Keri Keri Wind Farm

Scoping Report

23 March 2022

Project No.: 0611753

The business of sustainability

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23 March 2022

Keri Keri Wind Farm

Scoping Report

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CONTENTS

List of Tables

List of Figures

Acronyms and Abbreviations

Name	Description
ABS	Australian Bureau of Statistics
AHIMS	Aboriginal Heritage Information Management System
ASL	Above sea level
AWA	Australian Wind Alliance
BC Act	Biodiversity Conservation Act 2016
BESS	Battery Energy Storage System
CCC	Community Consultative Committee
CEF	Community Enhancement Fund
CSCP	Community and Stakeholder Engagement Plan
CSP	Murray River Community Strategic Plan 2018-2028
DAWE	Department of Agriculture, Water and the Environment
DCP	Development Control Plan
DPE	Department of Planning and Environment (formerly Department of Planning, Industry and Environment, DPIE)
DPIE	Department of Planning, Industry and Environment (now Department of Planning and Environment, DPE)
EEAP	Energy Efficiency Action Plan
EIS	Environmental Impact Statement
EMF	Electromagnetic Field
EMI	Electromagnetic Interference
EPBC Act	Environmental Protection and Biodiversity Conservation Act 1999
EP&A Act	Environmental Planning & Assessment Act 1979
EPL	Environment Protection Licence
ERM	Environmental Resources Management Australia Pty Ltd

Name	Description
GHG	Greenhouse gas
GWh	Gigawatt hours
ISP	Integrated System Plan
LEP	Local Environmental Plan
LGA	Local Government Area
LGC	Large-scale Generation Certificate
LRET	Large-scale Renewable Energy Target
LSPS	Murray River Local Strategic Planning Statement 2020
MNES	Matters of National Environmental Significance
MW	Megawatt
NEM	National Electricity Market
NSW	New South Wales
REAP	NSW Renewable Energy Action Plan
RET	Renewable Energy Target
REZ	Renewable Energy Zone
RMRP	Riverina Murray Regional Plan 2036
RNE	Register of the National Estate
RSA	Rotor Swept Area
SA1	Statistical Area Level 1
SEARs	Secretary's Environmental Assessment Requirements
SEED	NSW Sharing and Enabling Environmental Data
SEIFA	Socio-Economic Indexes for Areas
SEPP	State Environmental Planning Policy
SIA	Social Impact Assessment
SSD	State Significant Development
STE	State and Territory
TEC	Threatened Ecological Community
UCLs	Urban Centres and Localities
WHL	World Heritage List
WTG	Wind turbine generator
ZVI	Zone of Visual Influence

Glossary

Term	Description
Development Footprint	The Development Footprint is the area in which physical disturbance is proposed for the development of the Project, including the Permanent Development Footprint and Temporary Development Footprint.
dB	dB is a logarithmic ratio between a measured level and a reference level. The reference level for sound power is 1×10^{-12} Watts and for sound pressure 2×10^{-5} Pascals.
dBA	dBA denotes a single number sound pressure level that includes a frequency weighting ("A-weighting") to reflect the subjective loudness of the sound level. The frequency of a sound affects its perceived loudness. Human hearing is less sensitive at low and very high frequencies, and so the A-weighting is used to account for this effect. An A-weighted decibel level is written as dBA.
L_{90}	The noise level exceeded for 90 per cent of the time and is approximately the average of the minimum noise levels. The L90 level is often referred to as the "background" noise level and is commonly used as a basis for determining noise criteria for assessment purposes.
L_{eq}	The 'equivalent continuous sound level', Leq, is used to describe the level of a time-varying sound or vibration measurement. Leq is often used as the "average" level for a measurement where the level is fluctuating over time. Mathematically, it is the energy-average level over a period of time (i.e. the constant sound level that contains the equivalent sound energy as the measured level). When the dBA weighting is applied, the level is denoted dB LAeq.
Permanent Development Footprint	This is the area of land that will be subject to permanent alteration as a result of installation and operation of Project infrastructure.
Project Area	The term Project Area refers to all affected lots where the Project may be located.
Temporary Development Footprint	This is the area of land which will be temporarily disturbed during construction of the Project, and rehabilitated following construction, in order to minimise permanent impacts to biodiversity. Mitigation measures in these areas are to include revegetation, spreading mulched or cleared vegetation and spreading native grass seed with local species.
the Project	In this report, the Project refers to the proposal by the proponent (Acciona) to construct and operate the Keri Keri Wind Farm, including the construction and operation of up to 176 wind turbine generators and associated infrastructure as described in this Scoping Report.
the Proponent	Acciona Energy Australia Global Pty Ltd (Acciona)

1. INTRODUCTION

1.1 Introduction

Acciona Energy Australia Global Pty Ltd (the Proponent) proposes to construct and operate the Keri Keri Wind Farm (the Project), a renewable energy development located east of Balranald in the Riverina Murray region of New South Wales (NSW). The Project is a proposed wind farm that will include up to 176 wind turbines with a total capacity of up to approximately 1,003 MW. The Proponent is seeking State Significant Development (SSD) consent under Part 4, Division 4.7 of the *Environmental Planning & Assessment Act 1979* (EP&A Act) for the Project.

The Proponent has engaged Environmental Resources Management Australia Pty Ltd (ERM) to prepare a Scoping Report for the Project, as a first step in the SSD consent process. The Scoping Report supports an application to the Secretary of the NSW Department of Planning and Environment (DPE) for Secretary's Environmental Assessment Requirements (SEARs). The SEARs will guide the preparation of an Environmental Impact Statement (EIS) for the Project as part of a broader Development Application (DA).

1.2 Proponent

The Proponent for the Keri Keri Wind Farm development is Acciona Energy Australia Global Pty Ltd an Australian business entity of ACCIONA, a Spanish multinational organisation that specialises in providing sustainable solutions for infrastructure and renewable energy projects. ACCIONA is a key player in the renewable energy market and the organisation has been carbon neutral since 2016. They aim to lead the transition towards a low-carbon economy and contribute in achieving the 17 sustainable development goals (SDGs) to be achieved by 2030 defined by the United Nations General Assembly in 2015 through business solutions.

