycling, and disposal.
- Electronics, plastic, polystyrene:
  - Engage with Hay Shire Council, the RAMJO Riverina Waste Group, and NSW EPA regarding options for reuse, recycling, and disposal; and

  - If reuse or repair is not possible, waste will be transported to a suitable disposal facility in line with 'NSW EPA Waste Classification Guidelines 2024' (EPA, 2014).
- Dangerous Goods:
  - Prepare a battery disposal protocol for lithium-ion batteries outlining methods of packaging and transporting used batteries to recycling facilities;
  - Store used oils and lubricants in a bunded area in lidded containers, to be transported to a licensed waste facility; and
  - If reuse of chemical drums onsite is undesirable, return to contractor. If contractor does not have capacity to accept, investigate options for reuse or recycle at a suitable facility.
- Metal and Concrete:
  - Store metal in dedicated and separate storage area for incremental transportation to suitable offsite recycling facilities; and
  - Sort and transport concrete offsite to a suitable recycling facility if not feasible to reuse on site. Offsite reuse will be in accordance with the 'Resource Recovery Order and Exemption for Recovered Aggregate' (NSW EPA, 2014) or latest version.
- Vegetation, Soil and Other Timber:
  - Prioritise onsite reuse where possible in accordance with the 'Resource Recovery Order and Exemption for Virgin Excavated Natural Material and Excavated Natural Material' (EPA, 2014). Offsite reuse where onsite reuse is not possible, in line with 'Mulch Order 2016' (EPA 2016), 'Mulch Exemption 2016' (EPA, 2016) and 'Guidance on the Resource recovery order and exemption for Mulch' (NSW EPA, 2016), or latest versions; and
  - Reuse wood pallets on site where possible or returned to supplier if accepted. Damaged or unusable wooden items will be sold for wood chipping or similar.
- Recyclable domestic or other waste:
  - Ensure any waste placed in bins that are serviced by HSC's waste collection service or contractors on a regular basis is sorted and stored in appropriate dedicated bins and signposted properly; and
  - Engage with HSC to agree the most appropriate disposal protocol for sewage and wastewater generated by amenities.

6.19 Social

6.19.1 Background

A Social Impact Assessment (SIA) was prepared for the Project by Lecroma Pty Ltd and is included as **Appendix T.**

The SIA addresses the following objectives in alignment with the SIA Guideline (DPE, 2023) and Technical Supplement (DPE, 2023):

- Evaluate and validate the data, presumptions and conclusions presented in the Scoping Report (RPS, 2023);
- Determine and forecast the positive and negative social impacts related to the Project;
- Investigate Project refinements in consideration of potential social impacts; and
- Propose strategies and initiatives to address identified social impacts.

Stakeholder engagement as utilised in the SIA is described in **Section 5**.

6.19.2 Methodology

The methodology for assessing the social impact of the Project included:

- Define the social locality of the Project (as per **Section 5.2**);
- Development of a social baseline profile. The social baseline profile identifies the existing social environment, conditions and trends relevant to the impacts identified. The social baseline provides a basis from which to predict and analyse direct, indirect and cumulative impacts (DPE 2023);
- Identification of and consultation with stakeholders. Identification of potentially vulnerable or marginalised groups within the community is central to the process. Stakeholders may include affected groups or individuals within the live, work, have an interest in, use or value a resource associated with or are in anyway affected by the Project;
- Collection and analysis of data. This includes the identification and management of likely social impacts. Analysing and evaluating the data means considering the benefits to and impact on different social groups and their capacity to respond to the social impacts. Evaluating the social impact involves analysing likelihood, magnitude and overall significance of each potential social impact; and
- Management and mitigation impacts. After identifying, analysing and evaluating social impacts, the Applicant should take steps to mitigate or eliminate negative impacts whilst enhancing positive impacts where possible. A Monitoring and Management Framework is proposed for the development in accordance with the SIA Guideline.

6.19.2.1 Social Locality

The social locality is often referred to as the 'area of social influence' in the context of an SIA. The social locality in relation to the Project broadly includes:

- Project Area and immediate surrounding areas located within the Australian Bureau of Statistics (ABS) LGA references: LGA13850; LGA12730; and LGA15560;
- Transportation and haulage routes, including vehicular routes from the south and north-east via the Cobb Highway, and from the east and west via Sturt Highway; and
- Surrounding towns and regional centres of Hay, Deniliquin, Swan Hill, and Griffith, which may provide construction and operations phase goods and services to support the Project.

6.19.3 Impact Assessment

6.19.3.1 Social Impact Issues

The SIA identified the 20 impacts themes (impacts) during the SIA study period in both primary and secondary study areas with key stakeholder groups. Impacts were categorised from 'Very High' to "Low" using the methodology previously described. Each is discussed below in order of their evaluated significance from 'Very High' to 'Low'.

Construction workforce accommodation will be addressed as stated in **Section 3.5.3.**

Table 6–71 Social Impacts Summary by Evaluated Significance

Evaluated Significance	Very High	High		Medium	Low
Social Impact Theme Identified	**1:** Temporary changes to population and demography **2:** Diversification of income streams,	**4:** Landscape character, use, aesthetic value and amenity **5:** Aboriginal cultural heritage,	**8:** Local infrastructure to facilitate the Project (water, waste, telecoms, and electricity grid)	**13:** Environment and biodiversity (flora and fauna) **14:** Climate resilience,	**17:** Stakeholder ability to access decision makers and influence Project decisions

Evaluated Significance	Very High	High		Medium	Low
	flow on economic benefits for the surrounding community and region **3:** Accommodation and housing	including identification of potential culturally sensitive sites **6:** Access to local services (including health and education) **7:** Road and traffic (including noise and air quality)	**9:** Agricultural goods production and land productivity **10:** Increased demand for local goods and services, including local employment supply **11:** Access to affordable energy **12:** Project decommissioning and/or re-energising (replacement)	including drought resilience **15:** Bush and grassland fire management **16:** Social cohesion between community members	and benefits sharing **18:** Land values **19:** Mental health concerns if the Project does or does not proceed **20:** Perceived health impacts of WTGs

Impact 1 – Temporary changes to Demography

The most concerns raised about the Project identified the temporary increase to population during construction and the subsequent flow-on effects (both positive and negative). The increased population of non-local construction workers to support the construction stage was identified as an area of concern by all local stakeholder groups including the First Nations peoples.

Temporary increases in population are modelled to reach their peak of 900 FTE during construction which would result in an increase of 20% of the local population in Hay. Temporary increases in population would take effect from 2027 onwards for a period of up to five years until construction is complete.

The cascade effects of these temporary changes to population and demography across all social impact assessment categories are complex with stakeholders expecting a boom-bust cycle of economic windfalls relating to construction including:

- Increased demand for housing and accommodation causing cost inflation effects. This may likely crowd out local access and affordability in the short term if mitigation measures are unsuccessful;
- Increased demand for local goods and services causing short term cost inflationary effects;
- Impacts on water supply, waste management, transport and local services resulting from increased short-term demand; and
- Access to skilled workers and trades by local service providers and businesses including wages inflation from short-term competition during construction.

Given the complexity of this matter, a broad range of mitigation, management and enhancement measures have been proposed across all identified potential impacts and are included in **Section 6.19.4**.

Impact 2 – Diversification of income streams and flow on economic benefits

All stakeholders noted the extreme economic cycles the area endures from its strong focus and reliance on agriculture. Forecasted flow-on effects were identified as considerable with most occurring during the construction stage. A well-designed Local Content Strategy was recommended, including efforts to ensure meaningful participation / engagement of Aboriginal owned businesses.

The negative impacts identified, included:

- Increased rural land use conflict with renewables Projects with decreased agricultural land for production;
- Inflationary effects of cost of goods, services and skilled workers in a local context. Greater incomes were identified to drive up prices of costs of goods, services and skilled workers locally; and
- Inequitable distribution of benefits from a diversified income stream among a small number of stakeholder groups. This may cause social cohesion challenges with possible land value changes.

Impact 3 – Accommodation and Housing

The potential impact on accommodation and housing was regularly cited in Hay and Deniliquin based consultations. The challenge to the region lies in the 1% rental vacancy rate. This issue exists both regionally and within the Project Area.

Hay Shire and Edwards River Council identified the need to develop a Local Housing and Accommodation Strategy for the Project. The strategy was identified as needing to consider how any housing developed could ensure no net loss of housing availability for the region.

Section 3.5.3 provides further information on construction workforce accommodation.

Impact 4 – Landscape character and amenity

Agricultural land uses and natural features were identified as being the highly valued features by most stakeholders consulted. The flat Hay Plains were identified as having a strong local and regional value from a visitor and tourist perspective. The scenery relating to uninterrupted views between Deniliquin and Hay are frequently identified.

Potential negative impacts of renewable energy infrastructure on the landscape were identified as a minor concern raised by Stakeholders about the Project. Most stakeholders consulted identified visual impacts concerns from a cumulative impact perspective. The introduction of Project infrastructure will primarily present a significant change to the locality and landscape for the Project neighbours rather than for the population centres and major tourism and visitor travel routes.

Impact 5 – Aboriginal cultural heritage

Many Aboriginal cultural artefacts and potential archaeological deposits were identified during surveys conducted for the Project (refer **Section 6.5**) which have withstood sustained agricultural practices on the Project Area. During consultation, several key points specific to Aboriginal cultural heritage and social benefits were identified:

- Meaningful ways to secure local First Nations group commercial partnerships in order to sustain cultural heritage activities in the regions in association with the REZ;
- Ensure that the Applicant understands the context and meaning of First Nations peoples view of landscape. This included what ‘healthy country’ means from a First Nations perspective;
- An appropriate Aboriginal cultural artefacts and heritage plan was asked to be developed;
- Equitable access to benefits from the Project; and
- In referencing ‘Closing the Gap’, it was requested that the Project appropriately respond to potential impacts beyond cultural heritage such as health, education, employment, security, housing and capability building.

Impact 6 – Access to local services

The social baseline identified that Hay and Deniliquin have limited social services with Hay experiencing a service supply decline over the past five years. The lack of services was cited by key stakeholder groups, in particular daycare services, health services and local emergency services.

Key stakeholder groups requested that the Project offset the construction workforce needs of the Project while targeting a net-benefit to the community.

Impact 7 – Road and traffic

Potential impacts on roads and traffic through construction was identified by the Project neighbours and agribusiness operators. Road upgrades were identified as a longer-term benefit which would offset the traffic concerns from the construction stage. The Traffic Impact Assessment (**Appendix O**) has found that the road network can accommodate the expected vehicle types and traffic volumes during the construction, operation, and decommissioning phases of the Project, subject to some proposed road upgrades.

Impact 8 – Local infrastructure to facilitate the Project

Several concerns were raised regarding the key impacts to local infrastructure (water, waste, telecoms and electricity grid) to facilitate the Project, which included:

- Solutions to improve the poor telecommunications infrastructure and connectivity around the locality is well documented, including on the Project Area;
- Project neighbours highlighted concerns with energy supply reliability with frequent blackouts experienced and it was aspired that the Project would address this issue;
- Water supply was highlighted as a typical challenge for agribusiness during droughts and floods; and
- Consultation is ongoing with HSC to finalise a Waste Management Plan (WMP) which accounts for the circular economy of the Project.

Impact 9 – Agricultural goods production and land productivity

Community consultation reporting identified the need to provide renewable energy Project designs that consider “changes that enable co-location of agriculture and energy production” (HSC, 2023).

Concerns relating to the cost of living increase (food prices) were also identified for the Project. These concerns were held by anti-renewable protest groups and political opponents but were found not to be fact based.

Concerns relating to increased biosecurity risks associated with farming practices were raised for the development in construction stage.

An estimate by the DPE, identified that 55,000 ha of land that is currently used for agricultural production will be converted to support renewable energy developments by 2051. This is estimated to be 0.1% of rural land.

Impact 10 – Decreased demand for local goods and services

Positive and negative outcomes were forecast by stakeholders during initial assessments. Importantly, most local business owners forecast positive outcomes of increased business opportunities.

Given the forecast population growth through construction, it was identified that this is both a considerable risk to both manage and mitigate. Challenges in recruiting and retaining staff were well documented with unemployment well below the national average.

Impact 11 – Access to affordable energy

Cost of living and business viability in the area has been impacted by rising costs of energy supply in the area. This was identified as a critical issue for most stakeholders locally. Widespread community expectations suggest that in providing a large-scale renewable energy facility, that the affordability and reliability of energy would be improved.

Median energy prices for small businesses and private residences increased significantly in the period from June 2020 to March 2023. Access to affordable energy price rises also appears to align with the rapid increase in the uptake of small scaled solar panel system installations. This suggested confidence and support for the renewable energy technology that supports the Project.

Impact 12 – Project decommissioning and/or re-energising

Project decommissioning is a frequently cited concern by groups within the locality and the regional area of the Project. The concern centred on the financial security of the Applicant and whether there may be a risk with regards to unfinished or abandoned Projects. Concerns that a proper decommissioning may not be undertaken properly was a concern. This concern has mostly been addressed since the release of the NSW Government Draft Wind Energy Guideline that cover decommissioning responsibilities.

With the Project forecast to operate for 30+ years, the possibility of negative flow on effects to local businesses, employment and infrastructure upon decommissioning was still highlighted. The primary recommendation that emerged from consultation was to undertake a detailed assessment of potential impacts of decommissioning and/or Project replacement activities on socio-economic conditions before those activities commence.

Impact 13 – Environment and biodiversity

Consultation determined that the environment from a biodiversity perspective is strongly valued, citing it as a “unique environment with rare breeding birds, flora and fauna” (HSC, 2023). Stakeholders and local council are seeking “design innovations to minimise impacts on this sensitive environment”. Native animals and exotic and introduced pests (flora and fauna) which threaten native Australian biodiversity have also been noted in the social locality.

During consultations, several Project neighbours voiced strong interest in including options to host biodiversity offsets for the Project (if required) and to support decarbonisation agribusiness operations (where possible).

Impact 14 – Climate resilience

The area was identified as being overexposed to ongoing negative impacts of climate change including droughts and floods. The expansion of renewable energy facilities proposed in the region is forecast as a key solution to providing diversified local industry and income streams, thereby contributing to ‘drought-proofing’ the area. Climate resilience will be aided by the Project, but resilience will be reached by the cumulative effect of the multiple large-scaled renewable energy Projects in the region.

Impact 15 – Bush and grassland fire management

Bushland and grass fires were cited as a significant risk by a range of stakeholder groups in the area. This concern was carried across to management throughout all stages of the Project. Bush and grassland fires were noted as a common occurrence on the Hay Plains. Increased support and on-farm infrastructure upgrades for NSW Rural Firefighting Services accessibility were identified as a key aspect of mitigation and benefit sharing.

Impact 16 – Social cohesion between community members

Large scale renewable energy Projects equivalent in size to the Project and surrounding Projects were identified as never having been undertaken in Australia previously. Social friction between neighbours hosting competing renewable energy Projects was also cited as a concern for the Project. Further, it was identified that community disharmony may emerge with only a small number of competing Projects feasibly being able to proceed due to grid access and transmission line constraints.

Concerns about the Project were raised in consultation with respondents questioning the economic validity and environmental benefit of renewable energy facilities. These concerns were received despite the absence of a large-scale opposition group to renewable energy.

The Stakeholder Engagement Plan (SEP) will be maintained and adapted.

Impact 17 – Stakeholder ability to access decision makers and influence benefits sharing

The isolated nature and the sparse population in proximity of the Project means that there is a relatively increased capacity for the Applicant to maintain direct and dynamic communications with Project neighbours and the immediate surrounding community. Most stakeholder say that they have direct access to the Applicant including key decision makers.

Community consultation fatigue was combated by HSC leading a parallel community consultation process on behalf of all Applicants to seek broad community feedback and guidance. This consultation was incorporated into the SIA.

Confusion in the community about the planning process and REZ tender process exists. Greater assistance in understanding the processes has been requested by local groups and the community with an overarching expectation that the Applicant "invest time in building community knowledge and to help interpret the EIS in layman's terms" (HSC, 2023).

Impact 18 – Land values

Despite potential negative impacts of large-scale renewable energy facilities on land values, greater concern is land value appreciation and affordability. Price increases are expected based upon the cumulative effect of nearby Projects and from further house and accommodation demand.

Unprecedented land price appreciation over the past five years has occurred in the area. Housing and rural land costs have become increasingly unaffordable for locals to buy a house and land.

Post-pandemic house price increases in the region have been similar to other parts of Australia.

Impact 19 – Mental health concerns

Overall, the community want to see Projects proceed. Community anxiety is rising with regard to the number of Projects proposed for the area and concerns about their deliverability due to the grid access constraints. Instances of 'haves and have nots' among the many land holders hosting proposed Projects will emerge based upon feedback from the community.

The running of complex agricultural businesses that are prone to boom-bust cycles linked to climate change also causes increased stress and anxiety. A disproportionate level of mental health issues is noted with respect to the isolation and lack of access to appropriate services. Community expectations are currently elevated to unhealthy levels and a correction is forecasted resulting from outcomes of the upcoming SW-REZ Tender Access process.

Impact 19 – Perceived health impacts of WTGs

No concerns were raised during consultation on the perceived health impacts of WTG (i.e. noise output, electromagnetic fields, visual, blade throw). This was generally due to the distance between WTGs and nearby towns and community centres.

6.19.3.2 Cumulative Impact Assessment

A cumulative impact assessment was conducted for the Project with regards to the compounding effects of a single Project or multiple Projects within the area. With regards to the Project, the following dimensions were assessed:

- The impact of the Project, when added to the combined impacts of all other existing developments and environmental characteristics of the area;
- The impact of this Project in the context of the potential for development of wind energy. The impact of developments which are ancillary to or otherwise associated with the Project (e.g. the development of transmission lines); and

- The potential for future development of wind farms in the region.

Section 6.21 identifies the nearby developments with potential cumulative Project impacts. The SIA referred to an HSC Meeting on 21 February 2024 with several Applicants preparing their EIS simultaneously. All Applicants attending the discussion made an in-principle commitment to consult and collaborate to manage, mitigate and/or enhance several potential cumulative Project impacts.

6.19.3.3 Social Impact Enhancement and Mitigation

The Applicant has sought to understand the values and needs of those within the social locality to build an impact management and BSP as described generally in **Table 6–72.**

Both the Hay and Edwards River LGAs have signed a 'Letter of Intent' with the Applicant detailing how benefits will be provided to the community. This includes details about the expected quantity and distribution of funds through VPAs with both councils and through broader benefits sharing mechanisms proposed by the Project.

6.19.4 Mitigation and Management

This section summarises the mitigation and management measures which will be implemented for the Project. It also describes the social monitoring and reporting program to be adopted.

6.19.4.1 Social Measures and Responses

The Applicant will implement the Social Impact Management and BSP. This may be amended from time to time in consultation with relevant stakeholders and detailed in a formal VPA, SEP or other management plan.

Each identified social impact area and the response measures that will be implemented for each for the Project Area detailed in **Table 6–72.**

Table 6–72 SIA Mitigation Measures by Affected Groups

Impact	Affected Groups	Response Measures
1: Temporary changes to population and demography	All	• Develop and implement a Local Content Strategy, including a workforce diversity strategy, to provide employment opportunities for local businesses and workers while seeking to mitigate potential negative consequences of increased demands for limited skilled workers • Develop and implement a Local Housing and Accommodation Strategy to meet temporary construction (and decommission) workforce requirements • Consider timing of major regional events, including agricultural production cycles and tourist flows (peaks/troughs) in construction and decommissioning stage planning
2: Diversification of income streams, flow on economic benefits for the surrounding community and region	All	• Develop and implement a Local Content Strategy • Support to local council economic development and enhancement plans • Local Housing and Accommodation Strategy • BSP • Payment of network infrastructure access fees to EnergyCo for the REZ which will include a component to fund a 'Community Benefit and Employment Program' for the during of Project operation • Various detailed recommendations in Economic Impact Assessment (refer **Section 6.20**)
3: Accommodation and housing	All	• Local Housing and Accommodation Strategy to be prepared prior to the commencement of construction to manage construction phase staffing

Impact	Affected Groups	Response Measures
		• The Applicant will continue discussions with Council to investigate the option to construct 'legacy house (quality homes)' to manage operations phase staffing • Investigate a potential partnership/s with other organisations to utilise existing or approved accommodation camps to house construction workforce
4: Landscape aesthetic value and amenity	Project hosts and neighbours	• Co-design of Project layout with Project hosts and neighbours and feedback from community consultation • Landscape screening program offered to Project hosts and neighbours • Biodiversity offsets programs, and Project site rehabilitation post construction and post-decommissioning
5: Aboriginal cultural heritage, including identification of potential culturally sensitive sites	First Nations groups and Traditional owners	• Implementation of proposed management measures, including avoidance and salvage as detailed in **Section 6.5.** This includes establishing cultural heritage preservation sites on the Project Area for identified artefacts and potential archaeological deposits. • Local Content Strategy implementation, focusing on efforts to ensure meaningful participation / engagement of Aboriginal owned businesses • First Nations partnerships implementation through formal commitment ('letters of commitment' or equivalent partnership building instruments). • BSP established with local First Nations groups • Explore with First Nations groups the inclusion of sourcing First Nations owned land in the biodiversity offset strategy
6: Access to local services (including health and education)	All	• BSP • Development and Workforce and Accommodation Strategy prior to the commencement of construction
7: Road and traffic (including noise and air quality)	Project hosts, neighbours, and communities along proposed transport route from port-to-site	• Collaboration with Project hosts and local road authority and consultation with Project neighbours in the design of road upgrades to ensure agricultural activities are supported • Traffic management plan to be implemented • Appropriate contribution to road maintenance and upgrades where required • Stakeholder engagement strategy to adequately inform the community, including mechanisms to ensure local stakeholder ability to raise key concerns for response by Project team • Neighbour and community BSP • Local Content Strategy implementation (incl. contracts for freight and haulage services) • Local Housing and Accommodation Strategy implementation, to mitigate travel time and traffic impacts on nearby localities
8: Local infrastructure to facilitate the Project (water, waste, telecoms, and electricity grid)	Project hosts and neighbours	• Waste and Water Management Plan (refer **Section 6.18** and **Section 6.10)** • Upgrades to local telecommunications around Project Area
9: Agricultural goods production and land productivity	Project hosts and neighbours	• Proposed infrastructure is located on identified low-productive land with project hosts, and opportunities will be explored for agrivoltaics (cropping and stock grazing) on proposed Project Area • Existing tracks are being used throughout the site to reduce Project disturbance footprint • Upgrades to broad range of on-site infrastructure that will complement agricultural production activities, telecommunications, electricity supply

Impact	Affected Groups	Response Measures
		(including transmission lines), waste management and firefighting capability response, and all-weather road access
10: Increased demand for local goods and services, including local employment supply	All	• Local Content Strategy implementation • Local Housing and Accommodation Strategy implementation • Workforce Development and Inclusion Plan • Payment of network infrastructure access fees to EnergyCo for the REZ which will include a component to fund a 'Community Benefit and Employment Program' during Project operation
11: Access to affordable energy	All	• Supply of affordable renewable energy supply into the Australian grid resulting from Project construction and operation • BSP • Share case studies of implemented de-carbonisation programs with HSC • De-carbonisation program delivery (part of BSP)
12: Project decommissioning and/or re-energising (replacement)	All	• Project decommissioning commitments with Project Hosts • Condition of development approval • A Decommissioning and Rehabilitation Plan will be prepared for the Project no less than five years prior to decommissioning and / or in accordance with any Project approval requirements • A waste management and recycling plan, informed by detailed consultation with Project hosts, local council, industry, local business and community interest groups • Support HSC implementation of their 'Circular Economy Strategy (2022)'
13: Environment and biodiversity (flora and fauna)	Project hosts and neighbours	• Environmental offsets program, with Projects hosts in the nearby area including with First Nations groups owned land • Existing tracks and stock routes are being used throughout the site to reduce Project disturbance footprint • Ongoing environmental management and monitoring • Decommission and rehabilitate the Project Area • Water management plan, including collaborations with industry to recycle Project infrastructure following decommissioning stage • Various detailed recommendations from Biodiversity impact assessment (refer **Section 6.4**)
14: Climate resilience, including drought resilience	All	• BSP. Host landowner payments • Local Content Strategy implementation • Contribution to renewable and de-carbonised energy supply through Project construction and operation • Various detailed recommendations detailed in **Section 6.20**
15: Bush and grassland fire management	Project hosts and neighbours	• Onsite bush and grassfire response assets to Project infrastructure and assist in nearby community firefighting responses efforts • Onsite staff trained to RFS Volunteer standard • Local Emergency Services communications channels supported onsite • Various detailed recommendations from Bushfire Technical Assessment report in EIS
16: Social cohesion between community members	All	• Ongoing community engagement throughout all remaining Project stages through to decommissioning. This includes implementing a range of mechanisms to engage and respond to key stakeholder needs and concerns as required. • Continued pro-active engagement with nearby landholders

Impact	Affected Groups	Response Measures
17: Stakeholder ability to access decision makers and influence Project decisions and benefits sharing	All	• All contact details made available on the Project website, coupled with local communications and media campaign to increase awareness • Summary of EIS in plain English (layman's terms) to be developed and provided on Project website for stakeholders to find and engage with to inform feedback more easily • Online survey tool • Project Team to be made accessible for one-on-on and small group consultations • Frequent Project information updates made available via website and mixed-method communications to stakeholder groups • Project co-design process implemented with key stakeholders, including Project hosts, neighbours and First Nations groups • NSW Government Major Project Portal for State Significant Development, with detailed planning documentation made available online • Payment of network infrastructure access fees to EnergyCo for the SW-REZ which will include a component to fund a 'Community Benefit and Employment Program' for the during of Project operation
18: Land values	Project hosts and neighbours	• The Applicant will continue discussions with Council to investigate the option to construct 'legacy house (quality homes)' to manage operations phase staffing • Payments to Project Hosts and BSP
19: Mental health concerns, for if Project does and/or does not proceed	Project hosts, neighbours, and proximal community	• BSP • Local expectations are being actively management to communicate the grid access constraints of REZ, which directly impact Project success/failure
20: Perceived health impacts of WTGs	Project hosts and neighbours	• Distribution of fact sheets to counter misinformation via mixed communication channels to stakeholder groups • Noise attenuated plant and equipment. • Noise monitoring, reporting and response protocol

6.19.4.2 Monitoring and Management Framework

Monitoring and evaluation will be facilitated through the Monitoring, Evaluation, Reporting & Learning (MERL) Framework. A framework for MERL has been developed by Lecroma and is provided in Table 29 of the SIA provided in **Appendix T.**

The framework identifies that it is preferable for stakeholders to collaborate in the MERL processes, which will enable stakeholder engagement. Periodic updates to reflect these lessons and monitor changes and additions to identified social impacts will be required.

6.20 Economics

6.20.1 Background

An Economic Assessment (EA) was prepared for the Project by Gillespie Economics and is included in **Appendix U.** A summary is provided below.

The EA assesses the economic benefits of the Project on the regional and NSW economy and was undertaken in accordance with relevant guidelines and the EP&A Act.

6.20.2 Methodology

The EA undertook an input-output (IO) analysis to assesses the potential economic impacts of the Project. The assessment extended across the Hay, Edward River and Murrumbidgee LGAs. The LGAs have the potential to provide inputs to and derive economic benefits from the construction and operation of the Project. The same region may also experience impacts from a reduction in agricultural activity which could result in increased demand for labour or other inputs.

The IO is used to assess the direct and indirect impacts of the construction and operation of the Project on the regional and NSW economy. This is known as the "gross economic footprint".

The IO includes two steps:

- The development of a regional transaction table that can be used to identify the economic structure of the region. Multipliers are then applied to each sector of the economy; and
- Identification of the direct impact or stimulus of the Project. The impact/stimulus is in a form that is compatible with the IO equations and so that multipliers and flow-on effects for the impacts or stimulus of the Project can then be estimated.

An IO analysis has four main indicators to identify the economic activity of a Project, including:

- Gross regional output – the gross value of business turnover in a region;
- Value added – the difference between the gross value of business turnover and the costs of inputs of raw materials, components and services which were brought in to produce the gross regional output;
- Income – the wages paid to employees including imputed wages for self-employed and business owners; and
- Employment – the number of people employed (including self-employed, full time and part time).

The following assumptions were identified as a basis of the IO method:

- The regional economy has access to sufficient labour and capital resources;
- Crowding out is assumed to occur outside the region of concentration of the Project. The regional impact analysis is also assumed to be focused; and
- A dynamic computable general equilibrium modelling approach may overcome the limitation of IO analysis but is unlikely to be warranted at local or regional scales or with small scaled impacts.

6.20.3 Impact Assessment

6.20.3.1 Construction

Construction Impacts

The EA identified that construction expenditure is associated with manufacturing of equipment and expenditure across three construction sectors, including:

- Heavy and Civil Engineering Construction Sector which includes businesses involved in engineering construction and Project management services;

- Construction Services Sector (earthmoving, concreting etc.); and
- Non-residential Building Construction Sector.

The EA identified that there are two types of flow-on effects which operate in different ways:

- Production-induced effects – those associated with firms buying goods and services from each other; and
- Consumption-induced effects – those associated with employing people who subsequently buy goods and services as households.

Production-induced effects occur in a near proportional way within a region, whereas the consumption induced flow-on effects only occur in a proportional way if workers and their families are in the region or migrate into the region. Some induced flow-on effects leak from the region when workers commute from outside the region.

The average annual impacts of the Project on the regional and NSW economy are provided in **Table 6–73.**

The EA identified that there are predicted to be greater impacts upon the NSW economy because there is less leakage of direct and indirect expenditure out of the NSW economy compared to the regional economy. Therefore, there are greater production induced and consumption induced flow-on effects.

Table 6–73 Average Annual Construction Impacts

Category	Regional Economy	NSW Economy
Direct and indirect output	$250 M	$486 M
Direct and indirect value-added	$91 M	$209 M
Direct and indirect household income	$49 M	$134 M
Direct and indirect jobs	623 jobs	1,365 jobs

Main sectors Affected

IO analysis conducted within the EA indicates that the Heavy and Civil Engineering Construction Sector, Construction Services Sector and Non-Regional Building Sector will be the most likely to be impacted by construction.

The other sectors of the regional economy which were modelled to be most impacted production induced flow-ons including output, value added, income and employment production in the IO analysis were:

- Professional, Scientific and Technical Services;
- Wholesale and Retail Trade;
- Road Transport;
- Employment, Travel Agency, and Other Administrative Services;
- Food and Beverage Services;
- Iron and Steel Manufacturing; and
- Structural Metal Product Manufacturing.

The NSW sector was modelled to have the following production induced flow-on sectors:

- Non-Residential Property Operators and Retail Services;
- Auxiliary Finance and Insurance; and
- Finance sector.

Consumption induced flow-on effects in the region were modelled to be in the following sectors:

- Retail and Wholesale Trade;
- Food and Beverage Services;

- Health Care Services;
- Primary and Secondary Education;
- Residential Care and Social Assistance; and
- Road Transport.

The NSW economy was modelled to have the following important consumption induced flow-on sectors:

- Finance;
- Professional, Scientific and Technical Services;
- Insurance and Superannuation;
- Personal Services;
- Other Services;
- Non-Residential Property Operators; and
- Real Estate Services.