Since becoming established in Australia in 2002, ACCIONA has invested more than AUD $1 billion through local investment opportunities and project development by specialising in a variety of projects including transport, water, and energy, amongst others. ACCIONA currently employs over 1,000 people across the country who are involved in renewable energy, infrastructure and water projects. ACCIONA's renewable energy projects in Australia currently have a total installed capacity of 402 MW, which will increase to 590 MW once the construction is completed on their fifth wind farm in Mortlake, Victoria. Acciona is planning to construct the MacIntyre Wind Farm Precinct, a 1,026-MW wind power development in Queensland, to be operational in 2024. The scale of the MacIntyre project makes it one of the largest onshore wind farms in development today and will help Queensland meet its decarbonisation commitments.

Acciona Energy Australia Global Pty Ltd (herein referred to as 'Acciona') Australian Business Number (ABN) and address are listed below:

- **ABN:** 54 600 910 647
- **Address**: Level 38, Melbourne Central Tower, 360 Elizabeth Street, Melbourne, Victoria 3000

1.3 Project Overview

Acciona proposes to develop the Keri Keri Wind Farm near the town of Balranald, in the Riverina Murray Region of NSW. The Project Area is situated approximately 820 kilometres (km) (by road) west of Sydney, and 31 km east of Balranald across a total area of approximately 18,055 hectares (ha). It is located entirely within the Murray River Local Government Area (LGA) and to the south of the Sturt Highway, on land that is predominately used for sheep grazing and cropping. The regional context of the Project Area is identified in **Figure 1-1**.

The Project is a proposed wind farm that will consist of up to 176 wind turbine generators (WTGs) with an estimated maximum installed capacity of up to approximately 1,003 MW. The wind turbines will have a proposed hub height of 200 m and tip height of 291.5 m. The Project will likely utilise Nordex turbines, specifically the Nordex N163-5.X - 5.7 MW model.

Large-scale battery storage is also proposed to support stabilising the supply of electricity to the National Electricity Market (NEM). The Project will involve the construction of a Battery Energy Storage System (BESS) facility with a capacity of up to 200 MW/800 MWh . It will be located in the south of the Project Area and would likely utilise lithium ion technology.

In addition, the Project will include the following Project infrastructure and associated works:

- One (1) operations and maintenance facility (located at either the North, South or Central substation location);
- up to three (3) substations (North, South, Central);
- up to two (2) temporary concrete batching plants (located at either North, Central or South locations);
- possible onsite temporary crushing facilities;
- one (1) switching station;
- wind turbine hardstands;
- four (4) temporary and four (4) permanent meteorological monitoring masts with a height of 160 m;
- overhead and underground electrical cabling;
- construction laydown areas and compounds;
- security fencing and landscaping;
- internal access tracks, site access and road upgrades along the haulage route (as required);
- ancillary activities including gravel pits, water sourcing, visual screening (as required); and
- temporary workers accommodation.

The broader Keri Keri Renewable Energy Project also includes a proposed 400 MWn (ac)/500 MWp (dc) solar farm located in the south west portion of the Project Area. The Keri Keri Solar Farm is subject to a separate SSD application, however it may share ancillary infrastructure to be constructed and operated under the Keri Keri Wind Farm project, including substation / switching station, road access, internal road network, and operations and maintenance facilities. This is detailed further in the Keri Keri Solar Farm Scoping Report.

1.3.1 Project Objectives

The objectives of the Project are to:

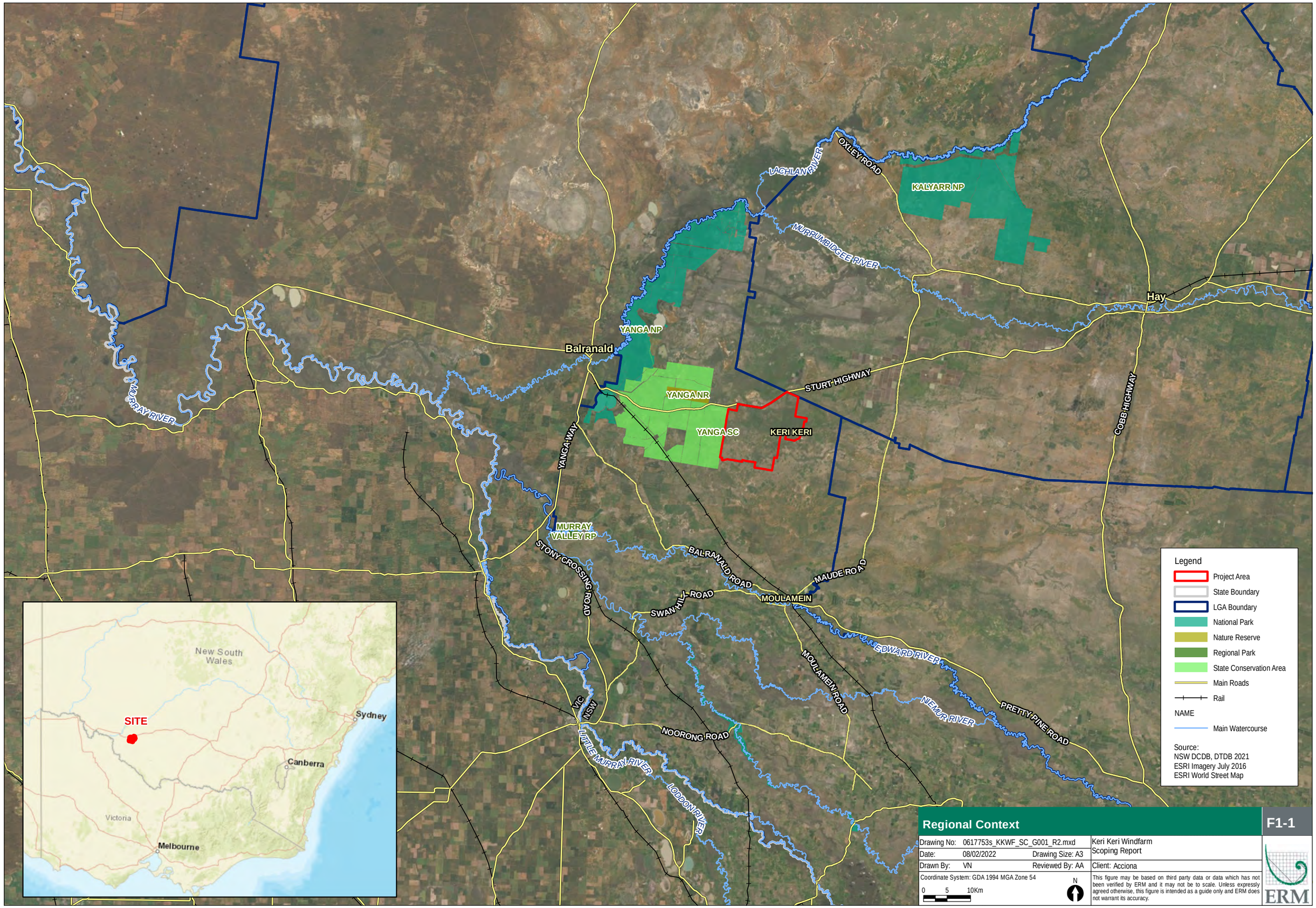
- provide a source of renewable energy to supplement NSW and National energy requirements and assist in reducing greenhouse gas (GHG) emissions;
- contribute to the additional generating capacity required to meet the growing energy demand in NSW and the generation shortfalls predicted as coal fired power stations reach the end of their operational lives;
- assist in providing network stability services through battery storage if they are required by the Transmission Network Operator (TNO) and Australian Energy Market Operator (AMEO);
- contribute to NSW and Commonwealth targets for renewable energy;
- provide both direct and indirect employment opportunities during construction and operation;
- provide additional income streams for associated landholders;
- provide broader financial benefits to the community through the community enhancement fund;
- liaise and work with the community and all potentially affected stakeholders in the identification, mitigation and/or monitoring of any potential environmental effects;

- ensure quality, safety and environmental standards are maintained;
- recycle and reuse materials where practical and economically feasible; and
- minimise all potential adverse environmental impacts.

1.4 Purpose of this Report

This Scoping Report supports an application for SEARs which will guide the development of the EIS to support a future SSD application under Part 4 of the EP&A Act. The Scoping Report has been prepared in accordance with the following guidelines:

- State Significant Development Guidelines - Preparing a Scoping Report: Appendix A to the State Significant Development Guidelines (DPIE, 2021a) (Scoping Report Guidelines);
- Social Impact Assessment Guideline for State Significant Projects (DPIE, 2021b);
- Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021c);
- Undertaking Engagement Guidelines for State Significant Projects (DPIE, 2021d);
- Wind Energy Guideline for State Significant Wind Energy Development (DPIE, 2016a);
- Wind Energy: Visual Assessment Bulletin for State Significant Wind Energy Development (DPIE, 2016b); and
- Wind Energy: Noise Assessment Bulletin for State Significant Wind Energy Development (DPIE, 2016c).



Regional Context

F1-1

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Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

0 5 10Km

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2. STRATEGIC CONTEXT

2.1 Site Setting and Features

2.1.1 Regional Context

The Project Area is located within the rural locality of Keri Keri, NSW, approximately 680 km west of Sydney and within the South West Region of NSW near the border between NSW and Victoria. It is to the south of the Sturt Highway, which is a national highway travelling east-west through the region connecting New South Wales, Victoria, and South Australia.

The Project Area is situated within the Murray River LGA, which formed in 2016 through the amalgamation of the former Murray Shire and Wakool Shire councils. The Murray River LGA covers a total area of 11,865 km^2 and has a population of 11,680 (ABS, 2021). A section of the Project Area approximately 2.7 km in length is situated adjacent to the boundary with the Hay LGA.

The key land uses and economic activities within the region are centred around agriculture and food production. Other key industries within the region include construction, manufacturing, health and community services, and land care and catchment management (MRC, 2020).

The Project Area is located within the Murrumbidgee Catchment of the Murray Darling Basin. At the closest points, the Project Area is located approximately 30 km south of the Murrumbidgee River and 50 km north of the Murray River.

Nearby Towns and Population Centres

The closest population centre is the town of Balranald, NSW, which is located approximately 31 km to the north west of the Project Area. Balranald has a population of 1,341 (ABS, 2021) and is located at the intersection between the Sturt Highway and the Murrumbidgee River. Other key towns in the region include:

- Hay, NSW - 75 km northeast (population 2,406);
- Swan Hill, Victoria - 64 km south (population 10,905);
- Robinvale, Victoria - 102 km west (population 3,088);
- Euston, NSW – 106 km west (population 839); and
- Deniliquin, NSW - 116 km south east (population 7,862).

Project EnergyConnect and the South-West Renewable Energy Zone

The Project Area is situated near Project EnergyConnect, which is a proposed 330 kV transmission line between South Australia and New South Wales with a total length of 900 km. This connection will allow for the energy generated at Keri Keri Wind Farm to be supplied to the NEM.

The Project Area is located within the boundaries of the proposed South-West Renewable Energy Zone (REZ), which is being developed in the areas surrounding Hay in the South-West region of NSW (Energy NSW, 2021). The South-West REZ was chosen to be located here due to:

- the abundance of renewable energy resources;
- the proximity of the area to Project EnergyConnect;
- a strong pipeline of proposed renewable energy projects; and
- the relative compatibility of land uses within the region.
- The South-West REZ will be formally declared in 2022.