Agricultural impacts

The Project was identified to disturb an area of approximately 1,066 ha of land that is currently subject to agriculture land use. It was assumed that agriculture will cease across the full area during construction.

The NSW Department of Primary Industries (DPI) identified a stocking rate of 1.5 dry sheep equivalent (DSE)/ha. The Soil and Agricultural Impact Assessment (SAIA) estimated the productivity (gross margin) of the Project Area at $75,105 per annum. The EA importantly noted that the landowner will receive rent from the Applicant that will more than offset any loss in agricultural income.

The direct and indirect measurement of the impact of ceasing agriculture on the Project Area for a construction period for approximately four years was measured to have the following financial losses and is provided in **Table 6–74.** Payments to host landowners as a result of the Project will provide an economic opportunity and a diversified income stream for the landowners to invest in their agricultural productivity which should have long term net benefits. Impacts to the region are predicted to be negligible.

Table 6–74 Annual Regional and NSW Economic Impacts of Forgoing Agriculture in Construction

Category	Regional Economy	NSW Economy
Direct and indirect output	$210,000	$350,000
Direct and indirect value-added	$90,000	$170,000
Direct and indirect household income	$40,000	$80,000
Direct and indirect jobs	0.61 jobs	1.05 jobs

Other impacts

Other impacts that were identified to occur from the Project, including:

- Demand will be created for regional labour resources and regional inputs to production.
- Where non-marginal increases in labour demand occur, this can potentially lead to:
  - increased construction wages in the short term;
  - attraction of workers from other relevant sectors of the economy leading to labour shortages in these other areas of the economy;
  - a rise in inflation as firms pass on wage costs to consumers.
- Short run excess demands for inputs to construction of an individual Project such as quarry materials, concrete etc. can result in rising costs and potentially supply shortages for other uses.

Despite this, as the Project has modelled 430 average workers being employed, a modest or no observable price effect will be anticipated.

6.20.3.2 Operational

The EA modelled the economic impacts and activity that the Project will trigger at a regional and NSW scale.

Operational Impacts

The operational stage was forecast to have an estimated operational employment of 50 FTE persons.

The output of the facility was measured by the installed capacity and the estimate on the bundled electricity and renewable energy per annum including wages, profit, taxes, depreciation, interest and other non-wage costs; and expenditure on nonwage costs. These additional costs were identified within IBISworld (2023) and Electricity Generation sector of regional and NSW IO models.

The average annual impacts of the Project on the regional and NSW economy were identified and are provided in **Table 6–75.** Again, the impacts were identified as being larger for the NSW economy because there is less leakage of direct and indirect expenditure to other jurisdictions.

Table 6–75 Average Annual Operational Impacts

Category	Regional Economy	NSW Economy
Direct and indirect output	$371M	$482 M
Direct and indirect value-added	$318 M	$375 M
Direct and indirect household income	$7 M	$39 M
Direct and indirect jobs	97 jobs	399 jobs

Multipliers

Type 11A multipliers when relating to the regional economy range from 1.03 for value-added to 2.30 for income.

Capital intensive developments were identified as more frequently having a high level of linkage with other sectors in the economy. Where greater linkages are identified, the greater the flow on employment and income. This was coupled with a lower level of direct employment and income.

The NSW Type 11A multipliers were identified with a greater range from 1.22 for value-added up to 9.84 for employment. As with the construction stage, the multipliers were identified as being larger for the operational stage as the NSW economy contains a greater level of intersectoral linkages. This brings larger flow-on impacts and less leakages than the regional economy.

Main sectors affected

The main sectors affected for in the regional and NSW economy induced flow-ons are identified below:

- Electricity Transmission, Distribution, On Selling and Electricity Market Operation;
- Finance;
- Construction Services;
- Auxiliary Finance and Insurance Services;
- Professional, Scientific and Technical Services;
- Employment, Travel Agency and Other Administrative Services;
- Wholesale Trade; and
- Road Transport.

Consumption induced flow-on effects in the region and NSW were identified in the EA as the following:

- Retail and Wholesale Trade;
- Food and Beverage Services;
- Health Care Services;
- Residential Care and Social Assistance;
- Road Transport; and
- Construction Services.

For the NSW economy alone, the Finance; Professional, Scientific and Technical Services; Insurance and Superannuation Funds were also identified as important consumption induced flow-on sectors.

Agricultural impacts

The Project was identified to disturb an area of approximately 1,066 ha of land that is currently subject to agriculture land use. The host landowners will continue to practice normal farming activities including grazing and the stocking of livestock during Project operation.

The NSW Department of Primary Industries (DPI) identified a stocking rate of 1.5 dry sheep equivalent (DSE)/ha. The Soil and Agricultural Impact Assessment (SAIA) estimated the productivity (gross margin) of the Project Area at $75,105 per annum. The annual revenue associated with this gross margin is $127,015. The EA importantly noted that the host landowner will receive rent from the Applicant that will more than offset any loss in agricultural income.

The direct and indirect measurement of the impact of ceasing agriculture on the Project Area for a construction period for two years was measured to have the following financial losses and is provided in **Table 6–76.** Payments to host landowners as a result of the Project will provide an economic opportunity and a diversified income stream for the landowners to invest in their agricultural productivity which should have long term net benefits.

Table 6–76 Annual Regional and NSW Economic Impacts of forgoing Agriculture in Operation

Category	Regional Economy	NSW Economy
Direct and indirect output	$210,000	$350,000
Direct and indirect value-added	$90,000	$170,000
Direct and indirect household income	$40,000	$80,000
Direct and indirect jobs	0.61 jobs	1.05 jobs

Other impacts

The operation of the Project will create a very small demand for regional labour resources and regional inputs to production. Consequently, no “crowding out” effects on other industry sectors are anticipated.

6.20.3.3 Cumulative impacts

The EA assessed the cumulative impacts which are generated from other renewable energy developments in proximity to the Project. The EA then identified the number of other nearby Projects in proximity to the Project, highlighting the cumulative impact potential from an economic standpoint. **Table 6–77** details relevant nearby renewable energy Projects.

The EA identified a series of economic cumulative impacts relating to the range of nearby Projects.

Initial Cumulative Labour Stimulus

The main cumulative economic impact is the demand for a suitably qualified construction workforce in the region. This labour force will draw from these regional sources:

- The unemployment pool;
- Increased labour force participation; and/or
- Workers from other industries.

Outside the regional areas, the sources will include:

- Moving into the region to live during the employment period; and
- Commuting from outside the region (FIFO or DIDO labour).

Population impact

It was highlighted as being unlikely that the cumulative labour demand for the various Projects can be met from the existing residents of the region only. Population growth or at least stagnation can be achieved by workers moving to the region (even temporarily). The population of smaller towns in regional areas has been noted to decline even if the regional population increases.

Population immigration can attract jobs through demand for goods and services. In turn, this growth can lead to increasing local multiplier effects, scale economies and increased innovation and capital availability (Sorensen, 1990). Closures of services can be caused by a population reduction.

Accommodation impacts

The EA established that cumulative increases in population will drive demand for short and long term accommodation. Increased house prices and rents may eventuate, and tourist or other accommodations may be utilised by workers.

The EA identified that the increased rent and sales of housing typically benefit the local buyers, but lower income households may not be able to afford the increased rent/house values. In the medium to longer term, the local housing and short-term accommodation may return to their previous levels. Early provision of housing supply may mitigate house price impacts.

Short term impacts depend on:

- The balance of labour supply from the region,
- The balance of labour supply from outside the region;
- Proportion of DIDO / FIFO workers;
- Provision of workforce accommodation facilities; and/or
- Overall housing supply adjustment.

Regional job growth

An imbalance between jobs growth in big Australian cities and the regions was highlighted. The imbalance is primarily related to the economy creating greater demand for higher skilled jobs with the majority located in big cities.

Cumulative Project demand can partially offset this imbalance. Opportunities for regional workforces, middle and high-skilled workers and the reduction of outmigration in the regions can offset this trend.

Regional Economic stimulus

Direct impacts from cumulative Project construction were identified to be most likely felt in the civil engineering and construction sector, construction services sector and non-residential building construction sector.

The sectors of regional economies that were established to be most impacted by production flow-on effect were as follows:

- Professional, scientific, and technical services;
- Wholesale and retail trade;
- Structural metal product manufacturing;
- Road transport;
- Employment, travel agency and other administrative services; and
- Cement lime and ready-mixed concrete manufacturing.

The consumption-induced flow on effects from the expenditure of wages were identified in the following sectors:

- Retail and wholesale trade;
- Food and beverage services;
- Health care services;
- Primary and secondary education;
- Residential care and social assistance services;
- Road transport; and
- Professional, scientific, and technical services;

Impacts on other sectors

Additional impacts may be felt in sectors not directly related to the cumulative Projects, including:

- An increased construction sector;
- Attraction of workers from other relevant sectors resulting in labour shortages and rising inflation;
- In addition, the short run excess demand for supplies and materials; and
- Any reallocation of resources to more highly valued markets;

Agricultural impacts

The EA found that negative regional economic impacts from the use of agricultural land will be very small in comparison with the positive regional economic activity from the Project. This was due to the small agricultural land disturbance footprint and the low value agricultural activities foregone.

6.20.4 Mitigation Measures

The Applicant proposes to work in partnership with the local councils and community to help maximise the projected economic regional benefits while minimising any impacts. In this respect, a range of general economic mitigation and management measures are proposed and would include:

- Employment of regional residents where they have the required skills, experience, and commitment;
- Participating, as appropriate, in business groups, events or programs in the regional community;

- Locally sourcing non-labour inputs to production where local producers can be cost and quality competitive;
- Establishment of a Community Enhancement Fund to fund community projects and support a range of benefit sharing initiatives;
- Lease payments to host landowners that provide an alternative drought proof income with potential flow-on benefits to the regional economy;
- Continued agricultural activities during the operational phase of the Project and following Project decommissioning, reinstatement of the Project Area, as far as practicable, to its condition prior to commencement of construction; and
- Use of FIFO/DIDO, investigate option to construct 'legacy housing (quality homes)' to offset operations phase staffing, and investigate partnership/s with other organisations to utilise existing or approved accommodation camps to house the construction workforce. The aim of these measures is to mitigate impacts on the regional labour market (wage increases and labour shortages) and mitigate Project housing demand on short term accommodation used for tourism and recreation.

6.21 Cumulative Impact Assessment

6.21.1 Background

Cumulative impacts are a result of incremental, sustained and combined effects of human action and natural variations over time and can be both positive and negative. They can be caused by the compounding effects of a single project or multiple projects in an area, and by the accumulation of effects from past, current and future activities as they arise (DPE, 2021).

In accordance with EIS guidelines, this EIS considers the Cumulative Guidelines which require impacts from the Project combined with past, present and reasonably foreseeable future SSDs are considered in this EIS. Assessment should focus on the key matters immediately proximate to the project area within the geographical area of influence.

This section collates cumulative assessments of individual technical studies described in the preceding sections. Detailed assessment of PHA, bushfire, blade throw, air quality and waste have not been undertaken as the potential for each are largely contained within the Project Area.

6.21.2 Impact Assessment

6.21.2.1 Strategic Framework

Section 2 of this EIS discusses the strategic context of the Project with reference to relevant strategic planning publications. In consideration of the Project and relevant future developments, most align with the relevant objectives of the:

- United Nations SDGs;
- United Nations COP26 and COP21;
- Federal Government Renewable Energy Targets;
- Climate Change Act 2022; and
- NSW Government Commitments.

Most relevant future developments identified are renewable energy developments that will provide affordable, reliable and sustainable energy. These developments will assist Australia and NSW in meeting their respective emission reduction targets. They will also assist NSW in the development of affordable, reliable and sustainable renewable energy generation, transmission and storage. The REZ will connect multiple generators and storage in the same area, to capitalise on economies of scale to deliver cheap electricity to homes and businesses in NSW.

The Project, as well as the relevant future developments have or are all progressing the assessments required under their relevant planning approvals pathway, which will minimise potential impacts on the environment and their respective social localities. For example, wind and solar farms will have to undertake a visual impact assessment and implement either design modifications or management measures to avoid or minimise potential impacts. This process assists in preserving the rural landscape, which is a key objective of relevant local strategic planning statements and community strategic plans.

More broadly these developments will provide social and economic benefit to the region. They will encourage economic development within a region, by supporting both employment and economic growth. While all developments would endeavour to hire locally, it is inevitable that skilled labour from outside the region would be required, however this would also benefit local businesses and the community through an increased in demand for local services, and diversification of communities.

6.21.2.2 Identified Developments

Section 2.5.2 of this EIS identifies the cumulative impacts of similar developments within the REZ in accordance with Section 3.4 of the Cumulative Guidelines.

Figure 2-8 shows non-associated receivers, associated receivers and non-associated (associated with another development) at as the date of this EIS.

As described in **Section 2.5.2**, the REZ, where the Applicant will need to tender and compete to win access rights that allow the Project to be grid connected to Project EnergyConnect. There is a capacity cap of 1.2 GW from Buronga substation up to but excluding Dinawan substation, where the Project and neighbouring developments plan to connect to the grid. As a result of this capacity cap, it is unlikely that all neighbouring developments will gain access rights. While it is not possible to determine which developments will be successful, it is considered that the potential for cumulative impacts with neighbouring Projects is limited by the overall grid capacity. For e.g. a traffic assessment in particular which assessed all Projects as per the Scoping Reports would therefore be grossly exaggerated.

The delivery of HumeLink and the Dinawan to Wagga Wagga upgrade, which could be delivered as part of VNI West, would increase the transfer capacity to 2.5 GW and the hosting capacity to a capacity of 3.2 GW.

Renewable developments within 25 km of the Project were identified in **Section 2.5.2.2**. The impacts during construction and operation of the Project are considered low when considering the other proposed or approved developments.

A summary of the cumulative impact potential with the Project (assuming construction from 2026 and operations from 2028) is provided in **Table 6–77**. Each has a potential to be undertaken in parallel with the Project excepting Project EnergyConnect, which is scheduled for construction to be completed, as such is not further discussed below.

Table 6–77 Cumulative Developments and Potential Impacts

Project Name	Distance	Key Dates and Potential Impacts
Pottinger Solar Farm (PSF) (300 MW)	< 1 km (overlap with Project Area)	• Construction (2026) and operations (2028) • Noise • Visual • Biodiversity • Heritage • Soils and Agriculture • Water resources, hydrology and flooding • Telecommunications • Traffic • Economics and social
Project EnergyConnect (NSW – Eastern Section) (1.2 GW)	<1 km (within Project Area)	• Construction (current) and operations (2025)

Project Name	Distance	Key Dates and Potential Impacts
Bullawah Wind Farm (1 GW)	< 1 km (adjacent)	• Construction (2025) and operations (2027) • Noise • Visual • Biodiversity • Heritage • Soils and Agriculture • Water resources, hydrology and flooding • Aviation • Traffic • Economics and social
The Plains Solar Farm (400 MW)	< 1 km (adjacent)	• Construction (2026) and operations (2028) • Noise • Visual • Traffic • Economics and social
The Plains Wind Farm (PWF) (1.8 GW)	< 1 km (adjacent)	• Construction (2026) and operations (2028) • Noise • Visual • Biodiversity • Heritage • Soils and Agriculture • Water resources, hydrology and flooding • Aviation • Traffic • Economics and social
Dinawan Wind Farm (DWF) (1.5 GW)	25 km	• Construction (2025) and operations (2027) • Traffic • Economics and social
Dinawan Solar Farm (800 MW)	25 km	• Construction (2025) and operations (2027) • Traffic • Economics and social

6.21.2.3 Cumulative Impacts Summary

Table 6–78 provides a collated summary of cumulative impacts from individual technical studies which have been assessed in **Section 6.**

Table 6–78 Cumulative Impacts Summary

Project name	Noise	Visual	Traffic	Biodiversity	Heritage	Soils and Agriculture	Water Resources	Aviation	Telecommunications
PSF	Cumulative impacts in PWF EIS	Cumulative impacts are likely along Jerilderie and West Burrabogie Road due to the close proximity and the available clear, open views.	There is potential for construction to overlap. The projects may utilise shared infrastructure, resources, and transport routes. The traffic generated from both projects may interact along Cobb Highway, Jerilderie Road and other local roads to the south and east.	Impacts to approximately 600ha of native vegetation, including potential impacts to Weeping Myall Woodland, Sandhill Pine Woodland, low potential Plains-wanderer habitat, and similar threatened species to the Pottinger Wind Farm.	None additional, as all impacts are included and assessed in both EISs.	None additional, as all impacts are included and assessed in both EISs.	Interaction between project infrastructure and Eurolie Creek, Nyangay Creek, Wargam Creek and the Coleambally Outfall Drain are access track crossings, these will be designed, constructed and installed to mitigate downstream impacts to minimise indirect impacts, such as erosion and sedimentation, to the other surface water receptors. As a result, cumulative impacts to surface water quality and flow are considered negligible. Cumulative impacts to groundwater are considered negligible as the groundwater table is below the depth required for project infrastructure.	N/A	N/A
Bullawah Wind Farm/ The Plains Wind Farm	Construction noise impacts anticipated if activities undertaken concurrently. only at receivers associated or non-associated (associated with another Project). Coordination between developments to be undertaken where practical. During operations, cumulative noise impacts are not anticipated.	NAD_02 < 4 km and associated with Bullawah Wind Farm. 50-75% visibility with Plains Wind Farm, Bullawah Wind Farm and Project - however views limited due to distance and vegetation. NAD_26 > 4 km associated with Bullawah Wind Farm. 50-75% visibility with The Plains Wind Farm, Bullawah Wind Farm, and Pottinger Wind Farm - however views limited due to distance and vegetation. Considering the low visibility of the Project from the surrounding area, it is unlikely to contribute to the cumulative impacts from developments in the surrounding area.	Construction traffic expected to have a minimal impact on the operation of the road network. Intersection updated included in Project description. Cumulative assessment approach agreed with TfNSW as traffic volumes for Bullawah Wind Farm and The Plains Wind Farm is not available.	To manage the cumulative biodiversity impacts, the design development has considered placement of infrastructure to avoid and minimise impacts to biodiversity, and opportunities will continue to be explored during the design phase and based on further field investigations. Biodiversity offsets will be provided for the Project to address cumulative biodiversity impacts where removal of habitat and vegetation is unavoidable.	The reports identified that 115 registered AHIMS sites were located within 10 km of the project boundary, with 13 located within the Bullawah Wind Farm project area. The majority of the sites (96 in total) were identified in the vicinity of waterways within the Oolambeyan National Park. Impacts to these sites were noted as being unlikely due to a 300 m buffer being applied to the Oolambeyan National Park.	The Project and other proposed energy developments can coexist with existing agricultural practices. Projects may also augment these through the provision of host-landowner economic benefits. Overall, the cumulative impact of the Project is expected to be low.	Access track crossings, will be designed, constructed and installed to mitigate downstream impacts to minimise indirect impacts, such as erosion and sedimentation, to the other surface water receptors. As a result, cumulative impacts to surface water quality and flow are considered negligible. Cumulative impacts to groundwater are considered negligible as the groundwater table is below the depth required for project infrastructure.	The potential cumulative impacts will differ across the REZ, but the main safety aspect is for pilots to be made aware of windfarms prior to their planned operations in the area. Pilots will need to consider downwind turbulence from WTGs and flight paths to remain clear of WTGs.	Telecommunication impacts from wind farms are typically related to the direct impact and/or infringement on telecommunication links. The Project is able to significantly limit its impact on telecommunication links as there are no ACMA communication sites located within the Project Area.
Dinawan Solar and Wind Farm	None	Unlikely to have potential to be viewed in combination with the Project.	There is potential for construction of these projects to overlap. The traffic generated from these projects may interact within the town of Hay.	As above	N/A	As above	As above	As above	As above

** NADs are "Project" references and associated with another development as indicated in various Scoping Reports as at the date of this EIS. ** dwelling entitlement only*

6.21.3 Mitigation and Management

The potential cumulative impacts associated with the Project will be manageable through the Applicant's commitment to implementing the mitigation and management measures presented in this EIS and preparing a CEMP and associated sub-plans (including a Local Housing and Accommodation Strategy).

These plans will consider reflect and respond to actual regional conditions at that time, especially in relation to concurrent Projects which will be serviced out of Hay and Deniliquin.

Appendix G provides a consolidated summary of all the Project's management and mitigation measures.

7 PROJECT JUSTIFICATION

The Section provides a justification and evaluation of the Project as a whole with regard to the economic, environmental and social impacts, principles of ESD and objects of the EP&A Act. It integrates the findings of each previous EIS section and objectively weighs the positive and negative impacts of the Project.

This Section also considers the intersection between these different findings and whether the Project will comply with the standards and performance measures of government legislation, plans, policies and guidelines.

7.1 Action Taken to Avoid/Minimise, Mitigate and/or Offset Impacts

Project development has been informed by site due diligence, preliminary investigations to guide Project scoping, detailed environmental assessments for this EIS, and extensive community and stakeholder engagement.

Avoiding and minimising environmental and social impacts has been a key consideration from an early stage, informing site selection and layout, and subsequent Project refinements in response to findings of this EIS. **Section 1.6** provides further information on the “Avoid-Minimise-Mitigate-Offset” design hierarchy.

7.1.1 Site Selection

Constraints and opportunities to minimise impacts have been a key aspect in the selection of a suitable site for the Project.

Evaluation of site options considered several factors including technical feasibility and quality of the wind resource, as well as potential impacts on the local community and the environment. Site selection has been undertaken with a focus on previously disturbed areas with a low potential for impacts to the environment, and minimisation of potential or perceived social impacts.

The Project Area is justified as it:

- Located within a superior wind resource area;
- Strategically located within the South West REZ;
- Strategically located within the Project EnergyConnect corridor;
- Includes suitable land use zoning;
- Is comprised of low, relatively flat terrain which is suitable for Project infrastructure and construction;
- Is largely cleared or previously disturbed which minimises environmental impacts;
- Is located away from towns and urban areas which minimises visual impacts;
- Has good access to a major road (Cobb Highway via Jerilderie Road); and
- Is proximate to the regional centre of Hay and other areas within the wider Murrumbidgee Region, providing opportunities for local sourcing of labour where possible.

7.1.2 Project Refinements

The Project Area covers 26,000 ha with a maximum Disturbance Footprint of 1,066 ha. The Project Layout and associated Disturbance Footprint represents the most appropriate location for infrastructure.

The design of the Project has been refined to avoid and minimise potential environmental and social impacts. These refinements have been informed by environmental studies and stakeholder engagement undertaken for the Project.

A summary of key actions and layout refinements undertaken to avoid and minimise potential impacts is provided in **Table 7–1.** The placement of infrastructure and extent of construction activities may be further refined as “micro-siting” during detailed design within the limits of the activities described in this EIS.

Table 7–1 Summary of Project Impact Minimisation and Benefits through Layout Refinement

Aspect	Action Taken	Impact Reduction / Benefit
Noise	• Relocation of the BESS around 3.2 km west	• Relocation resulted in significant noise impacts to NAD_02 (associated with another development)
Biodiversity	• The results of ongoing field investigation in 2023 and 2024 were used to determine the locations of highest biodiversity value (such as TECs and high-density hollow-bearing trees) • Ongoing design review workshops to refine WTG locations and redesign access roads to avoid areas of high biodiversity value • Commitment to a BMP and BOS	• Redesign of Disturbance Footprint resulting in a reduction of 35 ha of works on Category 1 – Exempt land • WTGs reduced from 253 to 247 avoided impacts on 7 ha of PCTs / TECs • Relocation of 18 WTC avoiding impacts on 10 ha of PCTs / TECs • Redesign of the Disturbance Footprint to mitigate impacts to Sandhill Pine TEC by 6 ha and avoided direct and indirect impacts to active Wedge-tailed Eagle nests • Redesign of the Disturbance Footprint avoids impacts to large populations of the EPBC Act (Vulnerable) and BC Act (Vulnerable) listed species (Chariot Wheels, Mossgiel Daisy, Slender Darling Pea and Silky Swainson-pea) • Relocation and redesign of southern substation and temporary construction, batching and laydown avoided direct impact to wetland habitat. • Removal and/or redesign of 20 km of access tracks avoided impacts on native vegetation
Aboriginal heritage	• Ongoing design review workshops to refine WTG locations and redesign access roads to minimise the disturbance footprint reducing impacts to Aboriginal sites • Commitment to an ACHMP	• Removal and/or redesign of access tracks and micro-siting of WTG has avoided the potential for direct impacts on 15 sites • This includes 10 sites reduced from high to moderate impact, six sites from a high to low impact and a further six sites from a moderate to a low
Flooding and Hydrology	• Design of WTG and other permanent site ancillary infrastructure so that it does not impede surface water flows and /or waterfront land	• Commitment during the detailed design refinement process will incorporate micro-siting of WTG to avoid works on waterfront land
Hazards	• Hazard reduction considered when locating the BESS and associated technology	• Lithium-ion phosphate batteries (or similar battery technology) with safety and fire protection features such as shut-down separator, tear-away tab, vent and thermal interrupt to be used to minimise chance of thermal runaway and fire • Vent covers of BESS constructed of non-combustible material and not located above battery packs to minimise chance of fire propagation
Bushfire	• 10m APZs around all infrastructure included in Project design • A minimum of one x 20,000 litre static water tank shall be provided at each of the four site entrance roads (i.e. Four in total). • Construction of access roads to suit large heavy vehicles and provide clear egress • Commitment to a Fire Management Plan and Bushfire Emergency Management and Operations Plan	• Minimise the risk of bushfire affecting the Project through a Fire Management Plan and develop protocols in a Bushfire Emergency Management and Operations Plan for action if a fire threatens the Project Area and in any risk to the surrounding environment

Aspect	Action Taken	Impact Reduction / Benefit
Economics	• Engagement with local stakeholders, including HSC, ERC regarding workforce accommodation, opportunities for local workforce, training and apprenticeships during construction, and potential impacts on tourism associated with the Project • Commitment to an Accommodation and Housing Strategy and an Employment and Procurement Strategy for construction	• Maximised economic benefit and employment opportunities for the local community • Minimised strain on local services where possible
Social	• Project design and layout refinements to minimise amenity impacts to the surrounding environment • Commitment to Accommodation and Housing Strategy and an Employment and Procurement Strategy in consideration of actual cumulative impacts during the life of the Project	• Maximised opportunity for local employment and training during construction and operation where possible • Maximised social benefits through local investment and a local contribution to climate change, in line with community input for the Project

7.2 Consistency with Strategic Context

An overview of the key regulatory commitments and strategic goals, and local and regional plans relevant to the Project, is presented in **Section 2**. The Project aligns with all applicable Commonwealth, State, regional and local plans and policies. In particular, the Project supports the Commonwealth and State governments in the transition to renewable energy, the goal of achieving net zero emissions by 2050, and the growth and development of the REZ.

The Project is consistent with the relevant Strategic Context as it will:

- Provide an additional renewable energy generation source which will assist Australia in its transition from traditional fossil fuel energy production to renewable energy;
- Reduce net greenhouse emissions through the replacement of traditional emission-intensive energy sources with renewable energy. This will assist to slow down the effects of climate change, benefiting current and future generations in line with the principles of ecologically sustainable development;
- Improve the security and reliability of the NEM, by providing additional energy generation capacity of approximately 1.3 GW, and usable energy storage of approximately 500 MW, increasing reliability of energy supply at peak times;
- Contribute to the continued growth of renewable energy generation and storage capacity in the REZ and NSW;
- Generate employment and maximise local economic stimulus, including the provision of 900 FTE jobs during construction, 50 FTE jobs during operation and an EDC of $2.152 billion;
- Provide ongoing benefit sharing through the VPA and BSP, to deliver tangible benefits for local communities hosting new energy infrastructure;
- Provide a diversified income stream for host landholders, which can help to improve the resilience of rural farms to the impacts of drought, fires and commodity price fluctuations; and
- Implement mitigation measures to avoid or minimise potential environmental and social impacts.

7.3 Compliance with Statutory Requirements

The Project is permissible under Part 4 Section 4.7 of the EP&A Act and is consistent with all relevant Federal and State government strategies, plans and policies to achieve net zero emissions by 2050. These goals are legislated in NSW under the Climate Change Act.

The Project satisfies the goals and objectives in Section 1.2 of the Hay and Edward River LEP as outlined in **Section 4**.

All requirements of the Project SEARs issued on 10 July 2023 and supplementary SEARs on 3 April 2024 have been addressed in this EIS as demonstrated in **Appendix C.**

Additional engagement was offered to regulators as required by the SEARs and is summarised in **Section 5**. Issues raised during consultation have been addressed in this EIS.

The permissibility and compliance of the Project with all applicable legislation is detailed in **Section 4**. Mandatory matters for consideration are included at **Appendix D.**

7.4 Objects of the EP&A Act

An assessment of the merits of the Project with respect to the objects of the EP&A Act is provided in **Appendix D.** The Project is consistent with the objects of the EP&A Act.

7.5 Consistency with Community Views

Community and stakeholder engagement undertaken and issues raised is outlined in **Section 5**. Stakeholders have included NSW and Federal Government agencies, the nearby community and community groups, Aboriginal groups, neighbouring landholders, and infrastructure and service providers.

Engagement has been ongoing since the scoping phase and throughout the development of the EIS to discuss the Project build an understanding of potential concerns, opportunities and mitigation strategies.

Overall, the Project is generally supported by communities in Hay and the surrounds, recognising the Project as a source of employment opportunities and generation of clean energy. Stakeholders were interested in understanding how local businesses could be involved with the Project and how the benefits could be shared within the community.

The key concerns raised during consultation have included:

- Potential for visual impacts / landscape changes;
- Potential to create stress and affect community cohesion;
- Potential to increase challenges associated with accessing a skilled workforce;
- Potential to exacerbate pressures on accommodation and rental housing;
- Potential for increased waste generation and waste management issues over the life of the Project;
- Potential for impacts to biodiversity and Aboriginal heritage;
- Potential for changes to road and traffic movements influencing stock and agricultural transport in the area; and
- Potential for land use conflicts which may reduce land productivity.

Support and recognition of the benefits of the Project have included:

- Potential to ease cost of living pressures through renewable energy generation;
- Employment opportunities during construction, and engagement of local contractors, materials and service providers;
- Increasing the capacity and experience of local workforce, contractors and service providers;
- Increased firefighting potential through local upgrades to infrastructure and increased local traffic (early fire detection);
- Potential for design innovations to minimise potential impacts on biodiversity and Aboriginal heritage;
- Economic benefits for the community and businesses; and
- Potential for eco-tourism opportunities, given the nature and scale of renewable energy Projects proposed in the region.

The Project development process has and would continue to respond to issues and concerns where possible. The assessments in the EIS have considered issues raised, and mitigation and management measures will be implemented to address potential impacts and reflect stakeholder input where practicable.

7.6 Ecologically Sustainable Development

The principles of Ecologically Sustainable Development (ESD) are detailed in Part 8 Division 5 Section 193 of the EP&A Regulation.