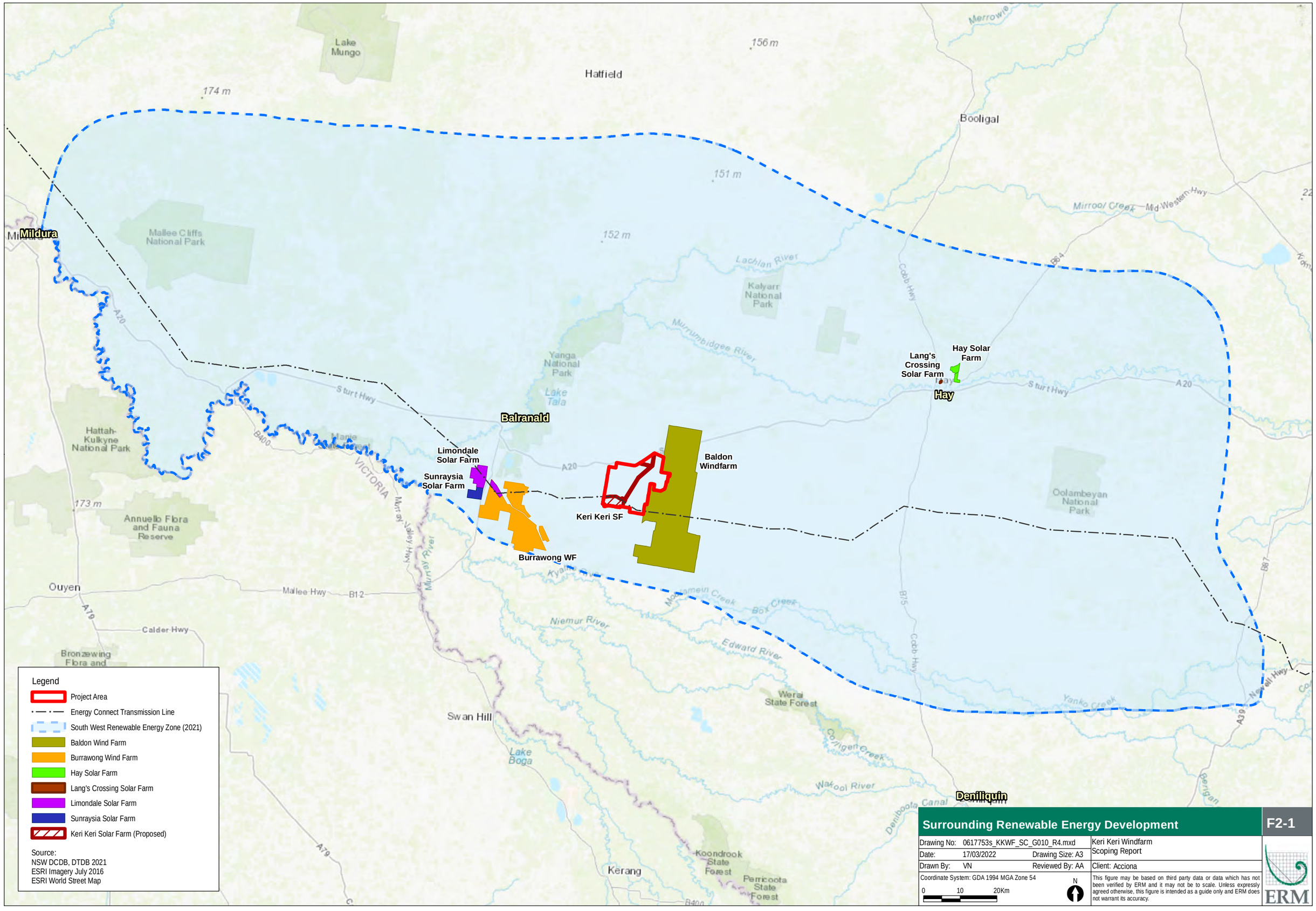
Nearby renewable energy and related projects

There are a number of proposed, approved or operational renewable energy projects located in proximity to the Project Area, which are listed in **Table 2-1** below. The high concentration of renewable energy projects within the region exists in relation to the proposed South-West REZ and the EnergyConnect project. The location of the South-West REZ, EnergyConnect and nearby renewable energy projects is displayed in **Figure 2-1**.

Table 2-1 Nearby Renewable Energy and Related Projects

Project	Developer / Operator	Energy	Indicative Scale	Proximity to the Project*	Status
Limondale Solar Farm	RWE	Solar	349 MW	33 km	Operational
Sunraysia Solar Farm	Maoneng	Solar	255 MW	33 km	Operational
Lang's Crossing Solar Farm	TEC-C	Solar	100 MW	78 km	Proposed
Hay Solar Farm	Plains SF No1 Pty Ltd	Solar	110 MW	82 km	Approved
Burrawong Wind Farm	Windlab	Wind	750 MW	20 km	Proposed, SEARs issued
Baldon Wind Farm	Goldwind Australia and Lacour Energy	Wind	800 – 900 MW	Located immediately adjacent to the eastern boundary of the Project Area	Proposed, SEARs not yet requested
Keri Keri Solar Farm	Acciona	Solar	400 MW	Located in the southern portion of the Project Area	Proposed, SEARs requested
Project EnergyConnect	TransGrid	Transmission Line	330kV	Sections of Project EnergyConnect traverse the southern portion of the Project Area	Western section approved Eastern section proposed, EIS exhibited

** Estimated distance*



Surrounding Renewable Energy Development

F2-1

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Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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2.1.2 Local Context

The Project Area is situated within the Hay Plains, which is characterised by a relatively flat topography with low relief and slight variation to elevations, which generally differs by only a few metres. The existing land uses surrounding the Project Area are predominantly agricultural and are used for irrigated cropping and grazing, and contain an extensive network of irrigation channels. The local context of the Project Area is identified in **Figure 2-2.**

The locality of Keri Keri recorded a population of 10 people in 2016 (ABS, 2021). The Project Area is also located adjacent to small towns and localities including Maude to the north (population 82), Moulamein to the east and south (population 484), and Yanga to the west (population 37) (ABS, 2021).

There are 13 nearby residences located within 8 km of a wind turbine generator, which are listed in **Table 2-2** and shown in **Figure 2-2.** Of these, two are involved and the remaining 11 are non-involved. A minimum buffer area of 3 km has been applied to WTG and dwelling locations.

Table 2-2 Nearby Residences within 8 km of a Wind Turbine Generator

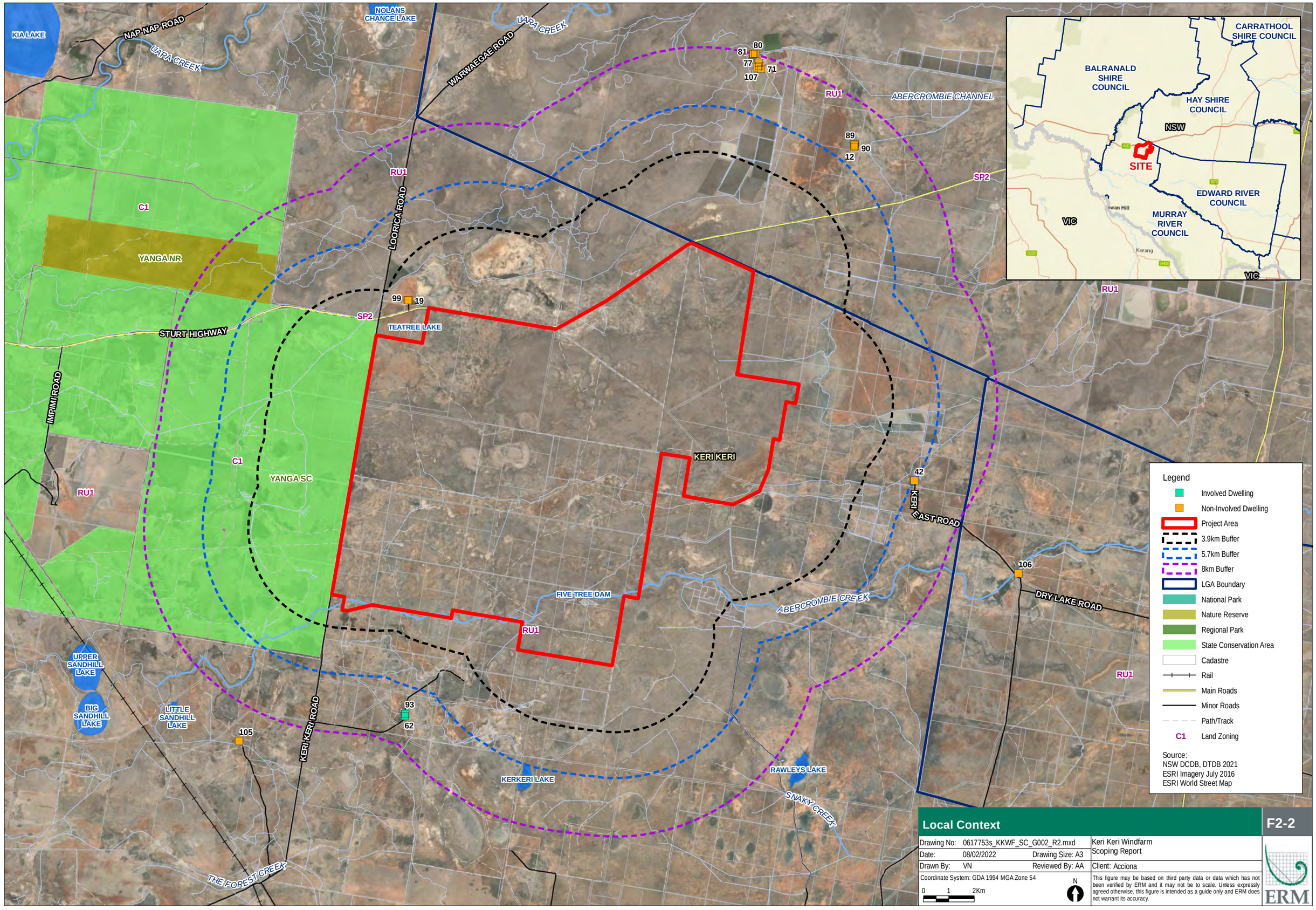
Dwelling / Residence Number	Involved / Non-Involved	Distance from nearest WTG (m)
12	Non-Involved	6,419
19	Non-Involved	3,000
42	Non-Involved	5.694
62	Involved	6,859
70	Non-Involved	7,614
71	Non-Involved	7,525
77	Non-Involved	7,714
80	Non-Involved	7,987
89	Non-Involved	6,515
90	Non-Involved	6,487
93	Involved	6,780
99	Non-Involved	3,033
107	Non-Involved	7,529

The Yanga State Conservation Area (SCA) is located immediately west of the Project Area and zoned *E1 – National Parks and Nature Reserves* under the Wakool Local Environmental Plan 2013 (LEP). Additionally, Yanga Nature Reserve and Yanga National Park are located approximately 20 km to the north west of the Project Area.

The Yanga Nature Reserve was reserved in 1972. The Yanga National Park and Yanga SCA were reserved in 2007 following the purchase of Yanga Pastoral Station, a 160 year old sheep, cattle, dryland cropping and red gum harvesting property (DPIE, 2020c). Further additions to the national park occurred in 2010.

The Yanga National Park, Yanga SCA, and Yanga Nature Reserve are situated along the floodplains of the Lower Murrumbidgee River and on the western edges of the Riverina agricultural region, and together cover an area of approximately 71,700 hectares. The area contains numerous woolsheds, camping ground, and homesteads, including the Willows Campground within the Yanga SCA.

There are a number of watercourses within the Murrumbidgee Catchment which are located near the Project Area. At the closest points, the Project Area is located approximately 20 km north of the Edward River, 10 km north of Forest Creek, and 12 km south west of the Uara Creek. The Murrumbidgee Catchment covers an area of 84,000 km^2 and comprises 8 percent of the total area of the Murray-Darling Basin (MDBA, 2021). The Murrumbidgee Catchment contains a number of sites of international ecological significance, including the Lowbidgee Wetlands and Fivebough and Tuckerbil Swamps (DPI, 2021). The riparian lands throughout the Murrumbidgee Catchment are also highly valued for their uses for recreational tourism.



Local Context

F2-2

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Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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2.1.3 The Site

The Project Area is zoned in its entirety as *RU1 – Primary* Production under the Wakool LEP. It covers 66 land parcels across approximately 18,055 hectares. The elevation across the Project Area is relatively consistent, ranging from 65 m to 75 m above sea level (ASL).

The allotments within which the Project Area is located are outlined in **Table 2-3.** The Project Area cadastre is detailed in **Figure 2-3.** The Project Area also includes crown land associated with paper roads, which the Project will seek closure of during the EIS preparation stage. These areas are also shown in **Figure 2-3.**

Table 2-3 Project Area Lot and DP Details

Lot	DP
9, 12, 13, 14, 54, 55, 56, 57, 58, 83, 84, 85, 86, 87	751231
32, 33, 34, 35, 36, 37, 38, 39, 40, 47, 48, 49, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 82, 84, 93, 94	756546
77, 78, 79, 80, 81, 82, 85	756558
11	1120173
1, 19	751175

The Project Area is adjacent to the Sturt Highway to the north, Keri Keri Road to the west, and rural properties to the south and east. The key access points into the Project Area are along northern boundary via the Sturt Highway. The Keri Keri Road running in parallel to the western boundary of the Project Area also potentially provides access to the site. The Project Area is currently used for sheep grazing and cropping.

The Preliminary Constraints Assessment undertaken by NGH (2020) in April 2020 determined that the Project Area has been subject to a moderate level of disturbance, which is most likely contained to the surface level. There is minimal development scattered across the Project Area, comprising of small farm buildings, roads, fences, wells, and artificial water bodies. Previous works on the Project Area have involved the construction of a large water pipeline (NGH, 2020).