An overview of the Project's conformance with ESD is provided in **Table 7–2.**

Table 7–2 Project Alignment with Principles of ESD

Principle	Detail	Project Alignment
Precautionary principle	The precautionary principle is that 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 applying the precautionary principle, public and private decisions should be guided by— (a) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and (b) an assessment of the risk-weighted consequences of various options	• Technical specialists have been engaged during the design and EIS phases to provide input on potential environmental impacts and strategies to avoid / minimise these impacts, with a high level of certainty • The Project layout was designed with regard to the relevant guidelines and has been refined further to the outcomes of technical environmental studies. This design process has ensured that the Project does not pose any unacceptable risk to the environment or human health • Appropriate mitigation and management measures have been identified where environmental impacts have been assessed in **Section 6** • With the suitable management measures in place, the Project will not cause foreseeable, serious or irreversible damage to the environment
Intergenerational equity	The principle of inter-generational equity is that the present generation should ensure the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations	• The Project will provide clean, renewable energy to the NEM which will be emission free once operating and will contribute to the stability of energy prices in the future • Once the Project reaches the end of its life, the land will be rehabilitated for agricultural land use. There is also the option to renew the infrastructure and continue the Project, allowing for sustained production of renewable energy. Either option would provide benefits for future generations. • Mitigation measures committed to in this EIS will minimise environmental impacts throughout construction, operations and decommissioning
Conservation of biological diversity and ecological integrity	The principle of the conservation of biological diversity and ecological integrity is that the conservation of biological diversity and ecological integrity should be a fundamental consideration	• Conservation of biodiversity has been a fundamental consideration throughout Project development. Extensive desktop and field investigations have been completed to understand anticipated biodiversity impacts. • Findings of desktop and field investigations have informed an ongoing and iterative design refinement process for the layout of the Project. This has minimised potential impacts to ecological values. • The Project is located on cleared, grazed farmland • A BOS will be in place under the 'NSW Biodiversity Offset Scheme', informed by the BDAR's assessment of the Project's ecological impacts. The BDAR also informed several management and mitigation measures, outlined in **Section 6.4**, to avoid and minimise impacts to biodiversity.
Improved valuation, pricing and	The principle of improved valuation, pricing and incentive mechanisms is that environmental factors should be included	• The Project will assist in NSW's transition to renewable energy, reduce greenhouse gas emissions and contribute to the stabilisation of energy prices

Principle	Detail	Project Alignment
incentive mechanisms	in the valuation of assets and services, such as— (a) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement, and (b) the users of goods and services should pay prices based on the full life cycle of the costs of providing the goods and services, including the use of natural resources and assets and the ultimate disposal of waste, and (c) established environmental goals 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	• The Project will bring economic stimulus to the region and support up to 900 FTE jobs during construction and up to 50 FTE during operation • The Applicant accepts the financial costs associated with all the measures required for the Project to avoid, minimise, mitigate and manage potential environmental and social impacts

7.7 Scale and Nature of Impacts

The Project will primarily be developed on land which has been previously disturbed and historically cleared for agricultural purposes. The Project layout has been designed to maximise the use of existing disturbed areas and avoid and/or minimise impacts to identified biodiversity and Aboriginal heritage values.

Progressive design and layout refinements have continued through the development of this EIS, with key objectives to avoid or minimise environmental and social impacts in line with the Avoid-Minimise-Mitigate-Offset design hierarchy.

7.7.1.1 Environmental Costs and Benefits

Potential impacts to environmental aspects from the findings of this EIS are summarised in **Table 7–3.**

Table 7–3 Project Environmental Costs and Benefits Summary

Aspects	Environmental Costs and Benefits
Noise	• Noise levels during construction are predicted to comply with noise criteria with the exception of Stage 2 – earthworks • Construction traffic noise levels are predicted to be below the road traffic noise criteria • Noise during operation is predicted to comply with noise criteria • Vibration impacts during construction, operation and decommissioning are not expected at non-associated receivers
Landscape and Visual	• Development of the Project will result in some changes to the landscape • Only one non-associated dwelling within 8 km of the Project was identified as having the potential for a high visual impact. This dwelling is derelict and uninhabited, and should this dwelling become habitable post-construction, screen planting and/or supplementary planting will be undertaken in accordance with **Appendix I** in consultation with the landowner. • A low to moderate visual impact is expected from all viewpoints surrounding the Project • A shadow and flicker blade assessment determined no non-associated dwellings were identified with potential shadow flicker hours
Biodiversity	• The Project layout has been refined to avoid and minimise impacts to biodiversity, resulting in avoidance of areas of high biodiversity value to the greatest extend feasible

Aspects	Environmental Costs and Benefits
	• The Project will result in impacts to 13 native PCTs, three BC Act listed TECs (*Acacia melvillei* shrubland, Weeping Myall Woodland and Sandhill Pine Woodland), one EPBC Act listed TEC (Weeping Myall Woodland) and known habitat for four threatened flora credit species (Chariot Wheels, Slender Darling Pea, Mossgiel Daisy and Silky Swainson-pea) and three fauna credit species (Pink Cockatoo, Plains-wanderer and Southern Bell Frog) • A desktop review of proposed transport route upgrades near Broken Hill determined there will be potential impacts to four native PCTs, including one Biodiversity Conservation Act 2016 listed threatened ecological community and known habitat for seven threatened flora credit species and 10 fauna credit species
Aboriginal Heritage	• Avoidance of Aboriginal cultural heritage values have been considered in the design refinement process • There are 53 Aboriginal heritage sites within the Disturbance Footprint and based on the current layout 17 of these sites directly impacted (high impact) and a further 36 sites with moderate impacts • There will be no adverse impacts on Aboriginal cultural heritage during operation and decommissioning
Historic Heritage	• There are no listed historic heritage sites of local, state of national significance in the Project Area • The archaeological potential of the Project area is low and if any items are uncovered during construction, they will likely comprise remnants of former late nineteenth to early twentieth century residence and hut of Wargam Estate plus associated structures (I.e. fences, well, tanks etc). • There will be no adverse impacts on historic heritage during operation and decommissioning of the Project
Soils	• Impacts to soils are expected to be minor and largely confined to the Disturbance Footprint. Any potential impacts can be effectively managed through the implementation of sediment and erosion controls • The Project Area is characterised by a flat topography and as a result the risk of erosion from surface water flows is considered low
Agriculture	• Agricultural activities will be maintained where practical within the Project Area for the duration of construction, operation and decommissioning • Impacts on agriculture are expected to be temporary, largely confined within the Survey Area, and readily manageable through the implementation of management and mitigation measures • The Project will not have any major effects on land and soil capability due to the minimal, localised and sporadic nature of landform modification required • Upgrades to access tracks within the Project Area are likely to benefit agricultural activities by improving all-weather access
Hydrology and Flooding	• Most of the 247 WTGs are below the estimated 0.3 m flood depth in an 1% AEP event, 54 WTGs are located above the 0.3 m flood depth with a maximum recorded depth of 0.9 m at WTG 72 • Construction of Project infrastructure (i.e. access tracks, transmission cables and WTG hardstands) are proposed on waterfront lands (i.e. within 40 metres of any watercourses) which may result in some disturbance to minor flow/drainage paths • No impacts on groundwater are anticipated and risks to water quality will be readily manageable through the implementation of management and mitigation measures
Water Resources	• Potential impacts on water resources for the Project Area are related to the increased risk of erosion and sedimentation and spills of wastewater, hydrocarbons or other pollutants because of construction activities, and the disturbance to the Project Area • Due to the flat topography, there is potential for spills to pool and subsequently infiltrate soil. Potential impacts to water resources will be readily manageable through the implementation of management and mitigation measures • Water use requirements for the Project are anticipated to be met from local sources
Traffic	• Traffic generation analysis shows that there would be adequate capacity in the road network to accommodate the Project • New site access points will be designed for all heavy vehicles required for the construction phase • A channelised left turn treatment at the intersection of Cobb Highway and Jerilderie Road, basic right and left turn treatment at the intersection of Cobb Highway and West Burrabogie Road and Cobb Highway and Warwillah Road, basic left turn

Aspects	Environmental Costs and Benefits
	treatment at the intersection of Cobb Highway Wargam Road / Symons Crescent and basin right turn treatment is required at the intersection of Kidman Way and Four Corners Road and a basic right turn treatment at the intersection of Kidman Way and Four Corners Road will be implemented to manage predicted increases to Project traffic travelling through the intersections. • The road network can accommodate the traffic, loads and type of vehicle movements generated by the Project during construction, operation and decommissioning, therefore no impact from the Project on the road network is expected • The transport of plant and equipment required for the Project from the Port of Adelaide will be managed via a Heavy Vehicles Route Assessment • A TMP will be prepared to mitigate the impacts of site traffic generated along the proposed transport route
Telecommunications	• Telecommunications are typically related to the direct impact and/or infringement on telecommunication links. The Project is able to significantly limit its impact on telecommunication links as there are no ACMA communication sites located within the Project Area. • Two point-to-point links are located within the Project Area. Consultation with stakeholders determined the Project is unlikely to impact these existing telecommunication services.
Aviation	• Based on the Project layout and WTG blade tip height of 280 m AGL, the blade tip elevation of the highest WTGs exceed the 25nm MSA by 534.6 ft • The Project is located beyond the horizontal extent of circling areas at Hay Airport • Impact analysis of the surrounding air routes found that two air route LSALTS close to the project will need to be amended to accommodate the WTGs • No ALAs will be impacted by the Project • The Project is located outside the horizontal extent of OLS of Hay Airport
Hazards	• Risks to the public associated with the operation of the Project (including the BESS units), such as the potential for fire, can be effectively managed by establishing appropriate separation distances between infrastructure and the Project Area • Comprehensive risk management and emergency response procedures will be implemented through relevant management plans
Blade Throw	As the closest receiver to a WTG is 500 m and blade throw typically impacts at 250 m, Project risk associated with a blade throw event is very low
Bushfire	• The Project Area has a low bushfire hazard potential based on the vegetation classification and slope of the land. Areas of isolated woodland vegetation present the greatest bushfire hazard, however this type of vegetation is only found in small areas throughout the Project Area. • Bushfire risk can be effectively managed by implementing appropriate fire prevention and control measures in including maintenance of APZs, provision of suitable access roads and static water tanks
Air Quality	• Potential air quality risks are expected to the temporary and limited to dust generation during construction. The implementation of management and mitigation measures will minimise impacts. • The Project will improve air quality by reducing emissions that would otherwise be generated through the burning of fossil fuels to generate electricity from traditional coal fired power stations
Waste	• Waste generated during construction operation and decommissioning will be minimised in accordance with statutory requirements • The Applicant will investigate recycling options for the WTG and the lithium-ion batteries used in the Project when they have reached their end-of-life • A WMP will be prepared for the Project and will describe the measures to be implemented to manage, reuse, recycle and safely dispose of waste
Social	• Potential adverse social impacts may include reduced availability of local accommodation and services during construction due to external workforce moving into the Hay region from other locations • An Accommodation and Housing Strategy will be developed to mitigate potential adverse social impacts
Economics	• The Project is expected to benefit the state economy in relation to the transition to renewable energy and the level of investment

Aspects	Environmental Costs and Benefits
	• At a local and regional level, positive impacts will include jobs and commercial opportunities (particularly during construction), and additional economic benefit to the area from money being spent in the local economy
Cumulative impacts	• Cumulative impacts on aspects such as land use, noise and traffic are difficult to predict and quantify due to the uncertain timeframes of other potential developments in the region. However, any impacts will be restricted to the short-term, construction period given the potential for cumulative impacts during operation will be negligible. • Cumulative impact on agriculture for the region is expected to be low, as the changes to agricultural land use and agricultural productivity are anticipated to minor from the Project and each SSD

7.7.1.2 Economic Costs and Benefits

The Project is justified economically due to the economic stimulus and benefit it will provide to the region, which includes the LGA of Hay, Deniliquin, Edward River, Murrumbidgee and more broadly NSW.

During construction, the Project has the potential to generate, $250 M in direct and indirect output annually, $91 M in direct and indirect value added, $49 M in direct and indirect household income, and 623 direct and indirect jobs throughout the region of NSW. The Project will create demand for regional labour resources and regional inputs to production.

During operation, the Project has the potential to create annually $371 M in direct and indirect output, $318 M in direct and indirect value added, $7 M in direct and indirect household income, and up to 97 direct and indirect jobs throughout the region of NSW.

Demand for regional labour resources and regional inputs to production will be created in smaller rates during operations. Consequently, the Project will not impact wage or price increases or production shortages.

The employment and economic opportunities created by the Project have been supported by the community during engagement and consultation activities (refer to **Section 5**).

The potential cumulative economic impacts of the Project and nearby SSDs are generally positive. These are associated with the demand for workforce, as described in **Section 6.20.**

7.7.1.3 Social Costs and Benefits

The Project has the potential to provide a diversified income stream for host landholders through lease payments. The income provided to landowners hosting Project's infrastructure can help make farms more resilient to the impacts of droughts, fires and commodity price fluctuations.

A VPA and BSP established to deliver tangible benefits for communities hosting new energy infrastructure. These benefits may include public infrastructure upgrades, training and employment programs, and health and education programs.

While the Project has the potential to generate environmental impacts, it is considered these can be appropriately managed through the implementation of the mitigation and management measures outlined in this section**.** These measures also consider the community concerns and associated social impacts identified during the community and stakeholder engagement process to date:

During construction, the Applicant will liaise with relevant stakeholders and will include:

- Regular and ongoing communication with the community;
- A robust safety culture; and
- Environmental monitoring.

Given the anticipated net benefit and commitment from the Applicant to appropriately manage potential environmental impacts, it is considered the Project will have a positive overall outcome for the Hay community, Murrumbidgee Region and broader NSW.

7.8 Compliance Monitoring and Communication

An EMS will be developed for the Project, and will guide all environmental management activities throughout construction, operation, maintenance and decommissioning. Environmental risks will be identified, and mitigation measures determined to minimise potential environmental impacts from the Project.

The EMS will also include a stakeholder management and monitoring framework to evaluate and adaptively manage social impacts throughout the Project lifecycle. The framework will encourage ongoing stakeholder engagement, will provide a social incident notification and reporting mechanism, and facilitate continuous learning and improvement for the Project to enable evidence-based contributions to the renewables industry on a whole.

7.9 Remaining Uncertainties

The Applicant has experience developing several wind farms in Australia and is aware of relevant standards, best practice and current technology; and this EIS has been prepared considering the best currently available technology. Any changes in technology throughout detailed design will be considered with respect to the findings and commitments in this EIS.

The renewable energy industry is progressing rapidly, and it is anticipated that technology will advance, and may replace the technology that is currently being considered for the Project.

Better reuse and recycling opportunities are expected to be available at the end of the Project life than at the time of preparing the EIS.

The Applicant will select appropriate suppliers of equipment and infrastructure based on detailed reviews of product information, safety data sheets and the best available science.

7.10 Conclusion

The Project involves the construction, operation and decommissioning of a 1.3 GW WTG capacity facility, with an associated 500 MW / 2 GWh BESS, and associated infrastructure.

Should approval be granted, the Project will supply clean electricity to the NEM to power for 830,000 homes annually. The additional renewable energy generated and associated reduction of greenhouse gas emissions (compared to fossil-fuel energy generation) will contribute to state and Federal emissions reduction goals. The Project supports local, state and Federal plans, policies, strategies and is permissible under all relevant legislation.

Throughout the design refinement process, the Applicant has worked to avoid potential environmental and social impacts. Where potential impacts cannot be avoided, the Project has sought to minimise environmental impacts and/or implement mitigation measures to manage the extent and severity of any residual environmental impacts.

During detailed design and prior to the commencement of construction, the placement of infrastructure and extent of construction activities would be further refined to maximise avoidance and minimisation objectives.

With consideration of the management and mitigation measures summarised in **Appendix G**, the outcomes of technical specialist reports, and stakeholder consultation; the Project will not have significant or permanent impacts on the environment.

Should the Project not proceed, the potential Project benefits described in this EIS would not be realised and it will be harder in the short-term to achieve Commonwealth and NSW Government renewable energy and greenhouse gas emissions reduction targets.

The Project has the potential for positive economic stimulation and an opportunity to increase the renewable energy generation capacity of the REZ. The Project is in the best interest of the public and the environment and is therefore open to the Minister for positive determination.

8 TERMINOLOGY AND ACRONYMS

Term	Definition
KEY TERMINOLOGIES	
Project	A wind farm as described in **Section 3** to which this Application applies
Project Area	Red boundary shown on key figures to which the Application largely applies (unless otherwise stipulated)
Applicant	Pottinger Renewables Pty Ltd
Pottinger Energy Park	The combined Pottinger Solar Farm and Wind Farm Projects for which separate Applications are being made
Developer	Someva Pty Ltd (Someva Renewables) and AGL Energy
Application	Application for Development Consent under Part 4.7 of the EP&A Act; and Determination under Part 9 of the EPBC Act
Associated dwelling	Habitable dwelling which does have any agreement with the Project
Non-associated dwelling	Habitable dwelling which does not have an Agreement with the Project
Non-associated dwelling (associated other Project)	Habitable dwelling which does not have an Agreement with the Project; however does have an Agreement with another Project
Receiver	Dwelling or house
Due Diligence	Internal environmental assessment process by which minor Project components may be located within the Project Area but external to the Survey Area as stipulated in Section 3 of the EIS
Survey Area	Area surveyed within the Project Area within which detailed assessment have been consistently undertaken for field studies. The Project components may be moved and/or micro-sited within this boundary during detailed design.
Disturbance Footprint	Direct total Project-related disturbance hectares. Largely within the Survey Area except where detailed in Section 3 of the EIS.

OTHER TERMINOLOGIES	
°C	Degrees Celsius
AAAA	Aerial Application Association of Australia
AAR	Aboriginal Ancestral Remain
ABS	Australian Bureau of Statistics
ACCU	Australian Carbon Credit Unit
ACHAR	Aboriginal Cultural Heritage Assessment Report
ACHMP	Aboriginal Cultural Heritage Management Plan
AD	Associated dwelling
Additional SEARs	Minor Updates to SEARs dated 6 May 2024 for Southern Extension Area
AEMO	Australian Energy Market Operator
AEP	Annual Exceedance Probability
AFAC	Australian and New Zealand National Council for Fire and Emergency Services
AHD	Australian Height Datum
AHIMS	Aboriginal Heritage Information Management System
AHL	Aviation Hazard Lighting

Term	Definition
AHUFP	Aboriginal Heritage Unanticipated Finds Protocol
AIP	Aeronautical Information Publication
ALA	Aircraft Landing Area
AL Act	*Aboriginal Land Rights Act 1983*
ANZEC Guideline	*Australian and New Zealand Environment Council – Technical basis for guidelines to minimise annoyance due to blasting overpressure and ground vibration 1990*
ANZG	Australian and New Zealand Guidelines
AM	Amplitude Modulation
Approved Methods	Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales
APZ	Asset Protection Zone
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASC	Australian Soil Classification
ASS	Acid Sulphate Soils
Austroads Guide	Austroads Guide to Road Design Part 4a: Unsignalised and Signalised Intersections
AVTG	Assessing Vibration: A Technical Guideline
AWA	Australian Wind Alliance
AWS	Automatic Weather Station
BAL	Bushfire Attack Level
BAM	Biodiversity Assessment Method
BAR	Bushfire Assessment Report
BBAMP	Bird and Bat Adaptive Management Plan
BC Act	*Biodiversity Conservation Act 2016*
BDAR	Biodiversity Development Assessment Report
BEMOP	Bushfire Emergency Management and Operations Plan
BESS	Battery and Energy Storage System
BFRMP	Bushfire Risk Management Plan
Bilateral Act	*Amending Agreement – No.1 – New South Wales Assessment Bilateral Agreement*
BIMP	Biosecurity Management Plan
Blue Book	Managing Urban Stormwater: Soils and Construction - Volume 1
BMP	Biodiversity Management Plan
BOM	Bureau of Meteorology
BOS	Biodiversity Offset Strategy
BPMs	Bushfire Protection Measures
BSAL	Biophysical Strategic Agricultural Land
BSP	Benefit Sharing Plan (or Community Benefit Fund (CBF))
CASA	Civil Aviation Safety Authority
CEF	Community Enhancement Fund
CEMP	Construction Environmental Management Plan

Term	Definition
CFIT	Controlled Flight Into Terrain
CIC	Critical Industry Cluster
CICL	Coleambally Irrigation Co-operative Limited
CL Act	*Crown Land Management Act 2016*
Climate Change Act	*Climate Change Act 2022*
CMT	Culturally Modified Tree
CMS Act	*Coal Mine Subsidence Compensation Act 2017*
Code of Practice	Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW
Conveyancing Act	*Conveyancing Act 1919*
COP	Conference of the Parties
CSP	Community Strategic Plan
CTAP	Climate Transition Action Plan
Cumulative Requirements	Cumulative Impact Assessment Guidelines for State Significant Projects
Cwlth	Commonwealth
DA	Development Application
DCCEEW	Federal Department of Climate Change, Energy, the Environment and Water
DCP	Development Control Plans
DIT	South Australia Department for Infrastructure and Transport
DP	Deposited Plan
DPI	NSW Department of Primary Industries (former)
DPHI	Department of Planning Homes and Infrastructure (formerly DPE and DPI)
DRP	Decommissioning Rehabilitation Plan
DIDO	Drive In Drive Out
Dutch Handbook	Dutch Wind WTG Risk Zoning Handbook
EA	Economic Assessment
ECRTN	Environment Criteria for Road Traffic Noise
EEC	Endangered Economic Community
EIS	Environmental Impact Statement
EIS Guidelines	State Significant Development Guidelines – Preparing an Environmental Impact Statement
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
EMS	Environmental Management System
Engagement Guideline	Undertaking Engagement Guidelines for State Significant Projects
EP&A Act	*Environmental Planning and Assessment Act 1979*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPI	Environmental Planning Instrument
EPL	Environment Protection Licence
EPR	Earth Potential Rise

Term	Definition
ERC	Edward River Council
ESCP	Erosion Sediment and Control Plans
ESD	Ecologically Sustainable Development
EUMETNET	European Meteorological Services Network
FCC	Fire Control Centre
FIFO	Fly In Fly Out
FM	Frequency modulated
FM Act	*Fisheries Management Act 1994*
FMP	Fire Management Plan
ft	Feet
FTE	Full Time Equivalent
GADDC	Guidance on the Assessment of Dust from Demolition and Construction
GDE	Groundwater Dependent Ecosystem
GHG	Greenhouse Gas
GNSS	Global Navigation Satellite System
GW	Gigawatt
GWh	Giga Watt Hour
Ha	Hectares
Hay LEP	*Hay Local Environmental Plan 2011*
Hazards SEPP	*State Environmental Planning Policy (Resilience and Hazards) 2021*
Heritage Act	*Heritage Act 1977*
HEVAE	High Ecological Value Aquatic Ecosystems
HHA	Historic Heritage Assessment
HHUFP	Historic Heritage Unanticipated Finds Protocol
HIPAP	Hazardous Industry Planning Advisory Papers
HSC	Hay Shire Council
IAF	Initial Approach Fix
IAP2	International Association for Public Participation
IEC	International Electrotechnical Commission
IO	Input-Output analysis
ICN	Industry Capability Network
ICNG	Interim Construction Noise Guideline
ICOMOS	International Council on Monuments and Sites
IFR	Instrument Flight Rules
INCIRP	International Commission on Non-Ionizing Radiation Protection
ISP	Integrated System Plan
kPa	Kilopascal
kV	Kilovolt
LALC	Local Aboriginal Land Council
LCU	Landscape Character Unit

Term	Definition
LCZ	Landscape Character Zone
LEP	Local Environmental Plan
LFI	Low Frequency Induction
LGA	Local Government Area
LGCs	Large-scale generation certificates
LiDAR	Light Detection and Ranging
LLS	Local Land Services
LLS Act	*Local Land Services Act 2013*
LRET	Large-scale Renewable Energy Target
LSALT	Lowest Safe Altitude
LSC	Land and Soil Capability
LSC Scheme	Land and Soil Capability Assessment Scheme
LSPS	Local Strategic Planning Statements
LUCRA	Land Use Conflict Risk Assessment
LVIA	Landscape and Visual Impact Assessment
Mbgl	Metres below ground level
MERL	Monitoring, Evaluation, Reporting & Learning
mG	milligauss
MNES	Matters of National Environmental Significance
MOS	Manual of Standards
MP	Member of Parliament
MSA	Minimum Safe Altitudes
Mtpa	Metric tonnes per annum
MW	Megawatt
MWAC	Megawatt (alternating current)
MWTT	Multiple Wind Turbine Tool
NAD	Non-associated dwelling
NAD (associated with another Project)	Dwelling not associated with the Project, but is associated with another renewables development
NCC	National Construction Code
NEM	National Energy Market
NEPM	National Environment Protection (Ambient Air Quality) Measure 2016
Net Zero Plan	Net Zero Plan Stage 1: 2020-2030
NHMRC	National Health and Medical Research Council
NIA	Noise Impact Assessment
NML	Noise Management Levels
NMP	Noise Management Plan
NPfi	NSW Noise Policy for Industry
NPI	National Pollutant Inventory
NPW Act	*National Parks and Wildlife Act 1974*
NSP	Neighbourhood Safer Plan

Term	Definition
NSW	New South Wales
NSW Heritage Manual	NSW Heritage Manual 1996
NSW Strategy	NSW Electricity Strategy
NT Act	*Native Title Act 1993*
OEMP	Operations Environmental Management Plan
O&M	Operations and Maintenance Facility
OLS	Obstacle Limitation Surface
OPERA	Operational Program for the Exchange of Weather Radar Information
OSOM	Oversize and Overmass
PAD	Potential Archaeological Deposit
PAN-OPS	Procedures for air navigation services – aircraft operations
Paris Agreement	UN Framework Convention on Climate Change COP – COP21
PBP	*NSW RFS Planning for Bushfire Protection Guideline*
Planning Systems SEPP	*State Environmental Planning Policy (Planning Systems) 2021*
PHA	Preliminary Hazard Analysis
PCT	Plant Community Types
PV	Photovoltaic
PM	Particulate Matter
PMF	Probable Maximum Flood
PMP	Probably Maximum Precipitation
POEO	Protection of the Environment Operations
POEO Act	*Protection of the Environment Operations Act 1997*
PSF	Pottinger Solar Farm
QLD	Queensland
RAMJO	Riverina and Murray Joint Organisation
RAP Consultation Guidelines	Aboriginal Cultural Heritage Consultation Requirements for Proponents
RAPs	Registered Aboriginal Parties
Regional Plan	Riverina Murray Regional Plan 2041
Reserve	South West Woodland Nature Reserve
RET	Renewable Energy Target
REZ	South West Renewable Energy Zone
RF Act	*Rural Fires Act 1997*
RFDS	Royal Flying Doctor Service
RFS	Rural Fire Service
Roadmap	NSW Electricity Roadmap
Roads Act	*Roads Act 1993*
RNP	Road Noise Policy
RPS	RPS AAP Consulting Pty Ltd
RSA	Rotor Swept Area
RSR	Route Surveillance Radar

Term	Definition
RTA Guide	RTA Guide to Traffic Generating Developments
SAIA	Soil and Agricultural Impact Assessment
SAII	Serious and Irreversible Impact
SDGs	Sustainable Development Goals
SEARs	Secretary's Environmental Assessment Requirements for SSD-59235464 issued on 10 July 2023
SCADA	Supervisory control and data acquisition
SEP	Stakeholder Engagement Plan
SEPP	State Environmental Planning Policy
SHR	State Heritage Register
SIA	Social Impact Assessment
SISD	Safe Intersection Sight Distance
SLAIA	Soils, Land and Agriculture Impact Assessment
SIA Guidelines	Social Impact Assessment Guideline for State Significant Projects
SOC	State of the Catchments
Solar Guidelines	Large Scale Solar Energy Guideline
SSAL	State Significant Agricultural Land
SSD	State Significant Development
Supplementary SEARs	Supplementary SEARS issued on 4 April 2024
t	Tonnes
TAFE	Technical and Further Education
T&I SEPP	State Environmental Planning Policy (Transport and Infrastructure) 2021
TAS	Tasmania
TCIA	Telecommunications Impact Assessment
TEC	Threatened Ecological Communities
TIA	Traffic Impact Assessment
TfNSW	Transport for NSW
TMP	Traffic Management Plan
Transmission Strategy	NSW Transmission Infrastructure Strategy
TSR	Travelling Stock Reserves
TTIA	Traffic and Transport Impact Assessment
UN	United Nations
VBB	Victorian Big Battery
VFR	Visual Flight Rules
VIC	Victoria
Visual Bulletin	Wind Energy: Visual Assessment Bulletin for State Significant Wind Energy Development
VIZ	Visual Influence Zone
VNI	Victoria to New South Wales Interconnector
VPA	Voluntary Planning Agreement
WAL	Water Access Licence

Term	Definition
WARR Act	*Waste Avoidance and Resource Recovery Act 2001*
Waste Regulation	*Protection of the Environment Operations (Waste) Regulation 2014*
WM Act	*Water Management Act 2000*
WMO	World Meteorological Organisation
WMP	Water Management Plan
WRIA	Water Resources Impact Assessment
WSPs	Water Sharing Plans
WTGs	Wind Turbine Generators

9 REFERENCES

AEMO (2022). 'About the National Electricity Market (NEM)'. Retrieved from https://aemo.com.au/en/energy-systems/electricity/national-electricity-market-nem/about-the-national-electricity-market-nem

AEMO (2024). '2024 Draft Integrated System Plan'. Retrieved from https://aemo.com.au/en/energy-systems/major-publications/integrated-system-plan-isp/2024-integrated-system-plan-isp

ARES (2024). 'Pottinger Energy Park OSOM Route Study'.

Australia ICOMOS (2013). 'The Burra Charter: the Australian ICOMOS Charter for Places of Cultural Significance'.

Austroads (2021). 'Austroads Guide to Road Design Part 4a: Unsignalised and Signalised Intersections'.

AWA (2019). 'Building Stronger Communities: Wind's growing role in regional Australia'.

BOM (2023). 'Bureau of Meteorology'. Australian Government. Retrieved from http://www.bom.gov.au/

Clean Energy Council (2024). 'Clean Energy Australia 2024'. Retrieved from https://assets.cleanenergycouncil.org.au/documents/resources/reports/clean-energy-australia/Clean-Energy-Australia-2024.pdf

Commonwealth of Australia & NSW, 2020. 'Bilateral Agreement'.

Council of Standards Australia (1997). 'AS 4282 Control of Obtrusive Effects of Outdoor Lighting'.

DECC (2006). 'Assessing Vibration; a technical guideline'.

DECC (2009). 'Interim Construction Noise Guideline'.

DECCW (2010). 'Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW'.

DECCW (2010). 'Aboriginal Cultural Heritage Consultation Requirements for Proponents'.

DECCW (2011). 'Road Noise Policy'.

DECCW (2023). 'National Electricity Market. Retrieved from https://www.dcceew.gov.au/energy/markets/national-electricity-market

Department of Urban Affairs and Planning (1998). 'Managing Land Contamination Planning Guidelines: SEPP 55 – Remediation of Land'.

DPE (2016). 'Wind Energy Guideline for State significant wind energy development'.

DPE (2016). 'Wind Energy: Visual Assessment Bulletin'.

DPE (2022). 'State Significant Development Guidelines – Preparing an Environmental Impact Statement'.

DPE (2022). 'Guidelines for Controlled Activities on Waterfront Land'.

DPE (2022). 'Guidelines for instream works on waterfront land'.

DPE (2023). 'Riverina Murray Regional Plan 2041'.