In addition to a number of watercourses located near the Project Area, Abercrombie Creek is a watercourse that flows east-west through the southern portions of the Project Area. All creeks and watercourses within the broader area are non-perennial (NGH, 2020).

Photographs of the Project Area are provided in **Figure 2-4.**

LOORICA ROAD
ABERCROMBIE CHANNEL
STURT HIGHWAY
12/DP751231
19/DP751175
11/DP1120173
13/DP751231
9/DP751231
14/DP751231
87/DP751231
86/DP751231
54/DP751231
83/DP751231
56/DP751231
85/DP751231
58/DP751231
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57/DP756546
55/DP756546
54/DP756546
53/DP756546
59/DP756546
56/DP756546
52/DP756546
ABERCROMBIE CREEK
32/DP756546
33/DP756546
34/DP756546
49/DP756546
48/DP756546
47/DP756546
KERI EAST ROAD
KERI KERI ROAD

Legend
- Project Area
- Crown Roads
- Main Roads
- Minor Roads
- Path/Track
- Cadastre

Source:
NSW DCDB, DTDB 2021
ESRI Imagery July 2016

Project Area Cadastre

F2-3

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Coordinate System: GDA 1994 MGA Zone 54

0 1 2Km

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Views from eastern boundary, facing west

Views from eastern boundary, facing west

Figure 2-4 Views of the Project Area

Views from centre of Project Area, facing south

Views from slightly west of the centre of Project Area, facing south

Figure 2-4 Views of the Project Area

View along Keri Keri Road looking south, Project Area on left, Yanga SCA on right

Figure 2-4 Views of the Project Area

2.2 Strategic Framework

The Project will align with various strategies, policies and plans across National, NSW, regional, and local contexts. The strategic framework for the Project is outlined in **Table 2-4** below.

Table 2-4 Alignment with Strategic Framework

Strategy, Policy or Plan	Description	Project Alignment
National Context		
Large-scale Renewable Energy Target (LRET)	The Large-scale Renewable Energy Target (LRET) incentivises the development of renewable energy power stations in Australia, through a market involving the creation and sale of certificates known as Large-scale Generation Certificates (LGCs) (CER, 2018). Power stations accredited under the LRET can create LGCs for the electricity generated from renewable energy sources, which can then be sold to liable entities that must meet compliance obligations under the LRET. Liable entities are predominantly electricity retailers which are required to surrender these certificates to the Clean Energy Regulator on an annual basis to demonstrate their compliance with annual targets. Selling LGCs provide accredited power stations with another source of revenue in addition to the revenue from the electricity generated (CER, 2018). The current target under the LRET is for 33,000 gigawatt hours 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 will generate up to approximately 3,600 gigawatt hours of electricity annually. The Project will therefore contribute significantly in meeting the LRET target for 33,000 gigawatt hours of additional renewable energy to be generated annually.
United Nations Framework Convention on Climate Change Conference of Parties (COP26) – Glasgow 2021	COP26 was the 26th climate change COP held in Glasgow in late 2021. A key outcome of COP26 was agreement to '*revisit and strengthen …2030 targets (Paris Agreement targets) in nationally determined contributions…by the end of 2022'* (UNFCCC, 2021). The Federal Government committed to achieving net zero greenhouse gas emissions by 2050 ahead of the G20 Summit in Rome and the Glasgow United Nations climate discussions (COP26).	The Project will contribute to meeting Australia's commitments through the generation of renewable wind energy and resultant annual reduction in greenhouse gas emissions.
United Nations Framework Convention on Climate Change Conference of Parties (COP21) – The Paris Agreement	The United Nations Paris Agreement on climate change (Paris Agreement) outlines a framework for all countries to take climate action from 2020, and builds upon the existing international efforts in the period up to 2020. The aim of the Paris Agreement is to limit emissions globally to net-zero in the second half of this century. Australia is one of 195 countries that signed on to the Paris Agreement, and has set a target to reduce emissions by 26-28 per cent below 2005 levels by 2030. This builds on the 2020 target of reducing emissions by five per cent below 2000 levels (PoA, 2017).	The Project will contribute to meeting Australia's commitments under the Paris Agreement through the generation of renewable wind energy and resultant annual reduction in greenhouse gas emissions by approximately 3.2 million tonnes per annum.

Strategy, Policy or Plan	Description	Project Alignment
Integrated System Plan 2020	The Integrated System Plan (ISP) provides an integrated roadmap for the development of the National Electricity Market (NEM) over the next 20 years, and the most recent ISP 2020 was released on 30 July 2020 (AEMO, 2020). The key objectives of the ISP are to design low cost and reliable energy systems through both new and existing technologies, and to identify ISP projects to achieve power needs. The ISP also serves the broader purpose of informing policymakers, investors, and consumers. It draws on stakeholder engagement and industry expertise in order to maximise the value and benefits to electricity consumers. The ISP 2020 identifies the locations of proposed Renewable Energy Zones (REZs) in Australia that can connect to existing transmission networks. The Draft 2022 Integrated System Plan was released in December 2021, and will be finalised by 30 June 2022 (AEMO, 2021).	The Project is located within the South West REZ, which has been identified as a proposed REZ in the ISP 2020. The Project will respond to Phase 2 of the ISP: "*Renewable generation development to replace energy provided by retiring coal-fired generators and supported by the actionable ISP projects*". Phase 2 will be achieved through the development of Variable Renewable Energy (VRE) in the South West REZ, which is to be supported by the proposed EnergyConnect project. The Project is proposed to connect to the EnergyConnect Project and will therefore align with the ISP 2020.
NSW Context		
Net Zero Plan Stage 1: 2020:2030	The Net Zero Plan Stage 1: 2020–2030 (DPIE, 2020a) sets the foundation for NSW's action on climate change and how the NSW Government will deliver on its objective to achieve net zero emissions by 2050. The Plan is the NSW Government's overarching strategy to reduce emissions and mitigate the impacts of climate change. In September 2021, the NSW Government announced ambitious new emission reductions, with an updated objective to reduce emissions by 50% below 2005 levels by 2030 under the Net Zero Plan Stage 1: 2020 – 2030 Implementation Update (September 2021).	This Project will contribute in addressing the Net Zero Plan, including the NSW Government's updated 2030 50% target. This will be achieved through a reduction in greenhouse gas emissions by approximately 3.2 million tonnes per annum.
NSW Electricity Strategy	The NSW Electricity Strategy is the NSW Government's plan to provide more reliable, affordable, and sustainable electricity across in NSW (DPIE, 2019). The Strategy encourages approximately $8 billion of new private investment in NSW's electricity system over the next decade, including $5.6 billion in regional NSW. It aligns closely with the NSW Government's Net Zero Plan Stage 1: 2020–2030, and supports a new affordable and reliable energy system by: ■ Delivering the coordinated Renewable Energy Zone in the Central-West Orana region; ■ Saving energy via the Energy Security Safeguard; ■ Supporting the development of new electricity generators; ■ Setting a target to increase the state's energy resilience; and ■ Making it easier to do energy business in NSW.	The Project is consistent with the Strategy as it provides renewable energy generation and storage capacity that, together with other renewable generation projects, is expected to result in lower cost of power in comparison to wholesale prices. The Project will also contribute to greater energy resilience through the use of BESS stabilisation technology and the future supply of electricity to the NEM with the impending closure of coal fired power stations over the next 20 years.