DPE (2023). ''NSW Flood Risk Management Manual'.

DPE (2023). 'Draft Benefit Sharing Guidelines'.

DPE (2023). 'NSW Wetlands'. Retrieved from https://datasets.seed.nsw.gov.au/dataset/nsw-wetlands047c7

DPI (2013). 'Policy & Guidelines for Fish Habitat Conservation & Management'.

DPI (2003). 'Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings'.

DPI (2021). 'Draft NSW Biosecurity Strategy'.

DPIE (2012). 'NSW Government's Strategic Regional Land Use Policy'.

DPIE (2020). 'Net Zero Plan Stage 1: 2020 – 2030'.

DPIE (2020). 'Development adjacent to National Parks and Wildlife Services Lands'.

DPIE (2020). 'The Biodiversity Assessment Method.

DPIE (2022). 'Cumulative Impact Assessment Guidelines for State Significant Projects'.

DPIE (2022). 'Agricultural Assessment Requirement Pathway'.

DPIE (2023). 'Social Impact Assessment Guideline for State Significant Projects'

DPE Water (2022). 'Spatial Layer of the Probable Vegetation Groundwater Dependent Ecosystems in NSW'. Retrieved from https://datasets.seed.nsw.gov.au/dataset/spatial-layer-of-probable-vegetation-groundwater-dependent-ecosystems.

EnergyCo (2023). 'Renewable Energy Zones'. NSW Government. Retrieved from https://www.energyco.nsw.gov.au/renewable-energy-zones.

EOH (2012). 'Land and Soil Capability Assessment Scheme'.

EPA (2014). 'Waste Classification Guidelines'.

EPA (2014). 'NSW Waste Avoidance and Resource Recovery Strategy'.

EPA (2014). 'Resource Recovery Order and Exemption for Recovered Aggregate'.

EPA (2014). 'Resource Recovery Order and Exemption for Virgin Excavated Natural Material and Excavated Natural Material'.

EPA (2016). 'Mulch Order 2016'.

EPA (2016). 'Mulch Exemption 2016'.

HSC (2020). 'HSC Local Strategic Planning Statement'.

HSC (2021). 'Hay Shire Community Strategic Plan 2022-2032'.

HSC (2022). 'Hay Aerodrome Master Plan'.

Heritage Council of NSW (2009). 'Assessing Significance for Historical Archaeological Sites and 'Relics'.

Heritage Office (1996). 'NSW Heritage Manual'.

IAP2 (2022). 'Spectrum of Public Participation'. Retrieved from Spectrum_8.5x11_Print (iap2.org.au).

IBISworld (2023). Retrieved from IBISWorld - Industry Market Research, Reports, & Statistics.

IEC (2005). 'International Standard IEC 61400'.

Institute of Air Quality Management (2014). 'Guidance on the Assessment of Dust from Demolition and Construction'.

Isbell, R. F. (2021). 'The Australian Soil Classification'. CSIRO Publishing.

ISO (2009). 'ISO 31000 Risk Management'.

Landcom (2004). 'Managing Urban Stormwater: Soils and Construction - Volume 1'. NSW Government.

MIA Bush Fire Management Committee (2006). 'Murrumbidgee Irrigation Area Bushfire Risk Management Plan'.

Murphy, D. V., Abbot, L. K. (2007). 'Soil Biological Fertility: A Key to Sustainable Land Use in Agriculture'.

NSW DCCEEW (2018). 'HEVAE Vegetation Groundwater Dependent Ecosystems Value'. Retrieved from https://datasets.seed.nsw.gov.au/dataset/hevae-vegetation-groundwater-dependent-ecosystems-murrumbidgee

NSW EPA (2017). 'NSW Noise Policy for Industry'.

NSW EPA (2012). 'Better Practice Guidelines for Waste Management and Recycling in Commercial and Industrial Facilities'.

NSW EPA (2014). 'NSW Waste Avoidance and Resource Recovery Strategy'.

NSW EPA (2014). 'Resource Recovery Order and Exemption for Recovered Aggregate'.

NSW Environment Protection Authority (2024). 'Contaminated Land Register'.

NSW EPA (2016). 'Guidance on the Resource recovery order and exemption for Mulch'.

NSW EPA (2024). 'Contaminated Land Record'. Retrieved from https://app.epa.nsw.gov.au/prclmapp/searchregister.aspx

NSW Government (2020). 'NSW Acid Sulphate Soil Planning Map'. Retrieved from https://datasets.seed.nsw.gov.au/dataset/acid-sulfate-soils-risk0196c

NSW Government (2023). 'NSW Electricity Roadmap'.

NSW Rural Fire Service (2019). 'Planning for Bushfire Protection Guidelines 2019'.

NSW RFS (2014). 'A Guide to Developing a Bushfire Emergency Management and Evacuation Plan'.

NSW State Government (2017). 'Australian standard 1742.3'.

OEH (2011). 'Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW'.

Road and Traffic Authority (2002). 'RTA Guide to Traffic Generating Developments'.

RFS (2021). 'Bushfire Prone Land Mapping'.

Rijksdienst voor Ondernemend Nederland (2014). 'Dutch Wind WTG Risk Zoning Handbook'.

RPS (2023). 'Pottinger Solar Farm Scoping Report'. Retrieved from https://www.planningportal.nsw.gov.au/major-projects/projects/pottinger-solar-farm

Sarlak, H., and Sorensen, J.N (2016). 'Analysis of throw distances of detached objects from horizontal-axis wind turbines. Retrieved from https://onlinelibrary.wiley.com/doi/abs/10.1002/we.1828

State of NSW and DPIE (2018). 'NSW Transmission Infrastructure Strategy'.

State of NSW and DPIE (2019). 'NSW Electricity Strategy'.

UN (2015). 'Sustainable Development Goals'. Retrieved from https://sdgs.un.org/goals.

UNFCC (2015). 'The Paris Agreement'. United Nations. Retrieved from https://unfccc.int/process-and-meetings/the-paris-agreement.

UNFCC (2021). 'COP26: Together for our planet'. United Nations. Retrieved from https://www.un.org/en/climatechange/cop26.

Weather Spark (2023). Retrieved from The Weather Year Round Anywhere on Earth - Weather Spark

Appendix A
Risk Assessment

POTTINGER WIND FARM - RISK ASSESSMENT

Risk ID#	Category	Risk	Initial Likelihood	Initial Consequence	Initial Risk Rating	Mitigation/Control Strategy	Likelihood After Mitigation	Consequence After Mitigation	Mitigated Risk Rating
	General Project Risks								
1	Project Description	EIS project description having omissions or incurracies resulting in incomplete or inaccurate technical studies or requirement for modification should approval be granted.	Possible	Moderate	**Medium**	Comprehensive review and iterations of project descriptions by appropriately qualified engineers and technical specialists. Incorporation of findings of technical studies to seek approval for a considered project.	Rare	Moderate	**Low**
2	Regulatory	Project does not meet the objects of the EP&A Act or relevant zoning provisions.	Unlikely	Minor	**Low**	As a renewable energy project, the Project is consistent with NSW and federal policy and regulations which were considered in the EIS. Zoning provisions are considered in the EIS.	Rare	Minor	**Low**
3	Regulatory	Landowner consent not received to support DA (including where relevant along the transport route)	Possible	Moderate	**Medium**	Significant consulation with landholders undertaken by Someva with landowner consent available to support the DA.	Rare	Moderate	**Low**
4	Regulatory	Changes in legislation or guidelines resulting in an incomplete EIS.	Possible	Minor	**Medium**	SEARs and revised SEARs; RAF utilised; highly experienced REAP; Wind Guidelines utilised; comprehensive regulatory engagement included in EIS.	Unlikely	Major	**Medium**
5	Land use conflicts	Inadequate stakeholder engagement and assessment resulting in adjacent land uses not being identified and mitigated in the EIS.	Possible	Moderate	**Medium**	Comprehensive SEP implemented by Someva and issues addressed in relevant technical studies and EIS.	Rare	Moderate	**Low**
6	EDC	Inaccurate determination of capital value of project resulting in incorrect application fee and project benefits	Possible	Moderate	**Medium**	Comprehensive EDC assessment being undertaken by appropriate specialist for inclusion in EIS.	Rare	Moderate	**Low**
	Aspects - issue specific								
7	Stakeholder Engagement	Inadequate stakeholder engagement resulting in community or regulatory issues not being addressed in EIS.	Possible	Major	**High**	Comprehensive and 'live' Stakeholder Engagement Plan (SEP) developed and implemented by Someva and appropriately qualified engagement specialist.	Unlikely	Major	**Medium**
8	Noise	Identification of unacceptable noise impacts during construction, operations or decommissioning on non-associated receivers.	Likely	Minor	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, field inspection, and engagement with relevant regulators. Mitigation and management identified. Non-associated receivers at significant distance to the Project.	Unlikely	Minor	**Low**
9	Visual	Unacceptable project impacts on the visual landscape (including WTG, night lighting) on non-associated residences, road corridors and public viewpoints.	Likely	Moderate	**High**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, field inspection, and engagement with relevant regulators. Mitigation and management identified. Non-associated receivers at significant distance to the Project.	Possible	Moderate	**low**
10	Biodiversity	Impacts to ecology not identified and/or mitigated in the EIS within the Project Area and immediately adjacent in accordance with relevant guidelines and regulator expectations.	Possible	Major	**High**	BDAR prepared by relevantly qualified specialists including relevant avoidance, mitigation and offset; EPBC Referral; SEARs and revised SEARs received; engagement with relevant state and federal regulators.	Unlikely	Major	**Medium**
11	Aboriginal Heritage	Impacts to Aboriginal heritage not identified and/or mitigated in the EIS; engagement with Registered Aboriginal Parties (RAPs) not undertaken in accordance with the SEARs.	Possible	Major	**High**	ACHAR prepared by relevantly qualified specialists. Engagement with RAPs undertaken in accordance with the SEARs.	Unlikely	Major	**Medium**
12	Historic Heritage	Impacts to historic heritage not identified and/or mitigated in the EIS.	Unlikely	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, field inspection, and engagement with relevant regulators. Mitigation and management identified.	Rare	Moderate	**Low**
13	Soils	Inadequate assessment of onsite soil properties impacting constructability and leading to potential land use conflict.	Unlikely	Minor	**Low**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, field inspection, and engagement with relevant regulators. Mitigation and management identified.	Unlikely	Minor	**Low**
14	Agriculture	The potential for loss of agricultural productivity, soil degradation, and change of land use not adequately assessed in EIS.	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, field inspection, and engagement with relevant regulators. Mitigation and management identified.	Unlikely	Moderate	**Medium**
15	Hydrology and Flooding	Poor identification of flooding impacts, works on waterfront land and inadequate sediment erosion control.	Unlikely	Minor	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, and engagement with relevant regulators. Mitigation and management identified.	Rare	Minor	**Low**
16	Water Resources	Poor identification of impacts to water resources, water needs for project construction and operation and inadequate sediment erosion control.	Unlikely	Minor	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, and engagement with relevant regulators. Mitigation and management identified.	Rare	Minor	**Low**
17	Traffic	Underestimation of Project traffic impacts and required mitigation on the immediate traffic network and transport to site.	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs, and engagement with relevant regulators. Mitigation and management identified.	Unlikely	Moderate	**Medium**
18	Telecommunications	Poor identification of effects on telecommunication services	Unlikely	Major	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Unlikely	Minor	**Low**
19	Aviation	The potential for risks to aviation safety	Unlikely	Major	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Rare	Major	**Medium**
20	Preliminary Hazard Analysis	Project hazards not adequately identified, assessed and/or mitigated (health, EMF, dangerous goods and BESS).	Unlikely	Minor	**Low**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Unlikely	Minor	**Low**
21	Blade Throw	The potential for health issues relating to shadow flicker and blade glint and poor indentification of the risks or blade throw.	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Unlikely	Minor	**Low**
22	Bushfire	Project bushfire hazard not adequately identified, assessed and/or mitigated	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Unlikely	Minor	**Low**
23	Air quality	The potential for elevated airborne, deposited dust from construction activities and vehicle movement during maintenance and decomissioning work not adequately assessed in the EIS.	Unlikely	Minor	**Low**	Air quality impact assessment and mitigation measures undertaken completed to inform the EIS.	Rare	Minor	**Low**
24	Waste	Inappropriate identification of waste to be generated during the Project and therefore appropriate mitigation not identified.	Unlikely	Minor	**Low**	Waste impact assessment and mitigation measures undertaken generally in accordance with the Wind Guidelines.	Rare	Minor	**Low**

Risk ID#	Category	Risk	Initial Likelihood	Initial Consequence	Initial Risk Rating	Mitigation/Control Strategy	Likelihood After Mitigation	Consequence After Mitigation	Mitigated Risk Rating
25	Social	Poor stakeholder engagement and assessment of social issues resulting in community or regulatory issues not being addressed in EIS. Adequate, best practice mitigation for the Project not identified.	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualified specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified.	Unlikely	Moderate	**Medium**
26	Economics	Inaccurate determination of economic values of the Project to the region and state.	Possible	Moderate	**Medium**	Assessment prepared by relevantly qualifiied specialist in accordance with relevant guidelines as per the SEARs. Mitigation and management identified including VPA and CBF.	Rare	Moderate	**Low**
27	Cumulative	Cumulative impacts not adequately addressed in the EIS.	Possible	Moderate	**Medium**	Relevant cumulative assessments included in all tehnical studies and detailed assessment in the EIS.	Unlikely	Moderate	**Medium**

Likelihood	**Consequence Rating**				
Rating	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Low	Medium	High	Very High	Very High
Likely	Low	Medium	High	High	Very High
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

	Major	Severe
	Very High	Very High
	High	Very High
	High	High
	Medium	High
	Medium	Medium

Likelihood of the consequences occurring.	
Rating	**Description**
Almost Certain	Very high probability of the consequences occurring. AND Has happened several times in the past OR has a > 90% chance of occurring if the risk is not mitigated
Likely	High probability of the consequences occurring. AND Has happened at least once in the past OR has a 60-90% chance of occurring if the risk is not mitigated.
Possible	Even probability of consequences occurring. AND Has happened in the past OR has a 40-60% chance of occurring if the risk is not mitigated.
Unlikely	Low probability of occurrence but not negligible. AND May have occurred in the past OR has a 10-30% chance of occurring in the future if the risk is not mitigated.
Rare	Very low probability of the consequences occurrence but not impossible. AND Has not occurred in the past OR may occur in exceptional circumstances, i.e. less than 10% chance of occurring if the risk is not mitigated.

	Very Low	Low	Medium	High	Very High
$AUD	<$20k	$20k – $200k	$200k – $500k	$500k – $1000k	>$2.0m
Company Reputation	N/A	Insignificant impact on reputation No share price impact Knowledge of event is contained between BAE Systems and customer	Moderate impact on reputation Minimal share price impact Event is reported in industry publications, Relationship damaged with the customer	Extreme impact on reputation 5% - 10% share price impact Event is reported in national press Termination of contract	Severe impact on reputation 10%+ share price impact Event is reported in international press Termination of multiple contracts
Quality	N/A	Minor Audit Actions	Minor Audit Actions	Major Audit Actions	Audit Failure
Safety	N/A	Negligible Injury that requires first aid Less than minor injury	Marginal Minor injury that requires hospitalisation Lost work days	Critical Severe injury Temporary disability	Catastrophic Death Permanent disability
Health	N/A	Less than minor occupational illness.	Minor occupational illness	Severe occupational illness	Long term exposure to chronic health risks
Environment	N/A	Pollution with minimal acute environmental or public health impact Less than minor system or environmental damage.	Minor system or environmental damage Releases that result in short term disruption of the ecosystem	Major system or environmental damage Releases that result in medium term disruption of the ecosystem	Severe environmental damage Releases that result in long term disruption of the ecosystem
Technical Performance	Minimal/unimportant effect on technical performance Requires some adjustment in the solution consuming design headroom	Small reduction in performance	Some reduction in technical performance Compliance requires concessions or difficult negotiations	Significant reduction in technical performance Degradation in performance so significant that a substantial non- compliance is unavoidable	Technical performance goals cannot be achieved Non-compliance against key requirements Serious degradation in performance sufficient to terminate the project
Schedule Impact	Involves some minor re-scheduling of tasks	Recoverable within float Able to meet need dates with additional resources	Causes overrun on non-critical milestones, Recoverable by making minor changes to the baseline	Jeopardises critical project milestones, Substantial changes to	Significant delay to project milestones Cannot achieve major
Schedule Impact	<1 week	1 to 4 weeks	4 to 12 weeks	12 to 26 weeks	>26 weeks
Cost Impact	Small change in one budget area Requires adjustment of resource profiles resulting in non- optimum efficiency	Small increase in costs in a number of budget areas Requires additional or higher rated resources A change to alternative suppliers Causes some consequential delay costs	Some cost overruns Requires significant re- work The selection of alternative sub- contractors Causes significant consequential delay costs & adjustment of the R&O margin balance.	Endangers the project's financial viability The re-assignment of business' resources sufficient to harm other projects Causes considerable consequential delay costs	Substantial project cost overrun Jeopardises the business budget due to substantial provision for consequential costs or damages Unacceptable impact on contribution

Appendix B
Project Team

PROJECT TEAM

EIS Component	Role	Team Member/s	Company
Client Project Management			
	Development Director	Tim Mead	Someva Renewables
	Director	Jamie Chivers	Someva Renewables
	Senior Development Manager	Angela Rozali	Someva Renewables
	Technical Lead	Tom Stokes	Someva Renewables
	Assistant Development Manager	Catherine Timbrell	Someva Renewables
	Assistant Development Manager	James Nicholas	Someva Renewables
EIS Management			
	Project Director and REAP Reviewer	Dianne Munro	RPS
	Project Coordinator	Nicholas Simmons	RPS
	Project Coordinator	Jessica Robinson	RPS
Stakeholder Engagement			
	Local Engagement and Social Impact Lead	Greg Ley	Lecroma Pty Ltd
	Development Director	Tim Mead	Someva Renewables
	Director	Jamie Chivers	Someva Renewables
	Senior Development Manager	Angela Rozali	Someva Renewables
	Assistant Development Manager	Catherine Timbrell	Someva Renewables
	Assistant Development Manager	James Nicholas	Someva Renewables
	Senior Principal	Dianne Munro	RPS
	Environmental Consultant	Nicholas Simmons	RPS
EIS Sections			
	Senior Principal	Dianne Munro	RPS
	Technical Director	Jon Williamson	RPS
	Principal Environmental Consultant	Lisa Montesin	RPS
	Senior Planner	Nick Meadows	RPS
	Environmental Consultant	Nicholas Simmons	RPS
	Environmental Consultant	Jessica Robinson	RPS
Appendices			
APP A	Risk Assessment		RPS
APP B	Project Team		RPS
APP C	SEARs and Regulatory Requirements		RPS
APP D	Statutory Compliance Table		RPS
APP E	WTG and Infrastructure Parameters		RPS
APP F	Schedule of Lands		RPS

EIS Component	Role	Team Member/s	Company
APP G	Mitigation and Management Summary		RPS
APP H	Noise Impact Assessment	Simon Moore	Sonus
APP I	Visual Impact Assessment	Mary-Ellen Dennerley	Moir Landscape Architecture
APP J	Biodiversity Assessment Report	Callan Wharfe	Biosis
APP K	Aboriginal Cultural Heritage Assessment Report	Lorien Perchard Erin Finnegan Lucy Baker Victoria Gleeson	ERM
APP L	Historic Heritage Assessment Report	Lorien Perchard Erin Finnegan Lucy Baker Victoria Gleeson	ERM
APP M	Soils and Agricultural Assessment	Matt Hemingway Clayton Richards	Minesoils
APP N	Hydrology Impact Assessment	Laura Vincent Susan Shield	Engeny
APP O	Traffic Impact Assessment	Oliver Mihaila Mike Willson	Amber Organisation
APP P	Telecommunications Impact Assessment	Ebony Apps Timothy Cervenjak	Middleton Group
APP Q	Aviation Impact Assessment	Peter White	Aviation Projects
APP R	Preliminary Hazard Analysis	Ezra Bagaskara Renton Parker	Riskcon
APP S	Bushfire Impact Assessment	Stuart Greville	Bushfire Planning Australia
APP T	Social Impact Assessment	Greg Ley	Lecroma Pty Ltd
APP U	Economic Impact Assessment	Rob Gillespie	Gillespie Economics
Drafting and Graphics Design			
	Technical Lead	Tom Stokes	Someva Renewables

Appendix C
SEARs and Regulatory Requirements

SEARS AND REGULATORY REQUIREMENTS

Table C1 SEARs Requirements: SSD-59235464

Issues	Secretary's Environmental Assessment Requirements	Section
General Requirements		
General Requirement	The Environmental Impact Statement (EIS) must meet the minimum form and content requirements as prescribed by Part 8, Division 5 of the Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) and must have regard to the State Significant Development Guidelines and the NSW Wind Energy Framework. In particular, the EIS must include:	**This EIS**
	• a stand-alone executive summary;	**Executive Summary**
	• a full description of the development, including: – details of construction, operation and decommissioning, including any staging of the development or refurbishing of turbines over time;	**3**
	– all infrastructure and facilities, such as substations, transmission lines, construction compounds, concrete batching plants, internal access roads, and road upgrades (including any infrastructure that would be required for the development, but the subject of a separate approvals process);	**3**
	– plans for any buildings;	**Figures**
	– high-quality site plans and maps at an adequate scale with dimensions showing:	**Figures**
	○ the location and dimensions of all project components including coordinates in latitude / longitude and maximum AHD heights of the turbines;	**Figures**
	○ existing infrastructure, land use, and environmental features in the vicinity of the development, including nearby residences and approved residential developments or subdivisions within 6 km of a proposed turbine, and any other existing, approved or proposed wind farms in the region;	**Figures**
	○ the development corridor that has been assessed, including any allowance for micro-siting of turbines and identification of the key environmental constraints that have been considered in the design of the development;	**Figures**
	○ consolidated list and GIS data of coordinates of wind turbines, project infrastructure and relevant receivers and distances to potentially impacted receivers; and	**Figures**
	○ details of the progressive rehabilitation of the site;	**Figures**
	• details of the progressive rehabilitation of the site;	**3.7, 6.7.3 to 6.7.4**
	• a list of any approvals that must be obtained before the development may commence;	**4**
	• the terms of any proposed voluntary planning agreement with the relevant local council;	**3.9**
	• a risk assessment of the potential environmental impacts of the development, identifying the key issues for further assessment;	**6.1**
	• an assessment of the likely impacts of the development on the environment and any other significant issues identified in this risk assessment, focusing on the specific issues identified below, including:	
	– a description of the existing environment likely to be affected by the development using sufficient baseline data;	**2.4.2**

Issues	Secretary's Environmental Assessment Requirements	Section
	– an assessment of the likely impacts of all stages of the development (which is commensurate with the level of impact), including any cumulative impacts of the site and existing or proposed developments in the region, in accordance with the Cumulative Impact Assessment Guideline (DPIE, 2022), taking into consideration any relevant legislation, environmental planning instruments, guidelines, policies, plans and industry codes of practice and including the NSW Wind Energy Guidelines for State Significant Wind Energy Development (2016);	**6.21**
	– a description of the measures that would be implemented to avoid, mitigate and/or offset the impacts of the development, including details of consultation with any affected non-associated landowners in relation to the development of mitigation measures and any negotiated agreements with these landowners, and draft management plans for specific issues as identified below; and	**7.1**
	– a description of the measures that would be implemented to monitor and report on the environmental performance of the development, including adaptive management strategies and contingency measures to address residual impact;	**3.10**
	• a consolidated summary of all the proposed environmental management and monitoring measures, identifying all the commitments in the EIS; and	**Appendix G**
	• a detailed evaluation of the merits of the project as a whole having regard to:	
	– the requirements in Section 4.15 of the Environmental Planning and Assessment Act 1979 (EP&A Act), and how the principles of ecologically sustainable development have been incorporated in the design, construction and ongoing operations of the development;	**7.6**
	– the environmental, economic and social costs and benefits of the development, having regard to the predicted electricity demand in NSW and the National Electricity Market, NSW's Climate Change Policy Framework, NSW's Net Zero Plan Stage 1: 2020 - 2030 and the greenhouse gas savings of the development;	**7.7**
	– feasible alternatives to the development and its key components including project design alternatives to avoid impacts to areas of biodiversity value, indirect impacts to the Oolambeyan National Park and the South West Woodland Nature Reserve and areas of archaeological sensitivity, opportunities for shared infrastructure with proposed developments in the region and the consequences of not carrying out the development; and	**7.1** and **2.6**
	– the suitability of the site with respect to potential land use conflicts with existing and future surrounding land uses; and	**2.3.2**
	• a detailed consideration of the capability of the project to the security and reliability of the electricity system in the National Electricity Market, having regard to local system conditions and the Department's guidance on the matter.	**2.1.2.3**
	Capital Investment Value and Employment • Provide a detailed calculation of the capital investment value (CIV) of the development, prepared by an AIQS Certified Quantity Surveyor or RICS Chartered Quantity Surveyor in accordance with Planning Circular PS 21-020: Calculation of Capital Investment Value. The calculation of the estimated CIV is to be accurate at the date of application and include details of all components and assumptions from which it is derived.	**Provided to DPHI separately to this EIS**
	• Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided.	**EDC Report**
	The development application must be accompanied by: • the consent of the owner/s of the land (as required in Section 23(1) of the EP&A Regulation); and	**Provided to DPHI separately to this EIS**

Issues	Secretary's Environmental Assessment Requirements	Section
	• a declaration from a Registered Environmental Assessment Practitioner that the EIS includes the information specified in the Department's Registered Environmental Assessment Practitioner Guidelines.	**Declaration**
Key Issues		
Landscape and Visual	The EIS must address the following specific matters: **Landscape and Visual** – including a detailed assessment of the visual impacts of all components of the project (including turbines, transmission lines, substations, and any other ancillary infrastructure in accordance with the NSW Wind Energy: Visual Assessment Bulletin (DPE, 2016), including detailed consideration of the:	**6.3**
	• potential visual impacts on local residences (including approved developments, lodged development applications and dwelling entitlements);	6.3.1
	• cumulative impacts with the proposed Pottinger Solar Farm, The Plains Wind Farm, The Plains Solar Farm and Bullawah Wind Farm;	**6.3**
	• project design to avoid or mitigate visual impacts; and	**6.3**
	• amenity values of the Oolambeyan National Park and the South West Woodland Nature Reserve, scenic or significant vistas and road corridors in the public domain.	**6.3**
Noise and Vibration	**Noise and Vibration** – including: • an assessment of the wind turbine noise in accordance with the NSW Wind Energy: Noise Assessment Bulletin (EPA/DPE, 2016);	**6.2**
	• an assessment of the noise generated by ancillary infrastructure in accordance with the NSW Noise Policy for Industry (EPA, 2017);	**6.2**
	• assessment of the construction noise under the Interim Construction Noise Guideline (DECC, 2009) and a draft noise management plan if the assessment shows construction noise is likely to exceed applicable criteria);	**6.2**
	• assessment of the traffic noise under the NSW Road Noise Policy (DECCW, 2011);	**6.2**
	• an assessment of vibration under the Assessing Vibration: A Technical Guideline (DECC, 2006); and	**6.2**
	• assessment of the cumulative noise impacts (considering other developments in the area).	**6.2**
Biodiversity	**Biodiversity** – including: • an assessment of the biodiversity values and the likely biodiversity impacts of the project in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 (NSW), the Biodiversity Assessment Method (BAM) and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must:	**6.4**
	– be prepared using the approved BDAR template;	**6.4**
	– document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the BAM;	**6.4**
	– assess impacts associated with transport route road upgrades and indirect impacts on the Oolambeyan National Park and the South West Woodland Nature Reserve;	**6.4**
	• an assessment of the likely impacts on listed aquatic threatened species, populations or ecological communities, scheduled under the Fisheries Management Act 1994, and a description of the measures to minimise and rehabilitate impacts;	**6.4**
	• an assessment of the impacts of the development on birds and bats, including blade strike, low air pressure zones at the blade tips (barotrauma), alteration to movement patterns, and cumulative impacts of other wind farms in the vicinity;	**6.4**

Issues	Secretary's Environmental Assessment Requirements	Section
	• cumulative impact assessment of biodiversity values in the region from nearby developments; and	**6.4**
	• if an offset is required, include details of any strategy to offset any residual impacts of the development in accordance with the BC Act.	**6.4**
Heritage	**Heritage** – including: • an assessment of the impact to Aboriginal cultural heritage items (archaeological and cultural) in accordance with the Guide to Investigating, Assessing and Reporting on Aboriginal Cultural Heritage in NSW (OEH, 2011) and the Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010), including results of archaeological test excavations (if required);	**6.5**
	• evidence of consultation with Aboriginal communities in determining and assessing impacts, developing options and selecting options and mitigation measures (including the final proposed measures), having regard to the Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW, 2010); and	**6.5**
	• an assessment of the impacts to historic heritage having regard to the NSW Heritage Manual.	**6.6**
Transport	**Transport** – including: • an assessment of the construction, operational and decommissioning traffic impacts of the development on the local and State road network;	**6.11**
	• details of the peak and average traffic volumes (including light, heavy and over-mass and over-dimensional vehicles / heavy vehicles requiring escort and construction worker transportation) and transport and haulage routes during construction, operation and decommissioning, including traffic associated with sourcing raw materials (water, sand and gravel);	**6.11**
	• an assessment of the potential traffic impacts of the project on road network function including intersection performance, site access arrangements, site access and haulage routes, and road safety, including school bus routes and school zones;	**6.11**
	• an assessment of the capacity of the existing road network to accommodate the type and volume of traffic generated by the project (including over-mass / over-dimensional traffic haulage routes from port) during construction, operation and decommissioning;	**6.11**
	• an assessment of the likely transport impacts to the site access and haulage routes, site access point, any rail safety issues, any Crown Land particularly in relation to the capacity and conditions of the roads and use of rail level crossings (and rail safety assessment if required), and impacts to rail underbridges and overbridges;	**6.11**
	• a cumulative impact assessment of traffic from nearby developments; and	**6.11**
	• provide details of measures to mitigate and / or manage potential impacts including a schedule of all required road upgrades (including resulting from over mass / over dimensional traffic haulage routes), road maintenance contributions, and any other traffic control measures, developed in consultation with the relevant road and / or rail authority.	**6.11**
Water and Soils	**Water and Soils** – including: • a site water balance for the development, quantify water demand, identify water sources (surface and groundwater), including any licensing requirements, and determine whether an adequate and secure water supply is available for the development;	**6.10**
	• an assessment of the likely impacts of the development (including flooding and flood modelling) on surface water and groundwater resources traversing the site and surrounding watercourses (including their Strahler Stream Order), drainage channels, wetlands, riparian land, farm dams, groundwater dependent ecosystems and acid sulfate soils, related infrastructure, adjacent	**6.9**

Issues	Secretary's Environmental Assessment Requirements	Section
	licensed water users and basic landholder rights, and measures proposed to monitor and mitigate these impacts;	
	• where the project involves works within 40 metres of the high bank of any river, lake or wetlands (collectively waterfront land), identify likely impacts to the waterfront land, and how the activities are to be designed and implemented in accordance with the DPI Guidelines for Controlled Activities on Waterfront Land (2018) and (if necessary) Why Do Fish Need to Cross the Road? Fish Passage Requirements for Waterway Crossings (DPI 2003); and Policy & Guidelines for Fish Habitat Conservation & Management (DPI, 2013); and	**6.9**
	• a description of the measures to minimise surface and groundwater impacts, including how works on erodible soil types would be managed and any contingency requirements to address residual impacts in accordance with the Managing Urban Stormwater: Soils and Construction series of guidelines;	**6.9** **6.10**
Air Quality	**Air Quality** – including an assessment of risks of dust generation and proposed mitigation measures designed in accordance with *the Approved Methods and Guidelines for the Modelling and Assessment of Air Pollutants in New South Wales* (DECC, 2005).	**6.17**
Land	**Land** – including: • a detailed justification of the suitability of the site and that the site can accommodate the proposed development having regard to its potential environmental impacts, permissibility, strategic context and existing site constraints;	**2**
	• an assessment of the potential impacts of the development on existing land uses on the site and adjacent land, including:	**2**
	– flood prone land, agricultural land, irrigated lands, Crown lands, travelling stock routes, mining, quarries, mineral or petroleum rights;	**2**
	– a soil survey to determine the soil characteristics and consider the potential for erosion to occur; and	**2.4.3.5** and **6.7**
	– a cumulative impact assessment of nearby developments;	**2**
	• an assessment of the compatibility of the development with existing land uses, during construction, operation and after decommissioning, including:	**2**
	– consideration of the zoning provisions applying to the land, including subdivision (if required);	**2**
	– completion of a Land Use Conflict Risk Assessment in accordance with the Department of Industry's Land Use Conflict Risk Assessment Guide; and	**Appendix M**
	– assessment of impact on agricultural resources and agricultural production on the site and region.	**2**
Hazards and Risks	**Hazards and Risks** – including: • *Aviation Safety*:	
	– assess the impact of the development under the National Airports Safeguarding Framework Guideline D: Managing Wind Turbine Risk to Aircraft;	**6.13**
	– provide associated height and co-ordinates for each turbine assessed;	**Appendix E**
	– assess potential impacts on aviation safety, including cumulative effects of wind farms in the vicinity, potential wake / turbulence issues, the need for aviation hazard lighting and marking, including of wind monitoring masts, considering, defined air traffic routes, aircraft operating heights, approach / departure procedures, radar interference, communication systems, navigation aids, and use of emergency helicopter access;	**6.13**
	– identify aerodromes within 30 km of the turbines and consider the impact to nearby aerodromes and aircraft landing areas;	**6.13**
	– address impacts on obstacle limitation surfaces; and	**6.13**

Issues	Secretary's Environmental Assessment Requirements	Section
	– assess the impact of the turbines on the safe and efficient aerial application of agricultural fertilisers and pesticides in the vicinity of the turbines and transmission line;	**6.13**
	• *Telecommunications* – identify possible effects on telecommunications systems, assess impacts and mitigation measures including undertaking a detailed assessment to examine the potential impacts as well as analysis and agreement on the implementation of suitable options to avoid potential disruptions to radio communication services, which may include the installation and maintenance of alternative sites;	**6.12**
	• *Health* – consider and document any health issues having regard to the latest advice of the National Health and Medical Research Council, and identify potential hazards and risks associated with electric and magnetic fields (EMF) and demonstrate the application of the principles of prudent avoidance, including an assessment against *the International Commission on Non-Ionizing Radiation Protection (ICNIRP) Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields*;	**6.12**
	• *Bushfire* – identify potential hazards and risks associated with bushfires / use of bushfire prone land, including the risks that a wind farm would cause bush fire and any potential impacts on the aerial fighting of bushfires and demonstrate compliance with *Planning for Bush Fire Protection 2019*; and	**6.16**
	• *Dangerous Goods* – a preliminary risk screening completed in accordance with the State Environmental Planning Policy (Resilience and Hazards) 2021;	**6.14**
	• *Battery Energy Storage System*:	
	– a preliminary risk screening completed in accordance with the *State Environmental Planning Policy (Resilience and Hazards) 2021*;	**6.14**
	– a Preliminary Hazard Analysis (PHA), prepared in accordance with the *Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-level Risk Assessment* (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to on-site and off-site receptors to prevent fire propagation and compliance with *Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning* (DoP, 2011). Include the key design parameters identified in the PHA within the project description;	**6.14**
	• *Blade Throw* – assess blade throw risks, including consideration of battery energy storage facilities.	**6.15**
Social Impact	**Social Impact** – including an assessment of the social impacts in accordance with the *Social Impact Assessment Guideline* (DPE, 2023) and *SIA Guideline - Technical Supplement* (DPE, 2023) and consideration of construction workforce accommodation.	**6.19**
Economic	**Economic** – including any benefits of the economic impacts or benefits of the project for the region and the State as a whole, including consideration of any increase in demand for community infrastructure services, and details of how the construction workforce will be managed to minimise local impacts, including a consideration of the construction workforce accommodation.	**6.20**
Waste	**Waste** – identify, quantify and classify the likely waste streams to be generated throughout all stages of the project, and describe the measures to be implemented to mitigate waste generation, manage, reuse, recycle and safely dispose of this waste.	**6.18**
Plans and Documents		
	• The EIS must include all relevant plans, architectural drawings, diagrams and relevant documentation required under Part 3 of the Regulation. Provide these as part of the EIS rather than as separate documents.	**This EIS**
	• In addition, the EIS must include high quality files of maps and figures of the subject site, proposal, and proposed road upgrades.	**This EIS**
Legislation, Policies and Guidelines		

Issues	Secretary's Environmental Assessment Requirements	Section
	The assessment of the key issues listed above must take into account relevant guidelines, policies, and plans as identified. While not exhaustive, a list of some of the legislation, policies and guidelines that may be relevant to the assessment of the project can be found at: https://www.planning.nsw.gov.au/Policy-and-Legislation/Planning-reforms/Rapid-Assessment-Framework/Improving-assessment-guidance https://www.planningportal.nsw.gov.au/major-projects/assessment/policies-and-guidelines; and https://www.dcceew.gov.au/environment/epbc/publications#assessments	**4**
Engagement		
	During the preparation of the EIS, you must consult with the relevant local, State or Commonwealth Government authorities, service providers, community groups and affected landowners.	**5**
	The EIS must: • detail how engagement undertaken was consistent with the Undertaking Engagement Guide: Guidance for State Significant Projects (DPIE, 2021); and	**5**
	• describe the consultation process and the issues raised, and	**5**
	• identify where the design of the development has been amended in response to these issues. Where amendments have not been made to address an issue, a short explanation should be provided.	**5**
	In particular you must consult with: • the relevant local, State or Commonwealth Government authorities, service providers, community groups, affected landowners, exploration licence holders, quarry operators, mineral title holders and irrigation channel owners; and	**5**
	• carry out detailed consultation with the following:	
	– Hay Shire Council	**5**
	– Edward River Council	**5**
	– NSW Aboriginal Land Council	**5**
	– DPE's Biodiversity, Conservation and Science Directorate	**5**
	– NSW National Parks and Wildlife Service	**5**
	– Heritage NSW	**5**
	– NSW Local Land Services	**5**
	– DPE Water Group	**5**
	– WaterNSW	**5**
	– Coleambally Irrigation Co-operative Limited	**5**
	– Environment Protection Authority	**5**
	– Crown Lands	**5**
	– Regional NSW – Mining, Exploration & Geoscience	**5**
	– Department of Primary Industries – Agriculture and Fisheries divisions	**5**
	– Transport for New South Wales	**5**
	– Transgrid	**5**
	– Department of Customer Service – Telco Authority	**5**
	– Fire & Rescue NSW	**5**
	– NSW Rural Fire Service	**5**
	– Commonwealth Department of Defence	**5**
	– Civil Aviation Safety Authority	**5**
	– Airservices Australia	**5**

Issues	Secretary's Environmental Assessment Requirements	Section
	– Murray-Darling Basin Authority	**5**
Expiry Date		
	If you do not lodge a Development Application and EIS for the development within 2 years of the issue date of these SEARs, your SEARs will expire. If an extension to these SEARs will be required, please consult with the Planning Secretary 3 months prior to the expiry date.	**N/A**

Table C2 SEARS Regulator Submissions SSD-59235464

Regulator	Issue	Requirement	Section
Heritage NSW	No issues raised	N/A	**N/A**
Biodiversity and Conservation and Division	Biodiversity – BDAR requirements	• Biodiversity impacts related to the proposed development are to be assessed in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 using the Biodiversity Assessment Method (BAM) 2020 and documented in a Biodiversity Development Assessment Report (BDAR).	**6.4** and **Appendix J**
		• The BDAR must include information in the form detailed in the Biodiversity Conservation Act 2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and the BAM, unless DPE determines that the proposed development is not likely to have any significant impact on biodiversity values.	**Appendix J**
		• The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect, uncertain and prescribed impacts in accordance with the BAM.	**Appendix J**
		• The BDAR must include details of the measures proposed to address the offset obligation as follows;	
		– The total number and classes of biodiversity credits required to be retired for the development/project;	**Appendix J**
		– The number and classes of like-for-like biodiversity credits proposed to be retired;	**Appendix J**
		– The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules;	**Appendix J**
		– Any proposal to fund a biodiversity conservation action;	**Appendix J**
		– Any proposal to make a payment to the Biodiversity Conservation Fund.	**Appendix J**
		• If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.	**Appendix J**
	Biodiversity – BDAR spatial data requirements	The BDAR must be submitted with all digital spatial data associated with the survey and assessment as per Appendix K of the BAM.	**Appendix J**
	Biodiversity – BDAR accreditation requirements	The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016.	**Appendix J**

Regulator	Issue	Requirement	Section
	Biodiversity – Wind turbine strikes on protected animals	The EIS must assess the impact of wind turbine strikes on protected animals including;	
		• Predict the likelihood of impact on aerial species resident in, or likely to fly over, the project area, including but not limited to bat/bird strike and barotrauma.	**Appendix J**
		• Predict the rate of impact per turbine per year for species likely to be affected.	**Appendix J**
		• Justify predictions of likelihood of impact and rates of impact with reference to relevant literature and other published sources of information.	**Appendix J**
		• Predict the consequences of impacts for the persistence of bioregional populations, with reference to relevant literature and other published sources of information.	**Appendix J**
		• Predict and map the likely zone of disturbance around wind turbines for aerial species resident in, or likely to fly over, the project area, with reference to relevant literature and other published sources of information.	**Appendix J**
		• Map significant landscape and habitat features within the zone of disturbance for species likely to be affected, including but not limited to hollow bearing trees, nest trees, microbat habitat and important habitat for migratory species.	**Appendix J**
		• Predict the likelihood and describe the nature of indirect impacts on aerial species resident in, or likely to fly over, the project area including but not limited to barriers to migratory pathways and breeding, feeding and resting resources.	**Appendix J**
		• For migratory species, predict the impact of avoidance behaviour relative to migration distances and the availability of suitable habitat for breeding, feeding and resting over the migration route, with reference to relevant literature and other sources of published information.	**Appendix J**
		• Justify prediction of likelihood and nature of impact, with reference to relevant literature and other published sources of information.	**Appendix J**
		• Predict the cumulative impact of the project together with existing wind farms with respect to movement patterns and the use of adjacent habitat and provide justification for these predictions.	**Appendix J**
	Flooding – Mapping requirements	The EIS must map the following features relevant to flooding as described in the Floodplain Development Manual 2005 (NSW Government 2005) including:	
		• Flood prone land.	**6.9**
		• Flood planning area, the area below the flood planning level.	**6.9**
		• Hydraulic categorisation (floodways and flood storage areas).	**6.9**
		• Flood hazard.	**6.9**
	Flooding – Assessment and	The EIS must describe flood assessment and modelling undertaken in determining the design flood levels for events, including a minimum of the 5% Annual	**6.9**

Regulator	Issue	Requirement	Section
	modelling requirements	Exceedance Probability (AEP), 1% AEP flood levels and the probable maximum flood, or an equivalent extreme event.	
	Flooding – Flood behaviour	The EIS must model the effect of the proposed development (including fill) on the flood behaviour under the following scenarios: • Current flood behaviour for a range of design events as identified in 7 above. This includes the 0.5% and 0.2% AEP year flood events as proxies for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change.	**6.9**
	Flooding – Flood studies	Modelling in the EIS must consider and document:	
		• Existing council flood studies in the area and examine consistency to the flood behaviour documented in these studies.	**6.9**
		• The impact on existing flood behaviour for a full range of flood events including up to the probable maximum flood.	**6.9**
		• Impacts of the development on flood behaviour resulting in detrimental changes in potential flood affection of other developments or land. This may include redirection of flow, flow velocities, flood levels, hazards and hydraulic categories.	**6.9**
		• Relevant provisions of the NSW Floodplain Development Manual 2005.	**6.9**
	Flooding – Flood impacts on proposed development	The EIS must assess the impacts on the proposed development on flood behaviour, including:	
		• Whether there will be detrimental increases in the potential flood affectation of other properties, assets and infrastructure.	**6.9**
		• Consistency with Council Floodplain Risk Management Plans.	**6.9**
		• Consistency with any Rural Floodplain Management Plans.	**6.9**
		• Compatibility with the flood hazard of the land.	**6.9**
		• Compatibility with the hydraulic functions of flow conveyance in floodways and storage in flood storage areas of the land.	**6.9**
		• Whether there will be adverse effect to beneficial inundation of the floodplain environment, on, adjacent to or downstream of the site.	**6.9**
		• Whether there will be direct or indirect increase in erosion, siltation, destruction of riparian vegetation or a reduction in the stability of river banks or watercourses.	**6.9**
		• Any impacts the development may have upon existing community emergency management arrangements for flooding. These matters are to be discussed with the SES and Council.	**6.9**
		• Whether the proposal incorporates specific measures to manage risk to life from flood. These matters are to be discussed with the SES and Council.	**6.9**
		• Emergency management, evacuation and access, and contingency measures for the development	**6.9**

Regulator	Issue	Requirement	Section
		considering the full range or flood risk (based upon the probable maximum flood or an equivalent extreme flood event). These matters are to be discussed with and have the support of Council and the SES.	
		• Any impacts the development may have on the social and economic costs to the community as consequence of flooding.	**6.9**
	National Parks and Wildlife Estate	The EIS must identify and assess:	
		• In the case of a project that is proximate to land reserved under Part 4 of the National Parks and Wildlife Act 1974, ensure no indirect impacts occur to the environmental values of the reserves, their assets or management operations.	**4**
		• In the case of a project that is in proximate to, or upstream of lands reserved under the National Parks and Wildlife Act 1974, ensure the matters outlined in the Developments adjacent to National Parks and Wildlife Service lands: Guidelines for consent and planning authorities are adequately considered and include:	-
		– recognition of the natural and cultural values attached to the reserved land in the context of the *Oolambeyan National Park Plan of Management* (OEH 2014) and the *South West Woodland Nature Reserve Statement of Management* (OEH 2014);	**6**
		– recognition of the impacts, including direct, indirect and cumulative impacts as they relate to the environmental values for which the land was reserved. Considering connectivity, dependent migratory and threatened species assemblages, hydrology and the key ecological functions the land provides;	**6**
		– extent of the direct, indirect and cumulative impacts on that land; and	**6**
		– duration of the direct, indirect and cumulative impacts on the environmental values and the reserves connectivity in the landscape to other reserved land.	**6**
		• Measures proposed to prevent, control, abate, minimise, manage and offset the impacts including an evaluation of the proposed measures effectiveness and reliability over the life of the project.	**6**
		• Residual impacts and their significance subject to the protection, conservation and resilience of land reserved as South West Woodland Nature Reserve and Oolambeyan National Park, considering the public interest at a state significant level in the protection of those values for which the land is reserved.	**6**
		• Risks and increased restrictions imposed to land management operations undertaken by the National Parks and Wildlife Service as a result of the project are identified, and considered especially:	
		– in the use of low flight aircraft for management and bush firefighting purposes. Justify compliance with Australian Government Civil Aviation Safety Authority regulations, and outline restrictions to be	**6.13**

Regulator	Issue	Requirement	Section
		imposed on reserved land. In consultation with the National Parks and Wildlife Service;	
		– interference to the functionality and operation of the emergency telecommunications systems used by National Parks and Wildlife Service, and other emergency services proximate to lands reserved as a result of the project. In consultation with NSW National Parks and Wildlife Service.	**6.13**
CASA	CASA consultation	N/A	
		Incidental comments: the scoping report states: Other Approvals could have included *Civil Aviation Regulations 1988* Subpart 139E advises: to construct or erect an object or structure that will have a height of 100 metres or more above ground level… give written notice to CASA.	**6.13**
NSW Crown Lands	Crown Lands consultation	Authority to use, traverse, access or build infrastructure on Crown land and roads is required under the Crown Land Management Act 2016 and/or the Roads Act 1993. It is recommended that the proponent contact Crown Lands as early as possible to discuss and initiate the processes required to authorise the use of and/or access to Crown land and roads.	**4**
		The Department will need to be referenced, prior to any use or occupation of any Crown roads or land, during the assessment phase.	**4**
		Any Crown road required for access to the development/proposal, will need to be transferred to Council, or application made to close and purchase the roads. As authority to access or use Crown roads is required prior to the commencement of any works or access, and to avoid any delays for the proposal, a tenure may be required in the interim.	**4**
DPE Water	Provided standard SEARS requirements	Standard SEARS requirements on Water Take and Licensing, Water Impacts and Assessment against Policy Guidelines	**6.10**
DPI Agriculture	State Significant Agricultural Land	Although there is no BSAL, an area of draft State Significant Agricultural Land (https://nswdpi.mysocialpinpoint.com/ssal) based on irrigated lands have been identified and construction of wind turbines and associated infrastructure should be avoided on these lands.	**6.8**
	Constraint mapping	Constraint mapping should be provided showing appropriate buffers and separation distances for constraints such as host dwellings, non associated dwellings, irrigation areas and infrastructure, airstrips, and Travelling Stock Routes and Reserves, similar to any constraints mapping for environmental and cultural assets.	**2.7**
	Decommissioning management plan	Decommissioning Management Plan should include, but not limited to, describing the potential design criteria of the final land use and landform, indicators which may be used to guide the return of the land back to possible agricultural production, along with the expected timeline for the rehabilitation program. This should also include the commitment to remove all infrastructure above and below ground, to a depth of 500 mm.	**6.7**
	Rehabilitation plans	Rehabilitation plans at all turbine and infrastructure sites during and post construction should detail appropriate groundcover management, e.g. using locally native species to limit dust and other land use conflict issues.	**6.7**

Regulator	Issue	Requirement	Section
	Land Use Conflict Risk Assessment	A Land Use Conflict Risk Assessment (LUCRA) should be undertaken in relation to land management issues during and post construction, as well as specific justification for the proposed worker accommodation site. DPI Agriculture has concerns about the development of extra dwellings on RU1 Primary Production zoned lands remote from towns or villages due to the potential for land use conflicts. Benefits to the local community would be enhanced by providing such accommodation in or adjacent to town or village centres with suitable infrastructure and utilities.	**Appendix M**
	Biosecurity management issues	Biosecurity management issues during and post construction must be assessed in relation to potential agricultural impacts (pests, weeds, and emergency animal diseases such as Japanese Encephalitis and Foot and Mouth Disease) including a risk assessment outlining the likely plant, animal, and community risks.	**6.8**
DPI Fisheries	Addressing impacts on aquatic ecology of waterways or any key fish habitats	The environmental assessment should specifically address impacts on the aquatic ecology of waterways or any Key Fish Habitats including Eurolie Creek, Nyangay Creek and Coleambally outfall drain.	**6.4**
	Aquatic Ecological Assessment requirements	The aquatic ecological environmental assessment should be as per Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013) and include the following information:	
		• Waterways that may be affected either directly or indirectly by the development or activity should be clearly identified;	**6.4**
		• Description of aquatic and riparian vegetation should be presented and mapped;	**6.4**
		• The extent of aquatic habitat removal or modification which may result from the proposed development;	**6.4**
		• Details of the location of all waterway crossings, including any access tracks, timetable for construction of the proposal with details of various phases of construction;	**6.4**
		• Details of the methodology (e.g. directional drilling, trenching, boring) for any works within or adjacent to waterways;	**6.4**
		• Aspects of the management of the proposal, both during construction and after completion, that relate to impact minimisation e.g. Environment Management Plans.	**6.4**
	Waterway crossings	The construction of waterway crossings should be in accordance with DPI Fisheries Policy & Guideline document: Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013). Any temporary waterway crossings must be removed immediately upon completion of the various stages of construction.	**6.10**
	Riparian buffer zones	The “degradation of native riparian vegetation” has been listed as a Key Threatening Process under the provisions of the Fisheries Management Act 1994. DPI Fisheries policy advocates the use of terrestrial buffer zones as per the Policy and Guidelines for Fish Habitat Conservation and Management (Update 2013) in order to maintain the riparian buffer zone and limit disturbance and susceptibility to bed or bank erosion.	**6.4**

Regulator	Issue	Requirement	Section
	Threatened species, populations and ecological communities	The proposal should include a threatened aquatic species assessment (as per part 7A Fisheries Management Act 1994) to address whether there are likely to be any significant impacts on listed threatened species, populations or ecological communities listed under the Fisheries Management Act 1994. It should be noted that waterways within the site area are considered habitat for the Lower Murray River aquatic ecological community which is listed as endangered under provisions of the Fisheries Management Act 1994.	**6.4**
NSW EPA	No issues raised	N/A	N/A
NSW Fire and Rescue	Insufficient information on BESS fire safety and emergency response management	FRNSW requests to be consulted and given the opportunity to review the hazard and risk analysis and provide comment regarding the proposed fire and life safety systems at the preliminary and final design phases of the project.	**6.16**
Hay Shire Council	Removal of text	Remove the text “and dwelling entitlements” under the Landscape and Visual section on p4. This has caused us grief in the past, as searching through property files and DA’s ends up being done by Council.	**6.3**
Heritage Council for NSW	No issues raised	N/A	**N/A**
Murray Darling Basin Authority	No issues raised	N/A	**N/A**
NSW DPE Mining, Exploration and Geoscience	No issues raised	N/A	**N/A**
NSW Rural Fire Service	Bush Fire Hazard Assessment Report	The preparation of an Environment Assessment should incorporate a bush fire hazard assessment report prepared by a suitably qualified person.	**Appendix S**
		• This assessment shall be developed in accordance with section 8.3.5 of Planning for Bush Fire Protection 2019 and include site-specific recommendations for the proper design of:	
		– asset protection zones (APZ);	**Appendix S**
		– measures to prevent a fire occurring within the site from developing into a bush/grass fire risk to the surrounding area	**Appendix S**
		– water supply for firefighting purposes;	**Appendix S**
		– land and vegetation management;	**Appendix S**
		– emergency management procedures, including the development of a Fire Management plan in consultation with the local NSW RFS District Fire Control Centre; and	**Appendix S**
		– vehicular access and defendable space around the solar array.	**Appendix S**
		• Protection for the facilities from bush fires can be achieved through a combination of strategies which will:	
		– minimise the impact of radiant heat and direct flame contact by separating development from bush fire hazards;	**Appendix S**
		– minimise the vulnerability of buildings to ignition and fire spread from flames, radiation and embers;	**Appendix S**

Regulator	Issue	Requirement	Section
		– enable appropriate access and egress for the public and firefighters;	**Appendix S**
		– provide adequate water supplies for bush fire suppression operations;	**Appendix S**
		– focus on facility preparedness, including emergency planning and property maintenance requirements; and	**Appendix S**
		– facilitate the maintenance of asset protection zones, fire trails, access for firefighting and on-site equipment for fire suppression and	**Appendix S**
		– prevention of fire spreading from the site.	**Appendix S**
Transport for NSW	Traffic Impact Assessment requirements	Incorporate a Traffic Impact Assessment (TIA), prepared by a suitably qualified person/s in accordance with the Austroads Guide to Traffic Management Part 12, Australian Standards and any complementary TfNSW Supplements, and Roads and Maritime Guide to Traffic Generating Developments. The TIA should be tailored to the scope of the proposed development contain information listed in Appendix A and include, but not be limited to, the following:	**Appendix O**
		• Identify the timeframe for the schedule of works (commencement year and completion year) overlapping timeframe of components of the construction process (to capture worst case scenario) and identify the hours of construction for the project;	**Appendix O**
		• Detailed plans identifying proposed location of any:	
		– project related infrastructure within and outside the project boundary,	**Appendix O**
		– transmission line infrastructure and associated access requirements, or any other project-related structures, within a road reserve. Include demarcation of local and classified road reserves;	**Appendix O**
		– identify the key access roads with the classified road network required for the project (including any access required from classified road network for components being constructed outside of the project area) and justification of additional access required to a classified road in accordance with section 2.119 of State Environmental Planning Policy (Transport and Infrastructure) 2021.	**Appendix O**
		– structures on the road network that could be sensitive to blasting (e.g. bridges, pump stations, etc.). Note, if any structures are likely to be affected, an assessment of the impact must ensure that the peak particle velocity is limited to an acceptable level to TfNSW.	**Appendix O**
		– details of any proposed ancillary infrastructure to be provided on-site for example, concrete batching facilities, workers accommodation etc. The TIA should identify:	**Appendix O**
		○ concrete batching facility - The source for input materials and quantify the traffic generation associated with the haulage of the source materials. Where the location of source materials is not yet known, worst case scenarios for traffic distribution of	**Appendix O**

Regulator	Issue	Requirement	Section
		those materials to and from the development site are to be addressed.	
		○ accommodation - Details of the accommodation, including but not limited to the maximum accommodation capacity, the work schedules relevant to staff turnover, the transport options available (Light Vehicles, Shuttle Buses, carpooling etc) and traffic generation volumes of workers arriving / departing, any staff pick up locations external to the project site, peak shift change / staff turn over details, any services required to support the proposed accommodation and what traffic will those support services generate.	**Appendix O**
		• Cumulative impacts	
		– Identify and assess the implications of any road and rail projects that will potentially be occurring simultaneously with the scheduling of the OSOM movements along the proposed OSOM routes.	**Appendix O**
		– An assessment should be undertaken as a part of the EIS and TIA to identify the projects that will have overlapping construction periods and assess the cumulative traffic impacts with emphasis on the following:	**Appendix O**
		○ The cumulative impacts from traffic generated from the construction workforces in terms of the origin-destination routes, access, AM/PM peaks where there is overlap with other projects.	**Appendix O**
		○ The cumulative impacts of heavy vehicle movements in terms of AM/PM peaks and routes where there is an overlap with other projects. Specifically, the Pottinger Solar Farm development in particular the impacts of utilising similar access points for LV, HV, OSOMs.	**Appendix O**
		○ Cumulative impacts and consideration in relation to the timing of movements of OSOMs where other projects will be utilising the same routes as proposed for this development.	**Appendix O**
		○ The cumulative impacts of the following renewable energy projects occurring within the south-west renewable energy zone need to be considered: Baldon Wind Farm, Moulamein, Bullawah Wind Farm, Hay, Dinawan Energy Hub, Coleambally, The Plains Renewable Energy Park, Hay, Wilan Wind Farm, Booroorban, Mallee Wind Farm, Buronga.	**Appendix O**
		• Heavy vehicle and OSOM routes:	
		– Identify the return routes for OSOMs.	**Appendix O**
		– National Heavy Vehicle Regulator (NHVR) approved routes identified on the Restricted Access Maps (RAV MAP) are to be utilised for the	**Appendix O**

Regulator	Issue	Requirement	Section
		heavy vehicles routes for the proposed development.	
		– The TIA is required to include details on the number of OSOM movements, the intended time for OSOM movements to occur and identify the location of pull-over bays / rest areas along the OSOM routes.	**Appendix O**
		– The following TfNSW projects are due to commence in the next 2-3 years and need to be considered within any route survey from the Port of Newcastle:	
		○ Hexham Straight Widening Project ○ M1 to Raymond Terrace Projects ○ Singleton Bypass Project ○ Belford to Golden Highway Project ○ Mudies Creek Bridge Upgrade ○ EnergyCo Port to Place will commence works along the OSOM route from the Port of Newcastle.	**Appendix O**
		• Project schedule	
		– Hours and days of work, number of shifts and start and end times	**Appendix O**
		– Phases and stages of the project, including construction, operation and decommissioning.	**Appendix O**
		• Traffic volumes including:	
		– Existing background traffic	**Appendix O**
		– Project-related traffic for each phase or stage of the project	**Appendix O**
		– Projected cumulative traffic at commencement of operation, and a 10-year horizon post-commencement.	**Appendix O**
		• Traffic characteristics including:	
		– Number and ratio of heavy vehicles to light vehicles	**Appendix O**
		– Peak times for existing traffic	**Appendix O**
		– Peak times for project-related traffic including commuter periods.	**Appendix O**
		– Proposed hours for transportation and haulage	**Appendix O**
		– Interactions between existing and project-related traffic	**Appendix O**
		– Capacity analysis using SIDRA or other relevant application, to identify an acceptable Level of Service (LOS) at intersections with the classified (State) road/s, and where relevant, analysis of any other intersections along the proposed transport route/s.	**Appendix O**
		• The origins, destinations and routes for:	
		– Commuter (employee and contractor) light vehicles and pool vehicles	**Appendix O**
		– Heavy (haulage) vehicles	**Appendix O**
		– OSOM vehicles.	**Appendix O**

Regulator	Issue	Requirement	Section
		• Identify the necessary road network infrastructure and access upgrades required to cater for and mitigate the impact of project related traffic on each proposed route (LV/HV/OSOM routes) on both the local and classified road network for the development (for instance, road widening, hardstand areas, pullover bays, site access upgrades, intersection treatments, upgrades identified as part of the OSOM route analysis/swept path assessment etc).	**Appendix O**
		• Road safety assessment of key haulage route/s:	
		– Where road safety concerns are identified at a specific location along the proposed haulage routes, TfNSW suggests that the TIA be supported by a targeted Road Safety Audit undertaken by suitably qualified persons in accordance with the Austroads Guidelines.	**Appendix O**
		• A review of crash data along the identified transport route/s for the most recent 5 year reporting period and an assessment of road safety along the proposed transport route/s considering the safe systems principles adopted under Future Transport 2056.	**Appendix O**
		• Consideration of the local climate conditions that may affect road safety during the life of the project (e.g. fog, wet and dry weather, icy road conditions).	**Appendix O**
		• The layout of the internal road network, parking facilities and infrastructure.	**Appendix O**
		• Impact on rail corridors and level crossings detailing any proposed interface treatments. Note, the rail authority for rail corridors in the vicinity of the site and likely OSOM route is ARTC.	**Appendix O**
		• Impact on public transport (public and school bus routes) and consideration for alternative transport modes such as carpooling and shuttle buses during construction.	**Appendix O**
		• Identification and assessment of potential environmental impacts of the project, such as blasting, lighting, visual, noise, dust and drainage on the function and integrity of all affected public roads.	**Appendix O**
		• Controls for transport and use of any dangerous goods in accordance with State Environmental Planning Policy No. 33 – Hazardous and Offensive Development, the Australian Dangerous Goods Code and AS4452 Storage and Handling of Toxic Substances.	**Appendix O**
		• A draft Traffic Management Plan (TMP) that could be implemented following approval of the EIS, in consultation with relevant Councils and TfNSW.	**Appendix O**
	Route analysis	A concept-level route analysis is required to be provided with the SSD application based on high-level 3D swept path analysis to generally indicate locations where civil works are likely to be required. The route analysis is to include at a minimum the following:	**Appendix O**
		• Identify the OSOM route to be utilised and any indicative pinch points within the network vertically, horizontally and laterally and the potential civil works required to accommodate the OSOM vehicles.	**Appendix O**