Strategy, Policy or Plan	Description	Project Alignment
NSW Transmission Infrastructure Strategy	The NSW Transmission Infrastructure Strategy is the NSW Government's plan to unlock private sector investment in priority energy infrastructure projects, which can deliver least-cost energy to customers to 2040 and beyond (DPE, 2018). The Strategy forms part of the government's broader plan to make energy more affordable, secure investment in new power stations and network infrastructure and ensure new technologies deliver benefits for consumers. The aims of the Strategy include increasing NSW's connections with Victoria, South Australia and Queensland, and increasing NSW's energy capacity through the prioritisation of Energy Zones in the Central-West, South West and New England regions of NSW.	The Project will meet the aims of the Strategy by increasing NSW's linkages with neighbouring states, through a proposed connection to the EnergyConnect Project. The Project will also contribute to the development of the South West REZ, which will result in an overall increase to NSW's energy capacity.
NSW Electricity Infrastructure Roadmap	The NSW Electricity Infrastructure Roadmap (the Roadmap), released in November 2020, is the NSW Government's plan to transform the NSW electricity sector to be cleaner, cheaper and more reliable (DPIE, 2020b). The Roadmap builds on the NSW Electricity Strategy (2018) and the NSW Transmission Infrastructure Strategy (2019), and emphasises the need for NSW to transition to renewable energy. It aims to replace NSW's ageing coal-fired power stations with a coordinated portfolio of energy generation, storage and network investment. As part of this Roadmap, the NSW Government commits to Renewable Energy Zones (REZ), which will expand transmission and generation capabilities in strategic areas across NSW, including the South-West region of NSW. The Roadmap reinforces the key role of these REZs in delivering renewable energy, transitioning from coal fired power generation, and providing regional growth and investment in regional NSW.	The Project will assist in meeting the NSW Government's emissions reduction targets, NSW's energy generation and storage requirements, and NSW's transition from coal fired power generation to renewable energy. The Project will also contribute to the development of the South-West REZ, which will add to the regional growth and investment in regional NSW.
Wind Energy Framework	The NSW Government's Wind Energy Framework aims to provide clarity, consistency and transparency for both industry and the community in relation to the assessment and decision-making on wind energy projects. The Wind Energy Framework includes the following documents: ■ Wind Energy Guideline; ■ Wind Energy: Visual Assessment Bulletin; ■ Wind Energy: Noise Assessment Bulletin; ■ Standard Secretary's Environmental Assessment Requirement (SEARs); and ■ Wind Energy Framework Q&As.	This Scoping Report and the EIS for the Project are / will be prepared in accordance with the relevant guidelines and documents under the Wind Energy Framework. In addition, the Landscape and Visual Impact Assessment (LVIA) and Noise Assessments that will be undertaken for the Project will be prepared by following relevant guidelines including the Visual and Noise bulletins under the Wind Energy Framework.
Regional Context		
Riverina Murray Regional Plan 2036	The Riverina Murray Regional Plan 2036 (RMRP) is a 20-year blueprint for the future of the Riverina Murray Region (DPE, 2017). It was developed by DPIE in 2017 following consultation with local councils, key stakeholders, and local communities. The RMRP provides a framework for guiding land use plans, development proposals, and infrastructure funding decisions over the next 20	The Project is proposed to connect to the existing 220 kV line running through the site or the planned NSW-SA interconnector, Project EnergyConnect at 330 kV, and will therefore have ready access to the electricity network. The Project is also consistent with relevant directions and actions of the RMRP

Strategy, Policy or Plan	Description	Project Alignment
	years and includes both priority and longer term actions (DPE, 2017). It aims to grow the region's cities and local centres, support the protection of high value assets, and develop a strong, diverse and competitive economy through the following four key goals: ■ A growing and diverse economy ■ A healthy environment with pristine waterways ■ Efficient transport and infrastructure networks ■ Strong, connected and healthy communities	listed under *Goal 1: A growing and diverse economy*. The Project will directly respond to: **Direction 11:** Promote the diversification of energy supplies through renewable energy generation. The Project will also respond to: **Action 11.1** – Encourage renewable energy projects by identifying locations with renewable energy potential and ready access to connect with the electricity network; and **Action 11.2** – Promote best practice community engagement and maximise community benefits from all utility-scale renewable energy projects.
Local Context		
Murray River Local Strategic Planning Statement 2020	The Murray River Local Strategic Planning Statement 2020 (LSPS) outlines the social, environmental and economic land use needs throughout the Murray River LGA (MRC, 2020). The LSPS was adopted by Murray River Council on 30 June 2020 and aims to guide planning decisions on future land uses. Specifically, it identifies: ■ A 20-year vision for land use within the Murray River LGA; ■ Shared community values and characteristics that contribute to the area's local identity; ■ An approach to managing growth and change in the future; ■ Strategic investigations required for future development; and ■ Relevant Actions to guide and inform future development throughout the Murray River LGA.	Renewable energy is addressed in *Planning Priority 9 – Climate Change and natural hazards* of the LSPS, which states that Council will "promote local renewable energy projects by collaborating with energy providers and implementing best practice waste management" in order to achieve this priority (MRC, 2020, p. 66). The Project is consistent with *Planning Priority 9* and responds to climate change through the development of a new renewable energy project within the LGA.
Murray River Community Strategic Plan 2018-2028	The *Murray River Council Community Strategic Plan 2018-2028* (CSP) is a 10-year plan which outlines the long-term vision of the communities within the Murray River LGA (MRC, 2018). It was adopted by Murray River Council on 26 June 2018 and aligns with the Riverina Murray Regional Plan 2036 and other strategic documents. The CSP provides a road map for guiding decisions in relation to planning and investment throughout the LGA. It was developed through a collaboration between the Murray River Council and the local community following extensive consultation with the community.	The Project responds to Strategic Theme 4: Economic Growth, which states that the Murray River LGA should make "use of our natural advantages to investigate alternate and renewable energy" (MRC, 2018, p. 18). In addition, the Project responds directly to Strategy 4.1.3, which aims to "Identify new opportunities and actively encourage investment in agriculture, agribusiness, value added manufacturing, alternate and renewable energy, health, wellbeing, aged care, and education" (MRC, 2018, p. 19). The Project is therefore consistent with the CSP.