Regulator	Issue	Requirement	Section
		• The logistics assessment is to highlight each at-risk road structures that the haulage route crosses including bridges, traffic signals, signage, major culverts, and minor culverts that may not meet the desirable cover to cater for proposed axle loads.	**Appendix O**
		• Pull-over bay locations (including GPS coordinates) are required to be identified for the indivisible OSOM loads and be accompanied by swept path analysis, as a part of the route survey. Pull-over bays must be identified for emergency break downs, where overtaking cannot be achieved, or mandatory breaks are required for fatigue management.	**Appendix O**
		• Identifying road and rail projects occurring concurrently along the OSOM route, and any civil works, obstructions, or other impediments associated with these projects or as a result of the OSOM movements.	**Appendix O**
		• The design vehicle templates used with the swept path analysis software are also requested in order for TfNSW to review the performance within the software (e.g. Autodesk Vehicle Tracking or Transoft AutoTURN).	**Appendix O**
		• Provide the following measurements parameters of the OSOM components / materials to be moved:	
		– Identify all the types of OSOM vehicles proposed to be used for the project and whether they require police escort or pilot vehicles,	**Appendix O**
		– Overall combination length, width, height and mass of the laden loads,	**Appendix O**
		– Maximum component length, widths and heights (clearance to overhead obstructions such as structures, utilities and vegetation),	**Appendix O**
		– Wheelbase dimensions,	**Appendix O**
		– Maximum trailer articulation angle(s),	**Appendix O**
		– Minimum overhang heights above the road surface,	**Appendix O**
		– Axle loads and axle group loads in terms of both tonnes and Equivalent Standard Axles (refer to Austroads Guide to Pavement Technology),	**Appendix O**
		– Overall combination length, width, height and mass of the laden loads,	**Appendix O**
		– Maximum component length (e.g. blade length, blade overhang length, etc.),	**Appendix O**
		– Maximum component widths (e.g. turbine tower, battery component, pipes, etc.),	**Appendix O**
		– Maximum load heights (clearance to overhead obstructions such as structures, utilities and vegetation).	**Appendix O**
WaterNSW	No issues raised	N/A	N/A
DPE Hazards	BESS PHA	A PHA for BESS should:	
		• Consider the most recent standards and codes such as and not limited to NFPA 855, AS 5139, IEC 62897, UL 9540, FM Global DS 5-33, and UL 9540A test reports when establishing separation distances	**Appendix R**

Regulator	Issue	Requirement	Section
		• consider the scenarios and findings from the reports on the 2021 DPE Hazards Victorian Big Battery fire, including fire propagation to the topside of the adjacent BESS sub-units (containers, modules, etc.)	**Appendix R**
		• Demonstrate that the separation distances between BESS to on-site or off-site receptors and the separation distances between BESS subunits (containers, modules, etc.) prevent fire propagation	**Appendix R**
		• Verify that the areas designated for BESS are sufficient taking into account separation distances between BESS sub-units	**Appendix R**
		• Demonstrate that the fire risks from BESS can comply with the Department's Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning.	**Appendix R**
Edward River Council		None provided	**N/A**
Coleambally Irrigation Co-operative Limited		None provided	**N/A**
Commonwealth Department of Defence		None provided	**N/A**

Table C3 Supplementary SEARs Requirements for SSD-59235464

Issues	Requirement	Section
General Requirements		
Relevant Regulations	The Environmental Impact Statement (EIS) must address all matters outlined in Schedule 4 of the EPBC Regulations and all matters outlined below in relation to the controlling provisions.	**This EIS**
Project description	The Environmental Impact Statement (EIS) must address all matters outlined in Schedule 4 of the EPBC Regulations and all matters outlined below in relation to the controlling provisions.	**3**
	The precise location and description of all works to be undertaken (including associated offsite works and infrastructure), structures to be built or elements of the action that may have impacts on Matters of National Environmental Significance (MNES).	**6.4**
	How the action relates to any other actions that have been, or are being taken in the region affected by the action.	**6.4**
	How the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts on MNES.	**6.4**
Impacts	The EIS must include an assessment of the relevant impacts[1] of the action on the matters protected by the controlling provisions, including: i. a description and detailed assessment of the nature and extent of the likely direct, indirect and consequential impacts, including short term and long term relevant impacts;	**6.4**
	ii. a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;	**6.4**
	iii. analysis of the significance of the relevant impacts; and	**6.4**
	iv. any technical data and other information used or needed to make a detailed assessment of the relevant impacts.	**6.4**
Avoidance, mitigation	For <u>each</u> of the relevant matters protected that are likely to be significantly impacted by the action, the EIS must provide information on proposed avoidance and mitigation measures to manage the relevant impacts of the action including:	**6.4**

Issues	Requirement	Section
and offsetting	i. a description, and an assessment of the expected or predicted effectiveness of the mitigation measures,	
	ii. any statutory policy basis for the mitigation measures;	**6.4**
	iii. the cost of the mitigation measures;	**6.4**
	iv. an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;	**6.4**
	v. the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program.	**6.4**
	Where a significant residual adverse impact to a relevant protected matter is considered likely, the EIS must provide information on the proposed offset strategy, including discussion of the conservation benefit associated with the proposed offset strategy.	**6.4**
	For each of the relevant matters likely to be impacted by the action the EIS must provide reference to, and consideration of, relevant Commonwealth guidelines and policy statements including any: i. conservation advice or recovery plan for the species or community;	**6.4**
	ii. relevant threat abatement plan for the species or community;	**6.4**
	iii. wildlife conservation plan for the species; and	**6.4**
	iv. any strategic assessment. **Note**: the relevant guidelines and policy statements for each species and community are available from the Department of Climate Change, Energy, the Environment and Water Species Profiles and Threats Database: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl.	**6.4**
	In addition to the general requirements described above, specific information is required with respect to each of the determined controlling provisions. These requirements are outlined in paragraphs 15-17.	**6.4**
Key Issues		
Biodiversity (threatened species and communities and migratory species) Assessment requirements:	The EIS must identify each EPBC Act listed threatened species and community and migratory species likely to be impacted by the action. For any species and communities that are likely to be impacted, the proponent must provide a description of the nature, quantum and consequences of the impacts. For species and communities potentially located in the project area or in the vicinity that are not likely to be impacted, provide evidence why they are not likely to be impacted.	**6.4**
	For each of the EPBC Act listed threatened species and communities and migratory species likely to be impacted by the action the EIS must provide a separate: i. description of the habitat (including identification and mapping of suitable breeding habitat, suitable foraging habitat, important populations and habitat critical for survival), with consideration of, and reference to, any relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans;	**6.4**
	ii. details of the scope, timing and methodology for studies or surveys used and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements;	**6.4**
	iii. description of the relevant impacts of the action having regard to the full national extent of the species or community's range;	**6.4**
	iv. description of the specific proposed avoidance and mitigation measures to deal with relevant impacts of the action;	**6.4**
	v. identification of significant residual adverse impacts likely to occur after the proposed activities to avoid and mitigate all impacts are taken into account;	**6.4**
	vi. a description of any offsets proposed to address residual adverse significant impacts and how these offsets will be established;	**6.4**
	vii. details of how the current published NSW Biodiversity Assessment Method (BAM) has been applied in accordance with the objects of the EPBC Act to offset significant residual adverse impacts; and	**6.4**

Issues	Requirement	Section
	viii. details of the offset package to compensate for significant residual impacts including details of the credit profiles required to offset the action in accordance with the BAM and/or mapping and descriptions of the extent and condition of the relevant habitat and/or threatened communities occurring on proposed offset sites. **Note:** For the purposes of approval under the EPBC Act, it is a requirement that offsets directly contribute to the ongoing viability of the specific protected matter impacted by a proposed action and deliver an overall conservation outcome that improves or maintains the viability of the MNES i.e. 'like for like'. Like-for-like includes protection of native vegetation that is the same ecological community or habitat being impacted (preferably in the same region where the impact occurs), or funding to provide a direct benefit to the matter being impacted e.g. threat abatement, breeding and propagation programs or other relevant conservation measures.	**6.4**
	Any significant residual impacts not addressed by the BAM may need to be addressed in accordance with the EPBC Act 1999 Environmental Offset Policy. https://www.dcceew.gov.au/environment/epbc/publications/epbc-act-environmental-offsets-policy.	**6.4**
Other approvals and conditions		
	Information in relation to any other approvals or conditions required must include the information prescribed in Schedule 4 Clause 5 (a) (b) (c) and (d) of the EPBC Regulations.	**4.2**
Environmental Record of person proposing to take the action		
	Information in relation to the environmental record of a person proposing to take the action must include details as prescribed in Schedule 4 Clause 6 of the EPBC Regulations.	**6.4**
Information Sources		
	For information given in an EIS, the EIS must state the source of the information, how recent the information is, how the reliability of the information was tested; and what uncertainties (if any) are in the information.	**This EIS**

Table C4 Additional SEARs for Southern Extension Area - SSD-59235464

Issues	Requirement	Section
Estimated Development Cost and Employment	Provide the estimated development cost (EDC) of the development prepared in accordance with the relevant planning circular using the Standard Form of EDC Report.	**EDC provided separately to DPHI**
	Provide an estimate of the retained and new jobs that would be created during the construction and operational phases of the development, including details of the methodology to determine the figures provided.	
	Include the capital investment value of mitigation/offset activities that are part of the project proposal for which the approval is being sought.	
Battery Energy Storage System	A Preliminary Hazard Analysis (PHA), prepared in accordance with the Hazardous Industry Planning Advisory Paper No. 6, 'Hazard Analysis' and Multi-level Risk Assessment (DoP, 2011). The PHA must consider all recent standards and codes and verify separation distances to onsite and off-site receptors to prevent fire propagation and compliance with Hazardous Industry Advisory Paper No. 4, 'Risk Criteria for Land Use Safety Planning (DoP, 2011) and include the key design parameters identified in the PHA within the project description.	**6.14**

Table C5 Cumulative Impact Guidelines Key Questions

Scoping Questions	Considerations	Comment
What to assess?	The government's strategic planning framework for the area, having regard to any relevant legislation, plans, policies or guidelines	Consideration of key legislation, plans, policies or guidelines is provided in **Section 2.** The Project's setting is discussed in **Section 2**, which identifies: • The key land use and economic activity within the region is agriculture (broadacre farming, including cropping and livestock) • The closest population centres are Hay and Deniliquin • The Project will connect to the 330kV Project EnergyConnect line • There are proposed renewable energy projects located in proximity to the Project Area, within the South West REZ. These are described in **Table 2–3.** • The impacts during construction and operation of the Project are considered low when considering the other proposed or approved developments. Three out of seven non-associated receivers are associated with another Project, and one is derelict.
	The project and other potentially relevant future projects that may be developed over the same time period or similar timeframes as the project.	The EIS will address the cumulative impacts of the Project with the other projects identified in **Table 6–77**
	Potential material impacts on features including National Parks and other protected areas, environmentally sensitive areas, threatened species and ecological communities, important natural resources, culturally significant resources, key infrastructure and industries, sensitive land use zones, population centres, settlements and residential areas.	The preliminary visual assessment as discussed in **Section 6.3** includes a preliminary review of all these parameters. The cumulative impacts of the Project with other projects are identified in **Table 6–77.**
	The likely scale and nature of the cumulative impacts of these projects.	The preliminary visual assessment as discussed in **Section 6.3** includes a preliminary review of all these parameters. The cumulative impacts of the Project with other projects are identified in **Table 6–77.**
What study area?	The study area selected for the cumulative impact assessment of each matter will vary depending on the specific characteristics of the assessment matter and the scale and nature of the potential impacts on the matter resulting from the project with other relevant future projects.	The preliminary visual assessment as discussed in **Section 6.3** includes a preliminary review of all these parameters. The cumulative impacts of the Project with other projects are identified in **Table 6–77.**
Over what time period?	Like the study area, the time period selected for the cumulative impact assessment on each matter will vary depending on the characteristics of the matter and the scale and nature of the potential impacts on the matter. In most cases, the period selected is likely to match the life of the project (e.g. 25 years). However, in some cases the period selected may be much shorter than this and cover a single phase of the project, or much longer periods.	The proposed timeframe for the development of the Project is stated in **Table 3–8.** Various levels of cumulative impacts may occur during the various Project phases. These impacts have been addressed in **Table 6–77.**

Scoping Questions	Considerations	Comment
What other projects to include?	Build on these assessments by considering the cumulative impacts of the proposed project on key matters when other future proposed projects are included in the assessment.	The EIS will address the cumulative impacts of the Project with the other projects identified in **Table 6–77.**
	The following types of development need to be identified for inclusion as 'relevant' future projects: • Other SSD projects. • Projects that are classified as designated development and require an EIS. • Projects that require assessment under division 5.1 of the EP&A Act that are likely to significantly affect the environment and require an EIS. • Projects that have been declared to be controlled actions under the EPBC Act. • Any major greenfield and urban renewal developments that are scheduled for the area.	The EIS will address the cumulative impacts of the Project with the other projects identified in **Table 6–77.**

Appendix D
Statutory Compliance

STATUTORY COMPLIANCE

Table D1 Mandatory Considerations

Statutory Reference	Consideration	Response	Section
Considerations under the EP&A Act and Regulation			
Section 1.3 - Objects of the EP&A Act **Pursuant to section 1.3 of the EP&A Act, the objects of the Act are:**	(a) To promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources.	The Project will promote the social and economic welfare of the community and contribute to a better environment through the provision of a renewable energy source. It will have lower GHG emissions compared to fossil-fuel electricity generation and will contribute to reducing climate change impacts to the community and the environment. The Project will also promote the social and economic welfare of the Hay, Deniliquin, Edward River and Murrumbidgee areas through the provision of jobs and business opportunities, ensuring better job stability for contract labourers in the local construction industry. Resources within the Project Area include land that is being used for agricultural purposes and land which has agricultural, biodiversity and Aboriginal cultural heritage values. This constitutes the 'natural resources' which will be properly managed, developed and/or conserved. Consultation with landholders will be undertaken to maintain agricultural utilisation within the Project Area wherever possible during construction, operation and decommissioning. The design and layout refinement process has mitigated impacts on biodiversity values and Aboriginal cultural heritage resources. The implementation of management and mitigation measures will further mitigate and/or avoid potential impacts. Residual impacts to biodiversity values will be offset; and recovery, relocation, documentation and analysis of potentially impacted Aboriginal sites will be undertaken in consultation with RAPs and stakeholders.	**7**
	(b) To facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment.	The economic, environmental and social context of the Project, and the potential impacts to facilitate an informed consideration of these aspects in the decision-making process is outlined in **Section 7.7**.	**7.7**
	(c) To promote the orderly and economic use and development of land.	The orderly and economic use of land is best served by development that is permissible under the relevant planning regime and in accordance with the prevailing planning controls. The Project is permissible with consent in accordance with the T&I SEPP, is consistent with statutory and strategic planning controls and is adjacent to significant proposed energy transmission infrastructure. As detailed through this EIS, the Project will promote economic use and development of the Project Area and will result in positive economic	**7.7.1.2**

Statutory Reference	Consideration	Response	Section
		impacts, with appropriate mitigation measures and management strategies to mitigate adverse environmental and social impacts.	
	(d) To promote the delivery and maintenance of affordable housing.	There is potential for the large construction workforce to indirectly affect affordable housing in the region by increasing demand. To mitigate this, a 'Local Housing and Accommodation Strategy' will be prepared. To facilitate flexibility in the approach, the Project description includes on-site accommodation to house up to 240 workers at a time. Continued use of approved accommodation facilities approved for other developments within the vicinity is also being investigated.	**7.7**
	(e) To protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats.	The Disturbance Footprint has been subject to numerous design refinements to avoid areas of environmental importance (particularly high biodiversity value land and Aboriginal heritage). In the case where impacts are unavoidable, mitigation and management measures to protect and conserve the environment have been provided in this EIS. The Project will contribute to reducing GHG emissions as part of Australia's climate change impact reduction objectives, including impacts on threatened and other species of native animals and plants, ecological communities and their habitats.	**7**
	(f) To promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage).	Avoidance of Aboriginal cultural heritage values has been a key consideration in the Project design refinement process. The Disturbance Footprint has been optimised to avoid as best as practicable impacts on Aboriginal Heritage present within the Project Area. Mitigation and management measures have been provided where impact could not be avoided. The Project will not impact any historical heritage sites.	**7.1**
	(g) To promote good design and amenity of the built environment.	The Project infrastructure will not be accessible to the public and therefore the design and amenity is not directly applicable. However, the Project's design has been conducted according to relevant design standards and the visual impact of the built components has been considered and minimised as part of design development.	**7**
	(h) To promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants.	The design refinement process will continue to consider the separation distances of any buildings with respect to the potential hazards and risks. Project infrastructure will be maintained or upgraded over the Project's life to ensure safe and efficient operations. Project construction will be compliant with the 'National Construction Code' (2022, ABCB) and all relevant statutory requirements.	**7**
	(i) To promote the sharing of the responsibility for environmental planning and assessment between	As summarised in **Section 5,** a wide range of local and State government agencies have been consulted regarding the Project, including HSC, ERC and DPHI.	**5**

Statutory Reference	Consideration	Response	Section
	the different levels of government in the State.		
	(j) To provide increased opportunity for community participation in environmental planning and assessment.	As described in **Section 5**, extensive engagement with the community has informed community members about the Project and has provided an opportunity to participate in the planning and assessment phase of the Project. This EIS provides further detailed information regarding the Project and its potential impacts. It will be placed on public exhibition by DPHI, and community members will be able to make formal submissions. A report responding to these submissions will be prepared and exhibited by DPHI.	**5**
Section 4.15 – Evaluation **Pursuant to Section 4.15 of the EP&A Act, the consent authority is required to take matters into consideration in determining an Application**	a) the provisions of – (i) any environmental planning instrument.	The relevant provisions of the applicable EPIs to the Project are listed in Section **4.**	**4**
	(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved).	There are no proposed instruments that are relevant to the Project.	
	(iii) any development control plan.	In accordance with s 2.10 of the *Planning Systems SEPP 2021*, development control plans are not applicable to SSD applications.	
	(iiia) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4.	Both a VPA and BSP are being prepared.	
	(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph).	All provisions of the *Environmental Planning & Assessment Regulation 2021* (EP&A Regs) and their relevance to the Project have been addressed within this EIS. Additionally, Clause 61 of the EP&A Regs describes additional matters that the consent authority must consider in the determination of any development application. None of these matters have been deemed to be relevant to the Project.	
	(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality.	This EIS has assessed the likely impacts of the Project, including environmental and socio-economic impacts.	
	(c) the suitability of the site for the development	The Project Area was selected based on the following: • Located within the Project EnergyConnect corridor, which will allow for the renewable energy generated from the Project to be	

Statutory Reference	Consideration	Response	Section
		supplied to the NEM, located within the boundaries of the proposed South West REZ, and the Project will contribute to the future development of the REZ • Proximate to a number of other existing and proposed renewable energy Projects located within the region and in close proximity to the Project Area • Easily accessible via the Cobb Highway • Consistent with RU1 – Primary Production zoning and will meet the following objective of the zone: to encourage sustainable primary industry production. Alongside preliminary planning assessment, this EIS has deemed the site suitable for the Project based upon the expected environmental impacts and the planning requirements.	
	(d) any submissions made in accordance with the Act or the regulations.	The preparation of the EIS has occurred in consideration of the SEARs requirements and issued agency advice.	**Appendix C**
	(e) the public interest.	The Project will provide a number of key public benefits to not only the local area, but the broader region of South-West NSW as a whole, which include the following: • Create new income opportunities for landowners; • Support communities in the development new industries; • Provide a significant source of renewable energy to assist in reducing greenhouse gas (GHG) emissions in the South West REZ and contribute to growing the renewable energy generation and storage capacity; • Generate electricity from clean energy and provide lower cost electricity for approximately 830,000 homes and the needs of future Australian generations; • Contribute to renewable energy requirements and consequently NSW and Commonwealth targets for renewable energy; • Collaborate with communities to allow residents, businesses and local industry to be incorporated into Project design and long term commitments that set up lasting and meaningful contributions locally; • Provide financial benefits to its neighbours and the community through a VPA and BSP; • Provide employment and education opportunities during all Project phases; and • Engage with First Nations Australians to enhance social and economic outcomes. Based on this, it is considered that the Project is deemed to be in the public interest.	**2.3.1**
Considerations under other legislation			
***Biodiversity Conservation Act 2016* – Section 7.14**	The Minister for Planning and Homes is required to take into	A BDAR pursuant to section 7.14 of the BC Act has been undertaken for the Project.	**Appendix J**

Statutory Reference	Consideration	Response	Section
	account the impact of the Project on biodiversity. The Minister may (but is not required to) further consider under the EP&A Act the likely impact of the Project on biodiversity values.		
Considerations under relevant EPIs			
State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP) **Chapter 3 Hazardous and offensive development** **Chapter 4 Remediation of Land**	Chapter 3 of Resilience and Hazards SEPP assesses the potential hazards associated with the Project by providing definitions and guidelines for hazardous industry, offensive industry, hazardous storage establishments, and offensive storage establishments. Chapter 4 of Resilience and Hazards SEPP promotes the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment.	To comply with Section 3.7 of the Hazards SEPP, this EIS has given consideration to current circulars and guidelines published by DPE that relate to hazardous or offensive development, including the following: • *Hazardous Industry Planning Advisory Paper No 4 – Risk Criteria for Land Use Safety Planning* (HIPAP No.4) (DPIE 2011); • *Hazardous Industry Planning Advisory Paper No 6 – Guidelines for Hazard Analysis* (HIPAP No.6) (DPIE 2011); • *Multi-level Risk Assessment Guideline* (DPI 2011). • *ICNIRP Guidelines for limiting exposure to Time-varying Electric, Magnetic and Electromagnetic Fields* (International Commission on Non-Ionizing Radiation Protection, 1998); • *Planning for Bush Fire Protection 2019 (NSW RFS, 2019)* A Preliminary Hazard Analysis (PHA) has been prepared for the Project. Under Clause 4.6, a consent authority is required to consider whether a proposed development site is affected by soil or other contaminants before granting consent. A SAIS provides a further discussion on the potential impacts on soil and agriculture resources associated with the Project.	**4** **Appendix R**
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP)	Chapter 4 Koala Habitat Protection 2021 of the Biodiversity and Conservation SEPP provides a framework for councils to prepare a strategic koala plan of management that would apply to the whole or part of an LGA.	State Environmental Planning Policy (Koala Habitat Protection) 2021 (Koala SEPP 2021) applies to identified LGAs in areas not zoned as RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry. Within zones RU1 Primary Production, RU2 Rural Landscape or RU3 Forestry, the former *State Environmental Planning Policy (Koala Habitat Protection) 2020* (Koala SEPP 2020) continues to apply. Both SEPPs only apply to development applications whereby Council is the consenting authority, which is not the case for the Project. Therefore, neither SEPP is applicable to the Project. Notwithstanding, Koalas have been considered during the preparation of this EIS, BDAR and EPBC Act Referral.	**6.4**
State Environmental Planning Policy (Primary Production) 2021 (Primary Production SEPP)	The primary Production SEPP contains planning provisions to manage primary production and rural development, including supporting sustainable	The Project will not impede agricultural use of the land.	**6.8**

Statutory Reference	Consideration	Response	Section
	agriculture for the protection of prime agricultural land of state and regional significance, as well as regionally significant mining and extractive resources.		
State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP)	T&I SEPP provides greater consistency and flexibility in the development of key transport and infrastructure works. Relevantly, Section 2.36(1) provides that the development of electricity generating works may be carried out with consent in a prescribed rural zone, which includes the RU1 – Primary Production Zone.	The Project Area is entirely zoned as RU1 Primary Production land, and consequently the Project is permissible with consent under section 2.36 of the T&I SEPP.	**4**
State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP)	The Primary Production SEPP classifies a Project as SSD if it requires development consent and is a development for the purpose of electricity generating works that has an estimated development cost of more than $30 million	The Project is classified as SSD as its purpose is to generate electricity and has an estimated development cost of more than $30 million.	
Hay Local Environmental Plan 2011	The EIS will address relevant components of the Hay LEP 2011, including: Section 1.2 – Aims of Plan (1) This Plan aims to make local environmental planning provisions for land in Hay in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act. (2) The particular aims of this Plan are as follows a) to protect, enhance and conserve agricultural lands and the contribution they make to the regional economy, b) to ensure that there is sufficient land to meet the employment needs of Hay, d) to ensure areas of high ecological value or significant land sensitivity are enhanced for future generations, e) to give priority to the protection, conservation and enhancement of areas and items of significance for Aboriginal and non-Aboriginal cultural heritage.	The Project mitigates to the most reasonable extent the impact on existing environmental and socio-economic resources, while simultaneously avoiding and minimising impact on Aboriginal heritage, significant agricultural land, biodiversity, and visual and noise amenity. This has been conducted in line with the principles of the avoid, minimise, mitigate, and offset detailed in the BC Act. Given that the Project is proposed in the South West REZ, the impact on agricultural activity is considered negligible. The Project also aims to provide employment opportunities throughout all Project phases, which will increase the participation of local resources and contribution to the local economy.	

Statutory Reference	Consideration	Response	Section
Conargo Local Environmental Plan 2013	The EIS will address relevant components of the Conargo LEP 2013, including: Section 1.2 – Aims of Plan (1) This Plan aims to make local environmental planning provisions for land in Conargo in accordance with the relevant standard environmental planning instrument under section 3.20 of the Act. (2) The particular aims of this Plan are as follows a) to encourage sustainable economic growth and development in Conargo, b) to provide for a range of development opportunities that contribute to the social, economic and environmental resources of the area and support the long-term and economic viability of the local community, c) to protect, enhance and conserve agricultural land through the proper management, development and conservation of natural and human-made resources,	The Project mitigates to the most reasonable extent the impact on existing environmental and socio-economic resources, while simultaneously avoiding and minimising impact on Aboriginal heritage, significant agricultural land, biodiversity, and visual and noise amenity. This has been conducted in line with the principles of the avoid, minimise, mitigate, and offset detailed in the BC Act. Given that the Project is proposed in the South West REZ, the impact on agricultural activity is considered negligible. The Project also aims to provide employment opportunities throughout all Project phases, which will increase the participation of local resources and contribution to the local economy.	
	Objectives of the RU1 Primary Production zone – To encourage sustainable primary industry production by maintaining and enhancing the natural resource base. To encourage diversity in primary industry enterprises and systems appropriate for the area. To minimise the fragmentation and alienation of resource lands. To minimise conflict between land uses within this zone and land uses within adjoining zones.	The Project has taken appropriate technical investigations to inform, avoid, and mitigate the negative impact that are associated with the Project, while simultaneously enhancing the positive impacts. Mitigation and management measures will be adhered to in order to ensure the existing natural resources within the Project Area are protected or enhanced. The Project offers further diversification in primary industry production, utilising solar energy to provide greater power supply to the regional grid and NEM, adding to the existing diverse uses within the Hay LGA. Current agricultural land use immediate to the Project Area, and in the broader Project locality will not change as a result of the Project, and there will be no fragmentation or displacement of existing agricultural industries. Agriculture land use will be re-established over the majority of agricultural land removed from agriculture at the time of decommissioning (unless otherwise agreed with the landowner and/or regulatory authorities) A Land Use Conflict Risk Assessment was conducted as part of the Soil and Agriculture Impact Assessment which includes risk reduction controls to minimise conflict.	
Considerations under Development Control Plans			

Statutory Reference	Consideration	Response	Section
Development Control Plans (DCP)	Under Section 2.10 of the Planning Systems SEPP, DCPs do not apply to SSD Projects as: *"Exclusion of application of the development control plans (whether made before or after the commencement of this policy) do not apply to-* *a) State significant development, or* *b) development for which a relevant council is the consent authority under section 4.37 of the Act"*	DCPs do not apply to the Project Area.	**4**

Table D2 EBPC Regulation Schedule 4

Requirement	Section
1. General information	
1.01 The background of the action including:	
(a) The title of the action	**Appendix J**
(b) The full name and postal address of the designated Applicant	
(c) A clear outline of the objective of the action	
(d) The location of the action	
(e) The background to the development of the action	
(f) How the action relates to any other actions (of which the Applicant should reasonably be aware) that have been, or are being, taken or that have been approved in the region affected by the action;	
(g) the current status of the action;	
(h) the consequences of not proceeding with the action.	
2. Description	
2.01 A description of the action including:	
(a) all the components of the action	**5** **Appendix J**
(b) the precise location of any works to be undertaken, structures to be built or elements of the action that may have relevant impacts;	
(c) how the works are to be undertaken and design parameters for those aspects of the structures or elements of the action that may have relevant impacts;	
(d) relevant impacts of the action;	
(e) proposed safeguards and mitigation measures to deal with relevant impacts of the action;	
(f) any other requirements for approval or conditions that apply, or that the Applicant reasonably believes are likely to apply, to the proposed action;	
(g) to the extent reasonably practicable, any feasible alternatives to the action, including: i. if relevant, the alternative of taking no action; ii. a comparative description of the impacts of each alternative on the matters protected by the controlling provisions for the action; iii. sufficient detail to make clear why any alternative is preferred to another;	
(h) any consultation about the action, including: i. any consultation that has already taken place; ii. proposed consultation about relevant impacts of the action;	

Requirement	Section
iii. if there has been consultation about the proposed action—any documented response to, or result of, the consultation; iv. identification of affected parties, including a statement mentioning any communities that may be affected and describing their views	
3. Relevant impacts	
3.01 information given under paragraph 2.01(d) must include:	
(a) a description of the relevant impacts of the action;	**3** **Appendix J**
(b) a detailed assessment of the nature and extent of the likely short term and long term relevant impacts;	
(c) a statement whether any relevant impacts are likely to be unknown, unpredictable or irreversible;	
(d) analysis of the significance of the relevant impacts;	
(e) any technical data and other information used or needed to make a detailed assessment of the relevant impacts.	
4. Proposed safeguards and mitigation measures	
4.01 Information given under paragraph 2.01(e) must include:	
(a) a description, and an assessment of the expected or predicted effectiveness of, the mitigation measures;	**Appendix J**
(b) any statutory or policy basis for the mitigation measures;	
(c) the cost of the mitigation measures;	
(d) an outline of an environmental management plan that sets out the framework for continuing management, mitigation and monitoring programs for the relevant impacts of the action, including any provisions for independent environmental auditing;	
(e) the name of the agency responsible for endorsing or approving each mitigation measure or monitoring program;	
(f) a consolidated list of mitigation measures proposed to be undertaken to prevent, minimise or compensate for the relevant impacts of the action, including mitigation measures proposed to be taken by State governments, local governments or the Applicant.	
5. Other approvals and conditions	
5.01 Information given under paragraph 2.01(f) must include:	
(a) details of any local or State government planning scheme, or plan or policy under any local or State government planning system that deals with the proposed action, including: i. what environmental assessment of the proposed action has been, or is being, carried out under the scheme, plan or policy; ii. how the scheme provides for the prevention, minimisation and management of any relevant impacts;	**4**
(b) a description of any approval that has been obtained from a State, Territory or Commonwealth agency or authority (other than an approval under the Act), including any conditions that apply to the action;	
(c) a statement identifying any additional approval that is required;	
(d) a description of the monitoring, enforcement and review procedures that apply, or are proposed to apply, to the action.	
6. Environmental record of person proposing to take the action	
6.01 Details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:	**Appendix J**
(a) the person proposing to take the action; and	
(b) for an action for which a person has applied for a permit, the person making the application.	
6.02 If the person proposing to take the action is a corporation—details of the corporation's environmental policy and planning framework.	
7. Information sources	

Requirement	Section
7.01 For information given in a draft public environment report or environmental impact statement, the draft must state:	
(a) the source of the information; and	**Appendix J**
(b) how recent the information is; and	
(c) how the reliability of the information was tested; and	
(d) what uncertainties (if any) are in the information.	

Appendix E
WTG and Infrastructure Parameters

WTG AND INFRASTRUCTURE PARAMETERS

Table E1 WTG Parameters

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG					
WTG1	-34.8521393/ 144.8843643	306583.275, 6141314.193	89.14	DAD_01	5.72
WTG2	-34.8555534/ 144.8885902	306977.66, 6140943.644	89.01	DAD_01	5.31
WTG3	-34.8509642/ 144.8996385	307977.172, 6141473.908	89.23	DAD_01	4.36
WTG4	-34.8544028/ 144.9044099	308421.436, 6141101.636	89.05	DAD_01	3.88
WTG5	-34.8574345/ 144.9085793	308809.681, 6140773.327	89.43	DAD_01	3.48
WTG6	-34.8511098/ 144.9174435	309605.563, 6141491.732	89.93	DAD_01	2.76
WTG7	-34.8512933/ 144.9245841	310258.905, 6141484.929	90.13	DAD_01	2.13
WTG8	-34.8555458/ 144.9298954	310754.299, 6141023.289	90.08	DAD_01	1.54
WTG9	-34.860395/ 144.9320935	310966.382, 6140489.573	90.37	DAD_01	1.37
WTG10	-34.8634589/ 144.9361548	311344.693, 6140157.378	90.38	DAD_01	1.17
WTG11	-34.8650205/ 144.9420793	311889.888, 6139995.306	90.78	DAD_01	0.94
WTG12	-34.8680953/ 144.9462289	312276.243, 6139662.041	90.48	DAD_01	1.19
WTG13	-34.8714356/ 144.9523854	312846.64, 6139303.057	91.08	DAD_01	1.64
WTG14	-34.8538076/ 144.9438476	312026.028, 6141242.344	91.07	DAD_01	0.47
WTG15	-34.8577505/ 144.9543544	312995.64, 6140824.673	92.58	DAD_01	0.71
WTG16	-34.8917898/ 144.9385369	311627.151, 6137019.43	90.31	DAD_01	3.89
WTG17	-34.8973298/ 144.9392462	311704.632, 6136406.267	90.32	AD_02	4.18
WTG18	-34.8979826/ 144.9482187	312526.072, 6136350.702	90.35	AD_02	4.45
WTG19	-34.8990089/ 144.9310688	310961.177, 6136204.614	89.99	AD_02	3.82
WTG20	-34.907472/ 144.9353528	311372.035, 6135273.973	89.90	AD_02	3.00
WTG21	-34.909689/ 144.9424015	312021.156, 6135041.328	90.01	AD_02	3.06
WTG22	-34.9129744/ 144.9462844	312383.428, 6134684.201	90.19	AD_02	2.98

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG23	-34.9139052/ 144.9529204	312991.858, 6134593.377	90.27	AD_02	3.35
WTG24	-34.906474/ 144.954008	313074.381, 6135419.679	90.48	AD_02	3.99
WTG25	-34.9075265/ 144.9608764	313704.363, 6135315.737	90.72	AD_02	4.36
WTG26	-34.9112572/ 144.9653916	314125.352, 6134910.33	90.77	AD_02	4.45
WTG27	-34.9032671/ 144.9738956	314884.414, 6135812.347	90.86	AD_02	5.59
WTG28	-34.8986404/ 144.9827281	315681.175, 6136341.841	91.10	DAD_01	5.64
WTG29	-34.8895524/ 144.9916928	316480.184, 6137366.335	91.12	DAD_01	5.45
WTG30	-34.8840266/ 145.0023598	317442.849, 6137998.746	91.66	AD_01	5.04
WTG31	-34.8870422/ 145.0065561	317833.047, 6137671.902	91.80	AD_01	5.32
WTG32	-34.8900679/ 145.0108108	318228.578, 6137344.031	91.84	AD_01	5.64
WTG33	-34.8900956/ 145.017556	318845.106, 6137353.19	92.37	AD_01	5.67
WTG34	-34.8925515/ 145.024661	319499.818, 6137093.613	92.42	AD_01	6.04
WTG35	-34.8867479/ 144.9713894	314618.273, 6137639.995	90.72	DAD_01	3.97
WTG36	-34.872918/ 144.9688363	314353.816, 6139169.253	91.44	DAD_01	2.66
WTG37	-34.878859/ 144.9782013	315223.195, 6138527.61	91.21	DAD_01	3.74
WTG38	-34.8821726/ 144.9828228	315653.029, 6138168.587	90.94	DAD_01	4.30
WTG39	-34.8714199/ 144.9831067	315654.962, 6139361.775	91.38	DAD_01	3.68
WTG40	-34.8593997/ 144.9930707	316539.106, 6140713.327	91.92	AD_01	2.79
WTG41	-34.869433/ 145.0085129	317973.055, 6139628.63	91.97	AD_01	3.36
WTG42	-34.8723963/ 145.0127254	318364.664, 6139307.594	92.27	AD_01	3.68
WTG43	-34.8754448/ 145.0169417	318756.779, 6138977.103	91.89	AD_01	4.05
WTG44	-34.878463/ 145.0212015	319152.776, 6138650.029	92.16	AD_01	4.45
WTG45	-34.8814497/ 145.025412	319544.17, 6138326.35	92.65	AD_01	4.86
WTG46	-34.8844193/ 145.0295978	319933.241, 6138004.504	92.73	AD_01	5.29
WTG47	-34.8874456/ 145.0338072	320324.565, 6137676.403	92.82	AD_01	5.73

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG48	-34.8905698/ 145.0381383	320727.202, 6137337.634	92.71	AD_01	6.20
WTG49	-34.8935093/ 145.0422763	321111.749, 6137019.005	91.77	AD_01	6.66
WTG50	-34.8672111/ 145.0223072	319229.211, 6139900.053	92.23	AD_01	3.26
WTG51	-34.8697824/ 145.0268245	319647.783, 6139622.996	92.16	AD_01	3.68
WTG52	-34.8730702/ 145.0309676	320033.691, 6139265.771	92.19	AD_01	4.16
WTG53	-34.8759591/ 145.0351153	320419.129, 6138952.79	92.31	AD_01	4.62
WTG54	-34.8783621/ 145.0403572	320903.489, 6138695.653	92.62	AD_01	5.09
WTG55	-34.8829003/ 145.0446939	321309.712, 6138200.038	92.86	AD_01	5.73
WTG56	-34.8617985/ 145.0323678	320137.131, 6140518.513	92.47	AD_01	3.16
WTG57	-34.8648129/ 145.0365981	320530.432, 6140191.746	92.45	AD_01	3.66
WTG58	-34.8679736/ 145.0414752	320983.155, 6139849.906	92.48	AD_01	4.22
WTG59	-34.8710239/ 145.046489	321448.099, 6139520.529	92.72	AD_01	4.78
WTG60	-34.8566409/ 145.0424113	321044.168, 6141108.552	92.92	AD_01	3.44
WTG61	-34.8593067/ 145.0488801	321641.369, 6140824.406	92.97	AD_01	4.10
WTG62	-34.8464733/ 145.0434906	321120.832, 6142238.238	92.71	AD_01	3.06
WTG63	-34.849403/ 145.0476096	321503.804, 6141920.623	92.71	AD_01	3.51
WTG64	-34.8522162/ 145.0518351	321896.237, 6141616.113	92.54	AD_01	3.98
WTG65	-34.837379/ 145.0406042	320837.191, 6143241.779	92.87	AD_01	2.69
WTG66	-34.837505/ 145.048291	321540.421, 6143241.514	93.12	AD_01	3.39
WTG67	-34.84272/ 145.0569154	322340.331, 6142678.415	93.14	AD_01	4.19
WTG68	-34.8300127/ 145.0445814	321184.967, 6144065.925	93.20	AD_01	3.21
WTG69	-34.8287478/ 145.0524023	321897.529, 6144220.141	93.29	AD_01	3.94
WTG70	-34.8310216/ 145.0572988	322350.256, 6143976.629	93.27	AD_01	4.31
WTG71	-34.8349164/ 145.0620816	322796.025, 6143553.096	93.19	AD_01	4.67
WTG72	-34.8455328/ 145.08071	324522.179, 6142408.348	92.78	AD_01	6.39

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG73	-34.847907/ 145.0866715	325072.329, 6142155.435	93.48	NAD_02	6.61
WTG74	-34.8315602/ 145.0706701	323574.299, 6143940.495	93.43	AD_01	5.50
WTG75	-34.8327425/ 145.0768938	324146.011, 6143820.297	93.61	AD_01	6.05
WTG76	-34.8340391/ 145.0830917	324715.588, 6143687.339	93.40	NAD_02	6.48
WTG77	-34.8370795/ 145.0872303	325100.512, 6143357.34	93.50	NAD_02	6.18
WTG78	-34.8401493/ 145.0914575	325493.569, 6143024.221	93.26	NAD_02	5.90
WTG79	-34.8432177/ 145.0957145	325889.322, 6142691.294	92.84	NAD_02	5.65
WTG80	-34.8454317/ 145.1006531	326345.576, 6142454.295	91.88	NAD_02	5.34
WTG81	-34.8499/ 145.1047887	326733.113, 6141965.847	94.19	NAD_02	5.26
WTG82	-34.8490341/ 145.1114423	327339.671, 6142073.375	94.16	NAD_02	4.70
WTG83	-34.8380194 /145.1087749	327072.727, 6143290.47	94.06	NAD_02	4.33
WTG84	-34.8394058/ 145.1161598	327750.961, 6143149.411	94.37	NAD_02	3.77
WTG85	-34.8426034/ 145.1201808	328125.311, 6142801.654	94.39	NAD_02	3.63
WTG86	-34.8456721/ 145.1243396	328511.974, 6142468.414	94.47	NAD_02	3.55
WTG87	-34.8487946/ 145.1283965	328889.403, 6142129.019	94.76	NAD_02	3.55
WTG88	-34.8117841/ 145.029729	319786.868, 6146061.178	94.00	AD_01	3.48
WTG89	-34.8146854/ 145.0336405	320150.996, 6145746.398	93.54	AD_01	3.41
WTG90	-34.81758/ 145.037474	320507.949, 6145432.204	93.36	AD_01	3.39
WTG91	-34.8131896/ 145.0459523	321274.001, 6145934.307	93.69	AD_01	4.29
WTG92	-34.8143714/ 145.0559728	322193.181, 6145821.041	93.97	AD_01	4.93
WTG93	-34.8174294/ 145.0601682	322583.517, 6145489.289	93.97	AD_01	5.09
WTG94	-34.8204742/ 145.064388	322976.028, 6145159.028	93.87	AD_01	5.29
WTG95	-34.8234369/ 145.0688187	323387.626, 6144838.239	93.78	AD_01	5.55
WTG96	-34.82377/ 145.0776052	324191.995, 6144816.731	93.92	AD_01	6.31
WTG97	-34.8160488/ 145.0847208	324826.47, 6145685.574	94.36	NAD_02	6.30

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG98	-34.819141/ 145.0888966	325214.978, 6145349.89	94.64	NAD_02	5.88
WTG99	-34.8222597/ 145.0929892	325595.904, 6145011.107	94.53	NAD_02	5.49
WTG100	-34.8253339/ 145.0971183	325980.046, 6144677.3	94.34	NAD_02	5.11
WTG101	-34.8284544/ 145.1012466	326364.185, 6144338.347	94.00	NAD_02	4.75
WTG102	-34.8297833/ 145.1074277	326932.285, 6144201.64	94.11	NAD_02	4.21
WTG103	-34.8303055/ 145.1153068	327653.978, 6144157.292	94.26	NAD_02	3.51
WTG104	-34.832204/ 145.1208227	328162.391, 6143956.196	94.52	NAD_02	3.07
WTG105	-34.8174067/ 145.102458	326451.796, 6145565.798	95.20	NAD_02	4.67
WTG106	-34.8189622/ 145.1086838	327024.532, 6145404.024	95.20	NAD_02	4.09
WTG107	-34.8193164/ 145.1154843	327647.31, 6145376.442	96.24	NAD_02	3.46
WTG108	-34.8228441/ 145.1195354	328025.195, 6144992.126	95.41	NAD_02	3.06
WTG132	-34.8943883/ 145.0020386	317436.425, 6136848.864	91.79	AD_01	6.18
WTG133	-34.8973385/ 145.0070896	317904.54, 6136530.837	91.78	AD_01	6.46
WTG134	-34.8960521/ 145.0147452	318601.315, 6136687.411	92.07	AD_01	6.31
WTG135	-34.8999076/ 145.0187303	318973.96, 6136266.992	91.90	AD_01	6.77
WTG136	-34.8993123/ 144.993379	316655.987, 6136286.873	91.43	DAD_01	6.32
WTG137	-34.9016717/ 144.9983245	317113.153, 6136034.224	91.43	DAD_01	6.82
WTG138	-34.9046325/ 145.0029192	317539.57, 6135714.203	91.72	AD_01	7.30
WTG139	-34.9046673/ 145.0100445	318190.733, 6135723.305	91.36	AD_01	7.26
WTG140	-34.9039605/ 144.9845703	315861.404, 6135755.126	90.76	DAD_01	6.22
WTG141	-34.9066035/ 144.9893623	316305.175, 6135470.78	91.56	AD_02	6.61
WTG142	-34.908573/ 144.993862	316720.713, 6135260.582	91.66	AD_02	6.89
WTG143	-34.9086537/ 144.975854	315075.454, 6135218.495	91.09	AD_02	5.41
WTG144	-34.9111888/ 144.9806776	315521.874, 6134946.207	91.17	AD_02	5.67
WTG145	-34.9137707/ 144.9855135	315969.494, 6134668.739	91.38	AD_02	5.97

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG146	-34.9181899/ 144.9879382	316200.888, 6134183.019	91.30	AD_02	6.02
WTG147	-34.9206981/ 144.9927936	316650.068, 6133913.727	91.38	AD_02	6.39
WTG148	-34.9158954/ 144.9720129	314740.76, 6134408.148	90.79	AD_02	4.74
WTG149	-34.9184182/ 144.9768352	315187.007, 6134137.238	90.63	AD_02	5.05
WTG150	-34.922932/ 144.9792052	315413.647, 6133640.956	91.09	AD_02	5.12
WTG151	-34.925906/ 144.9837763	315837.896, 6133319.508	91.04	AD_02	5.47
WTG152	-34.9290031/ 144.9877795	316210.513, 6132983.349	91.13	AD_02	5.80
WTG153	-34.9176043/ 144.9639628	314009.129, 6134203.664	90.45	AD_02	3.99
WTG154	-34.9233098/ 144.9682102	314410.033, 6133578.701	90.50	AD_02	4.14
WTG156	-34.9277112/ 144.9704486	314624.425, 6133094.652	90.36	AD_02	4.24
WTG157	-34.9304633/ 144.9750018	315046.548, 6132797.83	90.39	AD_02	4.62
WTG158	-34.9336108/ 144.9790965	315427.646, 6132456.278	90.18	AD_02	4.99
WTG159	-34.9363017/ 144.9840437	315885.565, 6132166.92	90.07	AD_02	5.45
WTG160	-34.9394827/ 144.9880491	316258.524, 6131821.459	90.10	AD_02	5.85
WTG161	-34.9406742/ 144.9955362	316945.031, 6131703.026	90.80	AD_02	6.55
WTG162	-34.933255/ 145.0230297	319439.926, 6132575.944	91.70	AD_02	9.00
WTG163	-34.9312026/ 145.0311801	320179.94, 6132818.273	92.36	NAD_06	9.01
WTG164	-34.9269784/ 145.0398743	320964.944, 6133302.413	91.74	NAD_06	8.94
WTG165	-34.9343351/ 145.0353299	320565.835, 6132478.279	92.54	NAD_06	8.51
WTG166	-34.9391939/ 145.0372343	320750.365, 6131942.764	92.40	NAD_06	7.97
WTG167	-34.9415341/ 145.0285085	319958.487, 6131667.52	91.97	NAD_06	8.30
WTG168	-34.9383887/ 145.0244631	319582.107, 6132009.105	91.96	NAD_06	8.81
WTG169	-34.9389889/ 145.0145033	318673.714, 6131924.519	91.45	AD_02	8.25
WTG170	-34.9458019/ 145.0187711	319078.498, 6131176.563	91.56	NAD_06	8.63
WTG171	-34.9461638/ 145.0114267	318408.532, 6131123.109	91.00	AD_02	8.08

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG172	-34.9457686/ 145.0047711	317799.799, 6131154.838	91.17	AD_02	7.47
WTG173	-34.9489612/ 145.0228849	319461.143, 6130833.584	92.00	NAD_06	8.12
WTG174	-34.951103/ 145.0282193	319953.003, 6130605.642	92.23	NAD_06	7.59
WTG175	-34.9541151/ 145.0325956	320359.242, 6130279.414	92.69	NAD_06	7.07
WTG176	-34.9236444/ 144.9607101	313725.607, 6133527.654	90.19	AD_02	3.47
WTG177	-34.9306848/ 144.9619115	313851.273, 6132748.974	90.00	AD_02	3.43
WTG178	-34.9350793/ 144.9662163	314254.415, 6132269.542	89.72	AD_02	3.82
WTG179	-34.9385007/ 144.9700221	314609.754, 6131897.1	89.48	AD_02	4.20
WTG180	-34.9409038/ 144.9751104	315079.915, 6131639.978	89.71	AD_02	4.71
WTG181	-34.9430579/ 144.9820622	315719.697, 6131413.878	90.25	AD_02	5.38
WTG182	-34.9461204/ 144.9868092	316160.096, 6131082.93	90.21	AD_02	5.88
WTG183	-34.9484477/ 144.9919988	316639.252, 6130834.32	90.24	AD_02	6.40
WTG184	-34.9515423/ 144.9963614	317044.559, 6130499.063	90.34	AD_02	6.88
WTG185	-34.9526199/ 145.0038426	317730.17, 6130393.208	90.73	AD_02	7.57
WTG186	-34.9531778/ 145.0140287	318661.622, 6130349.848	91.27	AD_02	8.48
WTG187	-34.9557103/ 145.0188629	319108.662, 6130077.712	91.62	NAD_06	7.97
WTG188	-34.9585554/ 145.0238538	319570.666, 6129771.153	91.89	NAD_06	7.41
WTG189	-34.9614442/ 145.0283303	319985.765, 6129458.807	92.17	NAD_06	6.90
WTG190	-34.9644579/ 145.0326935	320390.762, 6129132.391	92.42	NAD_06	6.38
WTG191	-34.9574821/ 145.0053711	317880.513, 6129856.68	91.19	AD_02	7.87
WTG192	-34.9603204/ 145.0102052	318328.22, 6129550.662	91.39	NAD_06	8.39
WTG193	-34.9637363/ 145.0147425	318750.068, 6129180.009	91.77	NAD_06	7.85
WTG194	-34.9663151/ 145.0194109	319182.012, 6128902.436	92.00	NAD_06	7.34
WTG195	-34.9692476/ 145.0237925	319588.519, 6128585.089	92.21	NAD_06	6.84
WTG196	-34.9722892/ 145.0283317	320009.625, 6128255.906	92.14	NAD_06	6.32

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG197	-34.976482/ 145.0312316	320283.553, 6127796.067	92.09	NAD_06	5.90
WTG198	-34.9265815/ 144.9514328	312884.731, 6133184.548	89.45	AD_02	2.56
WTG199	-34.9325527/ 144.9487553	312653.713, 6132517.213	89.04	AD_02	2.22
WTG200	-34.935111/ 144.953262	313071.193, 6132241.881	89.24	AD_02	2.64
WTG201	-34.9379672/ 144.9576742	313480.689, 6131933.31	89.26	AD_02	3.08
WTG202	-34.942351/ 144.9613621	313827.457, 6131453.942	89.39	AD_02	3.53
WTG203	-34.945744/ 144.9663808	314293.497, 6131086.928	89.46	AD_02	4.08
WTG204	-34.9501388/ 144.9708819	314714.484, 6130607.811	89.83	AD_02	4.65
WTG205	-34.9506051/ 144.9780625	315371.311, 6130569.369	90.06	AD_02	5.27
WTG206	-34.953053/ 144.9835168	315874.908, 6130307.917	90.22	AD_02	5.83
WTG207	-34.9559298/ 144.9876212	316256.158, 6129996.372	90.37	AD_02	6.30
WTG208	-34.9579106/ 144.9953464	316966.03, 6129790.847	90.70	AD_02	7.04
WTG209	-34.9629775/ 144.9968055	317110.535, 6129231.503	91.28	AD_02	7.40
WTG210	-34.9655372/ 145.0015096	317545.753, 6128956.178	91.53	AD_02	7.91
WTG211	-34.968051/ 145.0061697	317976.826, 6128685.85	91.57	NAD_06	8.37
WTG212	-34.9711857/ 145.0101839	318350.271, 6128345.463	91.80	NAD_06	7.90
WTG213	-34.9738748/ 145.0150471	318800.219, 6128056.022	91.71	NAD_06	7.38
WTG214	-34.976614/ 145.0195417	319216.596, 6127760.331	91.96	NAD_06	6.90
WTG215	-34.9805672/ 145.0226071	319505.135, 6127327.386	91.79	NAD_06	6.51
WTG216	-34.9427193/ 144.9489616	312695.686, 6131389.926	88.60	AD_02	2.48
WTG217	-34.9461813/ 144.9527751	313051.856, 6131013.065	88.77	AD_02	2.97
WTG218	-34.9495462/ 144.95766	313505.625, 6130648.948	88.96	AD_02	3.54
WTG219	-34.953081/ 144.9614336	313858.255, 6130263.908	89.37	AD_02	4.05
WTG220	-34.9574289/ 144.9645672	314154.247, 6129787.472	89.83	AD_02	4.56
WTG221	-34.9578007/ 144.9715255	314790.507, 6129759.146	89.98	AD_02	5.10

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG222	-34.9582619/ 144.9769532	315287.192, 6129718.037	90.07	AD_02	5.55
WTG224	-34.9507112/ 144.9439824	312259.137, 6130494.127	88.52	AD_02	2.65
WTG225	-34.9533645/ 144.9487614	312701.626, 6130208.789	88.73	AD_02	3.17
WTG226	-34.9570014/ 144.9525761	313058.261, 6129812.521	88.66	AD_02	3.70
WTG227	-34.9608581/ 144.9559466	313374.801, 6129391.036	88.89	AD_02	4.22
WTG228	-34.9686025/ 144.9615961	313908.207, 6128542.569	89.18	AD_02	5.21
WTG230	-34.9698858/ 144.9709981	314769.567, 6128417.696	90.61	AD_02	5.90
WTG231	-34.9504095/ 144.9128038	309410.99, 6130468.585	88.83	AD_02	2.21
WTG232	-34.9575907/ 144.9096446	309139.124, 6129666.011	89.01	AD_02	3.05
WTG233	-34.9547366/ 144.9182001	309913.816, 6129998.896	89.07	AD_02	2.48
WTG234	-34.957388/ 144.9228917	310348.377, 6129713.71	88.98	AD_02	2.71
WTG235	-34.9730702/ 144.9627045	314019.515, 6128049.079	90.07	NAD_14	5.44
WTG236	-34.9762774/ 144.9668389	314404.231, 6127701.02	90.23	NAD_14	5.73
WTG237	-34.9794081/ 144.970983	314789.631, 6127361.453	89.92	NAD_14	6.05
WTG238	-34.9718393/ 144.9758518	315217.115, 6128210.004	90.77	AD_02	6.37
WTG239	-34.9709302/ 144.983466	315910.276, 6128324.893	90.97	AD_02	6.84
WTG240	-34.9705377/ 144.9908063	316579.595, 6128381.928	91.34	AD_02	7.35
WTG241	-34.9731063/ 144.9954776	317011.818, 6128105.593	91.42	AD_02	7.87
WTG242	-34.9811766/ 145.010801	318428.677, 6127238.397	90.98	NAD_06	7.54
WTG243	-34.9851292/ 145.0139049	318720.753, 6126805.623	90.95	NAD_06	7.18
WTG244	-34.9883255/ 145.0179383	319095.986, 6126458.398	91.17	NAD_06	6.77
WTG246	-34.9837526/ 145.0266735	319883.344, 6126981.413	91.32	NAD_06	6.06
WTG247	-34.9883713/ 145.0288635	320093.375, 6126473.062	91.31	NAD_06	5.78
WTG248	-34.984512/ 144.979001	315533.081, 6126810.168	89.76	NAD_14	6.75
WTG249	-34.9781871/ 144.9794583	315560.637, 6127512.566	90.20	NAD_14	6.84

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
WTG250	-34.9778661/ 144.9867856	316228.868, 6127561.681	90.55	NAD_14	7.51
WTG251	-34.9805675/ 144.9912922	316646.326, 6127270.319	90.52	NAD_14	7.89
WTG252	-34.9834122/ 144.9959591	317078.709, 6126963.347	90.35	NAD_14	8.30
WTG253	-34.9929562/ 145.0201362	319306.799, 6125948.748	91.12	NAD_06	6.52
WTG254	-34.9956457/ 145.0247532	319734.131, 6125658.782	91.04	NAD_06	6.10
WTG255	-34.9998082/ 145.0275438	319997.963, 6125202.114	91.52	NAD_06	5.86
WTG256	-34.9885861/ 145.0052778	317940.867, 6126406.488	90.70	NAD_06	7.91
WTG257	-34.9925529/ 145.0092106	318308.636, 6125973.664	90.99	NAD_06	7.52
WTG258	-34.9972692/ 145.0112986	318509.644, 6125454.325	91.37	NAD_06	7.33
WTG259	-35.000203/ 145.0157706	318924.286, 6125137.039	91.68	NAD_06	6.94
WTG260	-35.0070232/ 145.0210436	319420.548, 6124390.09	91.94	NAD_06	6.56
WTG261	-35.0101531/ 145.0252043	319807.132, 6124050.444	91.99	NAD_06	6.27
WTG262	-34.989968/ 144.9882102	316385.963, 6126221.966	89.96	NAD_14	7.60
WTG263	-34.9912611/ 144.994212	316936.7, 6126089.551	90.37	NAD_14	8.16
WTG264	-34.9951724/ 144.9974247	317238.657, 6125661.594	90.29	NAD_25	8.04
WTG265	-34.9988218/ 145.0009842	317571.658, 6125263.319	90.76	NAD_25	7.86
WTG266	-35.0036406/ 145.0028419	317751.905, 6124732.217	90.64	NAD_25	7.51
WTG267	-35.0053125/ 145.0086276	318283.649, 6124557.315	91.74	NAD_06	7.65
WTG268	-35.0118442/ 145.0120729	318612.514, 6123839.092	91.59	NAD_25	7.36
WTG269	-34.9973166/ 144.9842524	316041.138, 6125399.57	89.28	NAD_25	7.31
WTG270	-35.0002485/ 144.9887141	316454.926, 6125082.575	89.43	NAD_25	7.18
WTG271	-35.0026071/ 144.9927553	316829.033, 6124828.387	89.62	NAD_25	7.11
WTG272	-35.0087155/ 144.9941497	316969.905, 6124153.397	89.46	NAD_25	6.59
WTG273	-35.0056657/ 144.9800872	315679.698, 6124465.81	89.12	NAD_25	6.31
WTG274	-35.0094475/ 144.9835525	316004.43, 6124052.726	89.19	NAD_25	6.05
Infrastructure					

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
BESS	-34.8289933/ 145.0948988	325784.756, 6144267.572	94.03	NAD_02	5.34
Collector Substation	-34.8282287/ 145.0910835	325434.1984, 6144345.736	93.91	NAD_02	5.68
O&M	-34.8308074/ 145.1303975	329035.1716, 6144127.463	95.24	NAD_02	2.19
Satellite O&M	-34.9352887/ 144.9473411	312530.7601, 6132211.085	89.25	AD_02	2.10
Substation 1	-34.9051755/ 144.939571	311752.222, 6135536.635	89.95	AD_02	3.38
Substation 2	-34.982962/ 144.9754303	315203.6327, 6126975.492	89.90	NAD_14	6.43
Substation 3	-34.962983/ 145.0060649	317956.0426, 6129247.796	91.45	AD_02	8.16
Substation 4	-34.8957896/ 145.0278425	319797.6527, 6136740.193	92.58	AD_01	6.46
Switching Station	-34.8285629/ 145.0873299	325091.6012, 6144302.132	93.59	NAD_02	6.02
Temporary Accommodation Facilities	-34.8266461/ 145.1238292	328425.821, 6144577.795	95.22	NAD_02	2.68
Temporary Construction Compound	-34.8305294/ 145.1274641	328766.3095, 6144153.294	95.00	NAD_02	2.44
Temporary Construction, Batching and Laydown 1	-34.8274097/ 145.113726	327503.3698, 6144475.762	94.84	NAD_02	3.61
Temporary Construction, Batching and Laydown 10	-34.9363131/ 144.9496407	312743.1431, 6132101.768	89.21	AD_02	2.33
Temporary Construction, Batching and Laydown 11	-34.9413993/ 144.9709673	314702.6124, 6131577.34	89.47	AD_02	4.35
Temporary Construction, Batching and Laydown 12	-34.8954129/ 145.0266535	319688.169, 6136779.833	92.50	AD_01	6.39
Temporary Construction, Batching and Laydown 13	-34.9186841/ 144.9917518	316550.4134, 6134135.209	91.26	AD_02	6.35
Temporary Construction, Batching and Laydown 2	-34.8331237/ 145.0511049	321788.303, 6143732.483	93.16	AD_01	3.71
Temporary Construction, Batching and Laydown 3	-34.8394539/ 145.0821746	324643.2056, 6143085.148	93.18	AD_01	6.49

ID	Latitude / Longitude	MGA Coordinates (GDA2020 / MGA zone 55)	Maximum AHD	Closest Receiver	Distance to Receiver (km)
Temporary Construction, Batching and Laydown 4	-34.899437/ 144.9814193	315563.3566, 6136251.071	91.08	DAD_01	5.64506642
Temporary Construction, Batching and Laydown 5	-34.9066568/ 144.9382655	311636.3157, 6135369.877	89.87	AD_02	3.18
Temporary Construction, Batching and Laydown 6	-34.8637631/ 145.0367311	320540.3089, 6140308.431	92.49	AD_01	3.58
Temporary Construction, Batching and Laydown 7	-34.8657615/ 144.9373481	311459.049, 6139904.229	89.94	DAD_01	1.26
Temporary Construction, Batching and Laydown 8	- 34.983953/ 144.9749458	315161.6341, 6126864.673	89.81	NAD_14	6.38
Temporary Construction, Batching and Laydown 9	-34.9636849/ 145.0080404	318137.9836, 6129173.537	91.39	AD_02	8.36
Water Tank 1	-34.836225/ 145.008973	317941.9461, 6143312.792	92.86	AD_01	0.39
Water Tank 2	-34.936888/ 144.9176145	309819.1097, 6131977.562	89.71	AD_02	0.76
Water Tank 3	-35.0113932/ 144.9915269	316736.5247, 6123851.574	89.81	NAD_25	6.22
Water Tank 4	-34.8497607/ 144.9410297	311759.1588, 6141685.93	90.85	DAD_01	0.99
Water Tank 5	-34.821601/ 145.1286637	328857.5481, 6145145.625	96.34	NAD_02	2.24

Appendix F
Schedule of Lands and Restrictions and Covenants

SCHEDULE OF LANDS

Table F1 Lot / DPs to which applies to Host Landowner 1

Lot	DP	Lot	DP
1	DP1081067	11	DP756315
2	DP1081067	12	DP756315
2	DP116080	13	DP756315
3	DP116080	16	DP756315
4	DP116080	17	DP756315
5	DP116080	18	DP756315
1	DP134988	19	DP756315
2	DP134988	20	DP756315
3	DP134988	21	DP756315
4	DP134988	22	DP756315
5	DP134988	23	DP756315
6	DP134988	24	DP756315
7	DP134988	25	DP756315
1	DP134991	27	DP756315
42	DP591554*	28	DP756315
1	DP756282	29	DP756315
10	DP756282	30	DP756315
11	DP756282	31	DP756315
12	DP756282	32	DP756315
13	DP756282	33	DP756315
14	DP756282	35	DP756315
15	DP756282	36	DP756315
16	DP756282	37	DP756315
17	DP756282	40	DP756315
2	DP756282	41	DP756315
20	DP756282	42	DP756315
24	DP756282	44	DP756315
25	DP756282	47	DP756315
26	DP756282	48	DP756315
3	DP756282	5	DP756315
32	DP756282	51	DP756315
33	DP756282	52	DP756315
34	DP756282	53	DP756315
35	DP756282	54	DP756315
36	DP756282	55	DP756315
37	DP756282	6	DP756315
38	DP756282	7	DP756315
4	DP756282	8	DP756315

Lot	DP	Lot	DP
44	DP756282	9	DP756315
45	DP756282	107	DP756809*
46	DP756282	108	DP756809*
47	DP756282	109	DP756809
48	DP756282	51	DP756809
49	DP756282	52	DP756809
5	DP756282	53	DP756809
50	DP756282	60	DP756809
54	DP756282	61	DP756809
6	DP756282	62	DP756809
7	DP756282	84	DP756809
8	DP756282	88	DP756809
9	DP756282	90	DP756809
10	DP756315	91	DP756809

** Indicates lots shared between wind and solar projects.*

Table F2 Lot / DPs which applies to the Host Landowner 2

Lot	DP	Lot	DP
1	DP133866	18	DP756343
1	DP133901	19	DP756343
2	DP133901	2	DP756343
221	DP133992	20	DP756343
222	DP133992	21	DP756343
151	DP133993	22	DP756343
152	DP133993	23	DP756343
18	DP756282	24	DP756343
19	DP756282	25	DP756343
23	DP756282	26	DP756343
27	DP756282	27	DP756343
28	DP756282	28	DP756343
29	DP756282	29	DP756343
30	DP756282	3	DP756343
31	DP756282	30	DP756343
39	DP756282	31	DP756343
40	DP756282	32	DP756343
41	DP756282	33	DP756343
42	DP756282	34	DP756343
43	DP756282	35	DP756343
53	DP756282	36	DP756343
1	DP756338	37	DP756343
12	DP756338	38	DP756343
17	DP756338	39	DP756343

Lot	DP	Lot	DP
18	DP756338	4	DP756343
19	DP756338	40	DP756343
2	DP756338	41	DP756343
21	DP756338	42	DP756343
3	DP756338	43	DP756343
34	DP756338	44	DP756343
35	DP756338	45	DP756343
36	DP756338	46	DP756343
42	DP756338	47	DP756343
45	DP756338	48	DP756343
48	DP756338	49	DP756343
51	DP756338	5	DP756343
52	DP756338	50	DP756343
1	DP756343	51	DP756343
10	DP756343	52	DP756343
11	DP756343	53	DP756343
12	DP756343	54	DP756343
13	DP756343	55	DP756343
14	DP756343	6	DP756343
15	DP756343	7	DP756343
16	DP756343	8	DP756343
17	DP756343	9	DP756343

Table F3 Lot / DPs to which apply to the BESS

Lot	DP
42	DP591554*

**Note this land is also listed within Landowner 1*

Table F4 NSW Lot / DPs to which the Application applies (Transport Route)

Lot	DP	Lot	DP
12	DP1041961	**5**	DP756338
4	DP1091853	**15**	DP756745
2	DP1137659	**4**	DP756745
7301	DP1149704	**8**	DP756745
7304	DP1149704	**5652**	DP757298
7313	DP1157457	**5653**	DP757298
7307	DP1179131	**5654**	DP757298
7400	DP1179151	**5655**	DP757298
7401	DP1179151	**5656**	DP757298
7301	DP1181196	**5657**	DP757298

Lot	DP	Lot	DP
7313	DP1185108	**5658**	DP757298
7320	DP1185108	**5834**	DP757298
301	DP1242250	**6667**	DP822054
302	DP1242250	**4 (10)**	DP758138
100	DP1283323	**7303**	DP1149704
1	DP456901	**31**	DP756343
2	DP456901	**42**	DP591554
2	DP510038		
41	DP591554		
7 (10)	DP758138		

Table F5 SA Parcel/Plans to which the Application applies (Transport Route)

Parcel	Plan	Plan	Parcel
A1	D117947	A75	D89521
Q3	D117947	A601	D94164
Q4	D117947	A602	D94164
A1	D25905	Q98	F199946
A501	D59781	A100	F206504
A101	D69560	A101	F206504
A3	D73873	A98	F206504
A78	D82497	A99	F206504

RESTRICTIONS AND COVENANTS

Table F6 Project Restrictions and Covenants

Lot	Restriction/Covenant	Crown Road
Landowner 1		
1//DP1081067	Reservations and conditions in the crown grant(s)	N/A
2//DP1081067	Reservations and conditions in the crown grant(s)	N/A
2//DP116080	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
3//DP116080	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
4//DP116080	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
5//DP116080	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
1//DP134988	Reservations and Conditions in the Crown Grant(s) Land excludes minerals	Crown Roads perpendicular to either end of lot
2//DP134988	Reservations and Conditions in the Crown Grant(s) Land excludes minerals	Crown Roads perpendicular to either end of lot
3//DP134988	Reservations and Conditions in the Crown Grant(s) Land excludes minerals	Crown Road at end of lot between 38//DP756282 and 4//DP756282
4//DP134988	Reservations and Conditions in the Crown Grant(s) Land excludes minerals	Crown Roads between lot and 152//DP133993 and 12,15//DP756282
5//DP134988	Reservations and Conditions in the Crown Grant(s) Land excludes minerals	Crown Road between lot and 54//DP756282
6//DP134988	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 222//DP133992
7//DP134988	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 221//DP133992
1//DP134991	Reservations and conditions in the crown grant(s) Land excludes minerals Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	Crown Roads touching either end of lot, roads between 19,30//DP756315 and 25,37//DP756315
42//DP591554	Reservations and Conditions in the Crown Grant(s) Easement for transmission line affecting the easement 50 wide shown in DP640245 Land excludes road shown in DP591554	Crown Roads through centre of lot and between 107-109//DP756809
1//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 38//DP756282
10//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 12,13,34,35//DP756282
11//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 12//DP756282
12//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Roads between lot and 10-11//DP756282 and 4//DP134988

Lot	Restriction/Covenant	Crown Road
13//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Roads between lot and 10,35//DP756282 and 31-32//DP756315
14//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Roads between lot and 16,17//DP756282 and 32//DP756315
15//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Roads between lot and 16,40//DP756282, 152//DP133993 and 4//DP134988
16//DP756282	Reservations and Conditions in the Crown Grant(s) Land excludes lot 1 in DP542495 Property Vegetation Plan (PVP). Expires on 19/6/2019	Crown Road between lot and 39-41//DP756282 and 14,15//DP756282
17//DP756282	Reservations and Conditions in the Crown Grant(s) Land excludes lot 1 in DP542495 PVP. Expires on 19/6/2019	Crown Road between lot and 32,51//DP756315 and 14//DP756282
2//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 44//DP756282
20//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Roads between lot and 41,42//DP756282 and 51//DP756315
24//DP756282	Reservations and conditions in the crown grant(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in DP1104065 expires 24/8/2155 Forestry right (carbon sequestration) to carbon Estate Pty Ltd tree belts shown in dp1104065 expires 24/8/2155	N/A
25//DP756282	Reservations and conditions in the crown grant(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	Crown Road between lot and 27,33//DP756315
26//DP756282	Reservations and conditions in the crown grant(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	Crown Road between lot and 27-29//DP756315
3//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 45//DP756282
32//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Road between lot and 49//DP756282
33//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	N/A
34//DP756282	Reservations and conditions in the crown grant(s)	Crown Road between lot and 10//DP756282
35//DP756282	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 10,13//DP756282 and 29-31//DP756315
36//DP756282	Reservations and conditions in the crown grant(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	Crown Road between lot and 5,8-10//DP756282 and 2//DP134988
37//DP756282	Reservations and conditions in the crown grant(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown	Crown Road between lot and 5//DP756282

Lot	Restriction/Covenant	Crown Road
	in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	
38//DP756282	Reservations and conditions in the crown grant(s) Land excludes the road(s) Forestry right (timber) to Carbon Estate Pty Ltd of tree belts shown in dp1104065 expires 24/8/2155 Forestry right (carbon sequestration) to Carbon Estate Pty Ltd tree belts shown in DP1104065 expires 24/8/2155	Crown Road running through the lot and between the lot and 1,4//DP756282 and 3//DP134988
4//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 38//DP756282
44//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Road between lot and 2//DP756282
45//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Roads between lot and 3,46,47//DP756282
46//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Roads between lot and 6,45//DP756282
47//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Road between lot and 45//DP756282
48//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Roads between lot and 7,54//DP756282
49//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Roads between lot and 32,54//DP756282
5//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 36,37//DP756282
50//DP756282	Reservations and Conditions in the Crown Grant(s)	N/A
54//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Excepting land below a depth from the surface of 20 m	Crown Roads between lot and 48,49//DP756282 and 5//DP134988
6//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 46//DP756282
7//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 48//DP756282
8//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 36//DP756282
9//DP756282	Reservations and Conditions in the Crown Grant(s)	Crown Road between lot and 36//DP756282
10//DP756315	Reservations and conditions in the crown grant(s) Property vegetation plan as in dp756315. Expires on 19/6/2019	Crown Road between lot and 25,37,51//DP756315
11//DP756315	Reservations and conditions in the crown grant(s) Property vegetation plan as in dp756315. Expires on 19/6/2019	Crown Road between lot and 1//DP756338
12//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 55//DP756315
13//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 54//DP756315
16//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A

Lot	Restriction/Covenant	Crown Road
17//DP756315	Reservations and conditions in the crown grant(s)	Crown Road between lot and 27,33//DP756315
18//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 8,19,28//DP756315
19//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 18,28-30//DP756315
20//DP756315	Reservations and conditions in the crown grant(s)	N/A
21//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 48//DP756315
22//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown Land excludes the road(s) within lots	Crown Road between lot and 48//DP756315
23//DP756315	Reservations and conditions in the crown grant(s)	N/A
24//DP756315	Reservations and conditions in the crown grant(s)	N/A
25//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 9,10,37//DP756315
27//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 17//DP756315 and 25,26//DP756282
28//DP756315	Reservations and conditions in the crown grant(s) Land excludes minerals	Crown Roads between lot and 18,19//DP756315 and 26//DP756282
29//DP756315	Reservations and conditions in the crown grant(s) Land excludes minerals	Crown Roads between lot and 19,30//DP756315 and 26,35//DP756282
30//DP756315	Reservations and conditions in the crown grant(s) Land excludes minerals	Crown Roads between lot and 19,29//DP756315 and 35//DP756282
31//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 13,35//DP756282
32//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 13,14,17//DP756282
33//DP756315	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 17//DP756315 and 25//DP756282
35//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 5,6//DP756315
36//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
37//DP756315	Reservations and conditions in the crown grant(s) Property vegetation plan as in DP756315. Expires on 19/6/2019	Crown Roads between lot and 10,25//DP756315
40//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown Land excludes the road(s) within lots	N/A
41//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
42//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
44//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown Land excludes the road(s) within lots	Edge of Crown Road between 12 and 55//DP756315 touching lot
47//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A

Lot	Restriction/Covenant	Crown Road
48//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown Land excludes the road(s) within lots	Crown Road between lot and 21,22//DP756315
5//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 35//DP756315
51//DP756315	Reservations and conditions in the crown grant(s) Land excludes minerals Property vegetation plan as in DP756315. Expires on 19/6/2019	Crown Roads between lot and 10//DP756315, 7//DP134988 and 17,20//DP756282
52//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 53//DP756315
53//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 52//DP756315
54//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 13//DP756315
55//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 12//DP756315
6//DP756315	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between lot and 35//DP756315
7//DP756315	Reservations and conditions in the crown grant(s)	N/A
8//DP756315	Reservations and conditions in the crown grant(s)	Crown Road between lot and 18//DP756315
9//DP756315	Reservations and conditions in the crown grant(s) Property vegetation plan as in DP756315. Expired 19/6/2019	Crown Roads between lot and 25//DP756315 and 2//DP756338
107//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Roads between lot and 106//DP756809 and 42//DP591554
108//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown Easement for transmission line affecting shown in DP640245	Crown Road between 42//DP591554
109//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	Crown Road between 42//DP591554
51//DP756809	Reservations and conditions in the crown grant(s) Easement for transmission line shown in DP640245	N/A
52//DP756809	Reservations and conditions in the crown grant(s) Easement for transmission line shown in DP640245	N/A
53//DP756809	Reservations and conditions in the crown grant(s) Easement for transmission line shown in DP640245	N/A
60//DP756809	Reservations and conditions in the crown grant(s)	N/A
61//DP756809	Reservations and conditions in the crown grant(s)	N/A
62//DP756809	Reservations and conditions in the crown grant(s)	N/A
84//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
88//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
90//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
91//DP756809	Excludes minerals and is subject to reservations and conditions in favour of the crown	N/A
Landowner 2		
1//DP133866	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 13//DP756343

Lot	Restriction/Covenant	Crown Road
1//DP133901	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Conservation agreement (part 5 division 3 Biodiversity Conservation Act 2016) (BC Act)	N/A
2//DP133901	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	N/A
221//DP133992	Reservations and conditions in the crown grant(s)	Crown Road between lot and 7//DP134988
222//DP133992	Reservations and conditions in the crown grant(s)	Crown Road between lot and 6//DP134988
151//DP133993	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Easement for flooding shown as proposed easement to fld in plan with K578539 Easement for access shown as proposed easement for access 25 links wide in plan with K578539 PVP expired 17/6/2019 Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 28-31//DP756282
152//DP133993	Reservations and conditions in the crown grant(s) Easement for flooding shown as proposed easement to fld in plan with K578539 Excludes minerals reserved by the crown grants Easement for drainage shown as proposed easement for channel in plan with K578539 Easement for access shown as proposed easement for access 25 links wide in plan with K578539 Conservation agreement (part 5 division 3 BC Act) PVP expired 17/6/2019	Crown Roads between lot and 28//DP756282 and 4//DP134988
18//DP756282	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 42,43//DP756343
19//DP756282	Reservations and conditions in the crown grant(s)	Crown Road between lot and 43//DP756343
23//DP756282	Reservations and conditions in the crown grant(s)	Crown Road between lot and 33,34//DP756343
27//DP756282	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 41,42/DP756343 and 53//DP756282
28//DP756282	Reservations and conditions in the crown grant(s) Easement for flooding shown as proposed easement to fld in plan with K578539 Easement for drainage shown as proposed easement for channel in plan with K578539 Easement for access shown as proposed easement for access 25 links wide in plan with K578539 PVP expired 17/6/2019 Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 151,152//DP133993 and 53//DP756282

Lot	Restriction/Covenant	Crown Road
29//DP756282	Reservations and conditions in the crown grant(s) Easement for flooding shown as proposed easement to fld in plan with K578539 Easement for drainage shown as proposed easement for channel in plan with K578540 Easement for access shown as proposed easement for access 25 links wide in plan with K578539 PVP expired 17/6/2019 Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 151//DP133993
30//DP756282	Reservations and conditions in the crown grant(s) Easement for flooding shown as proposed easement to fld in plan with K578539 Easement for drainage shown as proposed easement for channell in plan with K578541 Easement for access shown as proposed easement for access 25 links wide in plan with K578539 PVP plan expired 17/6/2019 Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 151//DP133993
31//DP756282	Reservations and conditions in the crown grant(s) Easement for drainage shown as proposed easement for channel in plan with K578539 PVP expired 17/6/2019 Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 151//DP133993
39//DP756282	Easement the nature of this easement is not stated shown on K507738	Crown Road between lot and 16//DP756282
40//DP756282	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 15,16//DP756282
41//DP756282	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 16,20//DP756282
42//DP756282	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 20//DP756282
43//DP756282	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 34//DP756343
53//DP756282	Excludes minerals and is subject to reservations and conditions in favour of the crown Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 34,41,55//DP756343 and 27,28//DP756282
1//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 11//DP756315
12//DP756338	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	N/A
17//DP756338	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 3//DP756338
18//DP756338	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 42//DP756338 and 37//DP756343
19//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 3,51//DP756338
2//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 9//DP756315
21//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	N/A

Lot	Restriction/Covenant	Crown Road
3//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 17,19,51//DP756338
34//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 221//DP133992
35//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 45,48,52//DP756338
36//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 52//DP756338
42//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 18//DP756338
45//DP756338	Reservations and conditions in the crown grant(s)	Crown Road between lot and 35,52//DP756338
48//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 35//DP756338
51//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 19//DP756338
52//DP756338	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Roads between lot and 35,36,45//DP756338
1//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 17,39,40//DP756343
10//DP756343	Reservations and conditions in the crown grant(s)	N/A
11//DP756343	Reservations and conditions in the crown grant(s) Property vegetation plan expiry date: 24/6/2024	Crown Road between lot and 55//DP756343
12//DP756343	Reservations and conditions in the crown grant(s) Property vegetation plan expiry date: 24/6/2024	Crown Road between lot and 47,55//DP756343
13//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 6,9,23//DP756343 and 1//DP133866
14//DP756343	Reservations and conditions in the crown grant(s) Property vegetation plan expiry date: 24/6/2024	Crown Roads between lot and 6,7//DP756343
15//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 23-25//DP756343
16//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 19//DP756343
17//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 1,19//DP756343
18//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 2,8,20//DP756343
19//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 16,17,28//DP756343
2//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 4,18//DP756343

Lot	Restriction/Covenant	Crown Road
20//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 8,18,21//DP756343
21//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 8,20//DP756343
22//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 9//DP756343
23//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 13,15//DP756343
24//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 15,25//DP756343
25//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 15,24,52//DP756343
26//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 52,53//DP756343
27//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 53,54//DP756343
28//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 19,29//DP756343
29//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 28,30//DP756343
3//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 4//DP756343
30//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 29//DP756343
31//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 32//DP756343
32//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 31//DP756343
33//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 221,222//DP133992 and 23//DP756282
34//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Roads between lot and 23,43,53//DP756282 and 55//DP756343
35//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Roads between lot and 55//DP756343
36//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 38,55//DP756343
37//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 38//DP756343 and 18//DP756338
38//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 1,36,37//DP756343
39//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 1//DP756343
4//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 2,3,8//DP756343

Lot	Restriction/Covenant	Crown Road
40//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Conservation agreement (part 5 division 3 BC Act)	Crown Road between lot and 1//DP756343
41//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Roads between lot and 27,53//DP756282
42//DP756343	Reservations and conditions in the crown grant(s)	Crown Road between lot and 27,18//DP756282
43//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants	Crown Road between lot and 18,19//DP756282
44//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants PVP expiry date: 24/6/2024	Crown Road between lot and 47//DP756343
45//DP756343	Reservations and conditions in the crown grant(s) PVP expiry date: 24/6/2024	Crown Road between lot and 47,48//DP756343
46//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants PVP expiry date: 24/6/2024	Crown Road between lot and 48//DP756343
47//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants PVP expiry date: 24/6/2024	Crown Road between lot and 12,44,45//DP756343
48//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants PVP expiry date: 24/6/2024	Crown Road between lot and 45,46//DP756343
49//DP756343	Reservations and conditions in the crown grant(s) PVP expiry date: 24/6/2024	Crown Road between lot and 14,52//DP756343
5//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 6,9//DP756343
50//DP756343	Reservations and conditions in the crown grant(s) PVP expiry date: 24/6/2024	Crown Road between lot and 52,53//DP756343
51//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants PVP expiry date: 24/6/2024	Crown Road between lot and 53,54//DP756343
52//DP756343	Reservations and conditions in the crown grant(s) Property vegetation plan expiry date: 24/6/2024	Crown Roads between lot and 25,26,49,50//DP756343
53//DP756343	Reservations and conditions in the crown grant(s) Property vegetation plan expiry date: 24/6/2024	Crown Roads between lot and 26,27,50,51//DP756343
54//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Property vegetation plan expiry date: 24/6/2024	Crown Roads between lot and 27,51//DP756343
55//DP756343	Reservations and conditions in the crown grant(s) Excludes minerals reserved by the crown grants Land excludes the road(s) shown in the title diagram Property vegetation plan expiry date: 24/6/2024	Crown Roads through lot and between lot and 11,12,34-36//DP756343 and 53//DP756282
6//DP756343	Reservations and conditions in the crown grant(s) PVP expiry date: 24/6/2024	Crown Roads between lot and 5,13,14//DP756343
7//DP756343	Reservations and conditions in the crown grant(s) PVP expiry date: 24/6/2024	Crown Road between lot and 14//DP756343

Lot	Restriction/Covenant	Crown Road
8//DP756343	Reservations and conditions in the crown grant(s) Conservation agreement (part 5 division 3 BC Act)	Crown Roads between lot and 4,18,21//DP756343
9//DP756343	Reservations and conditions in the crown grant(s)	Crown Roads between lot and 5,13,22//DP756343

Appendix G
Mitigation and Management Summary

MANAGEMENT AND MITIGATION SUMMARY

Table E1 contains a summary of all specific management and mitigation measures from the EIS that the Applicant commits to. Each is based on specialist recommendations to minimise and avoid environmental impacts and enhance benefits from construction, operation and decommissioning of the Project.

Table E1 Management and Mitigation Summary

Ref.	Project Aspect	Management or Mitigation Measure	Section
1.	Project Description	Construct, operate, maintain and decommission the Project generally in accordance with the Project Description	**3**
2.	Project Description	Implement external site accesses and road upgrades as stated and in consideration of known cumulative impacts at the time of construction	**3.4.4**
3.	Project Description	Prepare a Local Housing and Accommodation Strategy during the detailed design phase in consideration of the known cumulative impacts at the time of construction	**3.5.3**
4.	Project Description	Prepare a Decommissioning and Rehabilitation Plan no less than five years prior to decommissioning	**3.7**
5.	Project Description	Implement the Voluntary Planning Agreement (VPA) and Benefit Sharing Plan (BSP)	**3.9**
6.	Project Description	Maintain and utilise an Environmental Management Strategy (EMS)	**3.10**
7.	Project Description	The EMS shall include at least a Construction Environmental Management Plan (CEMP), Operational Environmental Management Pan (OEMP) and other documentation as stated in this Table or required by relevant legislation	**3.10**
8.	Project Description	The EMS shall include training relevant to all personnel's job description on the commitments in this Table	**3.10**
9.	Statutory Context	Ensure legislative requirements in relation to the known restrictions and covenants are met	**4**
10.	Statutory Context	Seek other approvals as stipulated in **Table 4–1**	**4**
11.	Statutory Context	Seek relevant approvals from relevant South Australian regulators in relation to Port to Site access	**4**
12.	Stakeholder Engagement	Implement the future Engagement Action Plan in **Table 5–7** which will be amended from time to time.	**5**
13.	Noise	Prepare and implement a Noise Management Plan (NMP) in consultation with relevant regulators which is inclusive of the Project's noise mitigation measures	**6.2**
14.	Landscape and Visual	Prepare and implement a Landscape and Visual Management Plan incorporating design, night lighting, glint and glare measures	**6.3**
15.	Biodiversity	Prepare and implement a BBAMP and Biodiversity Management Plan (BMP) in consultation with relevant regulators	**6.4**
16.	Biodiversity	The BMP shall incorporate the general mitigative actions in **Table 6–29.** and prescribed impact mitigative actions in **Table 6.21**	**6.4**
17.	Biodiversity	A Biodiversity Offset Strategy (BOS) shall be implemented in accordance with the ecosystem credits stipulated in **Table 6–30** and species credits in **Table 6–32** The credits may be revised for the Development Consent or during detailed design in consultation with relevant regulators.	**6.4**
18.	Aboriginal Heritage	• Aboriginal Cultural Heritage Management Plan (ACHMP) incorporating the EIS management and mitigation measures shall be prepared and utilised • The ACHMP will be prepared in consultation with registered Aboriginal Parties (RAPs) and relevant regulators	**6.5**

Ref.	Project Aspect	Management or Mitigation Measure	Section
19.	Historic Heritage	A Historic Heritage Unanticipated Finds Protocol (HHUFP) will be prepared and implemented	**6.6**
20.	Soils	Soil mitigation measures will be undertaken during construction phase and form part of the CEMP: • Prepare a site-specific erosion and sediment control plan in accordance with the Blue Book • Establish erosion and sediment control measures • Establish an unexpected finds procedure for contaminated land • Rehabilitate ground cover following any activities as soon as practical after disturbance	**6.7**
21.	Soils	Soil mitigation measures during operations will include progressive restoration as soon as practical; and manage any bare areas and erosion that develops beneath solar arrays	**6.7**
22.	Soils	The Decommissioning and Rehabilitation Plan (DRP) will address all aspects of decommissioning and removal of all infrastructure unwanted after the use of the Project	**6.7**
23.	Agriculture	Upon decommissioning of the Project, the Project Area will be re-established and returned to an equivalent of its current agricultural productivity (including fences and farm dams), unless otherwise agreed with the landowner	**6.8**
24.	Agriculture	The CEMP and OEMP will include weed, pest and biosecurity management	**6.8**
25.	Hydrology and Flooding	The CEMP, OEMP and DRP will include Project surface water mitigation measures in relation to water crossings, minimisation to instream and overland flooding, flood risk, erosion and sediment control and general soil and water management	**6.9**
26.	Hydrology and Flooding	The detailed design will incorporate the use existing water crossings where possible and will locate WTG to minimise works on “waterfront land” in accordance with relevant Guidelines	**6.9**
27.	Hydrology and Flooding	Management of flooding risks at the Project Area will be managed through the implementation of an Emergency Response Plan (ERP)	**6.9**
28.	Water Resources	Measures to minimise potential impacts to water resources will form part of the CEMP, OEMP and DRP \ and will include: • All required water licensing and approvals will be coordinated with associated land holders and or relevant regulators if sources are needed to support water supply arrangements during construction and operation • The onsite wastewater treatment system will be designed and operated in accordance with relevant standards and guidelines • Controls to minimise use of water resources during decommissioning activities	**6.10**
29.	Traffic	Traffic Management Plan (TMP) will be prepared and implemented in consultation with relevant regulators	**6.11**
30.	Traffic	A Decommissioning TMP will be prepared as part of the DRP	**6.11**
31.	Traffic	Information and communication, signage, onsite and drivers protocol measures will be incorporated in the TMP and implemented	**6.11**
32.	Traffic	Implementation of road upgrades prior to the construction phase	**6.11**
33.	Traffic	In relation to OSOM usage during construction: • A pre-condition survey will be completed • Sections of the road network utilised by the Project will be monitored and maintained • Any faults attributed to construction of the Project will be rectified • A post-condition survey will be undertaken	**6.11**

Ref.	Project Aspect	Management or Mitigation Measure	Section
34.	Telecommunications	During detailed design, a final review of the WTG locations will be undertaken to ensure that any changes to WTG locations will not cause any potential impact	**6.12**
35.	Telecommunications	During detailed design, a final review of the WTG locations will be undertaken to ensure that any changes to WTG locations will not cause any potential telecommunications impact	**6.12**
36.	Telecommunications	During detailed design, a detailed analysis of the full power coordination impact will be undertaken in consultation with Telstra	**6.12**
37.	Aviation	Consultation will be conducted with Airservices Australia, CASA, Land Owners, aerial firefighting and emergency response stakeholders regarding coordinates and elevations of WTGs and emergency access	**6.13**
38.	Preliminary Hazard Analysis	Mitigation measures around BESS and subsequent design requirements have been incorporated into the Project description in Section 3. These will be included in the CEMP and OEMP and implemented	**6.14**
39.	Blade throw	The Project will be designed and constructed in accordance with relevant design, manufacturing, installation, and operations standards	**6.15**
40.	Blade throw	An operations and maintenance schedule will be implemented to ensure that faults are prevented or detected and rectified early	**6.15**
41.	Bushfire	A Fire Management Plan and Bushfire Emergency Management and Operations Plan will be prepared in consultation with relevant regulators	**6.16**
42.	Bushfire	Mitigation measures around APZs, water storage, landscaping and hazardous materials storage will be included in the CEMP and OEMP and implemented	**6.16**
43.	Air Quality	The CEMP and OEMP will include air quality management measures	**6.17**
44.	Waste	A Waste Management Plan (WMP) will be prepared for inclusion in the CEMP and OEMP inclusive of the mitigation measures to minimise waste generated by the Project	**6.18**
45.	Social	Maintain and implement a Stakeholder Engagement Plan	**6.19**
46.	Social	Facilitate monitoring and evaluation through the Monitoring, Evaluation, Reporting, & Learning (MERL) Framework	**6.19**
47.	Economic	Implement social measures and response as described in **Table 6–72**	**6.20**
48.	Cumulative	Engage with other developments during construction where this overlaps to ensure impacts are minimised through at least traffic and social impacts, where practical. This may be undertaken with or by relevant regulators	**6.21**

Appendix H
Noise Impact Assessment

Appendix I
Visual Impact Assessment

Appendix J
Biodiversity Assessment Report

Appendix K
Aboriginal Cultural Heritage Assessment Report

Appendix L
Historic Heritage Assessment Report

Appendix M
Soils and Agricultural Assessment

Appendix N
Hydrology Impact Assessment

Appendix O
Traffic Impact Assessment

Appendix P
Telecommunications Impact Assessment

Appendix Q
Aviation Impact Assessment

Appendix R
Preliminary Hazard Analysis

Appendix S
Bushfire Assessment Report

Appendix T
Social Impact Assessment

Appendix U
Economic Impact Assessment