2.3 Project Justification

2.3.1 Commitments to Renewable Energy

Federal Commitments

Australia is one of 195 countries that signed on to the United Nations Paris Agreement on climate change (Paris Agreement). The Paris Agreement sets in place a durable and dynamic framework for all countries to take climate action from 2020, building on existing international efforts in the period up to 2020. The aim of the Paris Agreement is to limit emissions globally to net-zero in the second half of this century. Australia set a target to reduce emissions by 26-28 per cent below 2005 levels by 2030 as part of its commitments under the Paris Agreement.

The current efforts to achieve this goal are reflected in the Renewable Energy Target (RET) Scheme. The RET was implemented in 2009 with an initial target of 44,000 GWh (later reduced to 33,000 GWh) of renewable energy generation by 2020. The RET has been an extremely successful initiative that has, in part, driven a more than 50% reduction in the cost of large-scale wind and solar projects over the past 10 years. The Project will contribute to meeting Australia's commitments through the generation of renewable wind energy and resultant annual reduction in greenhouse gas emissions.

The Federal Government committed to achieving net zero greenhouse gas emissions by 2050 ahead of the G20 Summit in Rome and the Glasgow United Nations climate discussions (COP26). The Project will assist in delivering on this key commitment for Australia.

State Commitments

In September 2013, the NSW Government released the NSW Renewable Energy Action Plan (REAP) with a vision to secure an affordable and clean energy future for NSW. The REAP was implemented alongside a separate Energy Efficiency Action Plan (EEAP) consisting of 30 actions to strengthen the energy efficiency market and aims to reach the following targets:

- achieve 16,000 GWh in energy savings per year by 2020;
- support 220,000 low income households to reduce energy use by up to 20 per cent by 2014; and
- assist 50% of NSW commercial floor space to achieve a four-star NABERS energy and water rating by 2020 through the delivery of high-standard building retrofit programs.

Additionally, as identified above, the project falls within the New England Energy Zone as outlined in the Net Zero Plan. The Net Zero Plan outlines the NSW Government's approach to grow the economy, create jobs and reduce emissions over the next decade, including an investment in emissions reduction innovation, particularly within regional and rural NSW.

The Net Zero Plan aligns with the 'NSW Climate Change Policy Framework' (OEH, 2016), which commits NSW to the aspirational objectives of achieving net-zero emissions by 2050.

The Project is consistent with the NSW Government's objectives and targets for the reduction of GHG emissions and investment in renewable energy technology, and supports regional investment and development.

Regional and Local Commitments

The development of renewable energy is supported by relevant regional and local plans and strategies, which have been outlined in **Table 2-4** above, and include:

- Riverina Murray Regional Plan 2036;
- Murray River Local Strategic Planning Statement 2020; and
- Murray River Community Strategic Plan 2018-2028.

2.3.2 Contribution to the National Electricity Market

The National Electricity Market (NEM) operates as a power system to deliver electricity from generators to market consumers, through an extensive transmission and distribution network comprising of around 40,000 km of transmission lines and cables. The NEM services the entire eastern and south-eastern coastline of Australia, connecting five states, and providing electricity to approximately nine million customers.

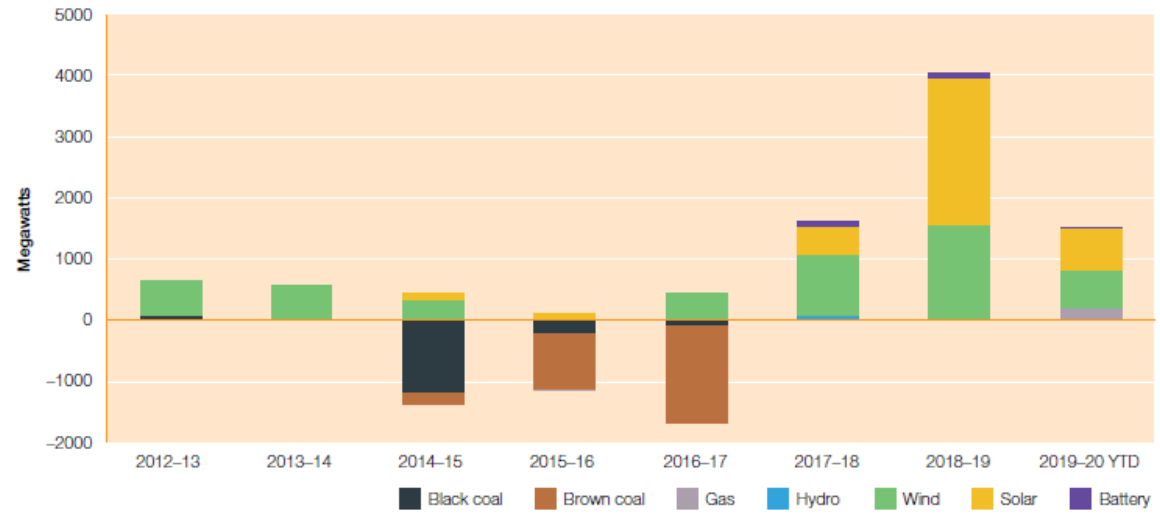
The Australian Energy Market Operator's (AEMO) 2021 Electricity Statement of Opportunities provides updated forecasts for demand and supply of electicity (AEMO, 2021). The 2021 report noted:

- electricity consumption is forecast to decline in the next five years, as distributed solar uptake continues;
- later in the decade, growth in electricity demand is forecast to return, driven by the commercial sector and an acceleration in the rate of electrification, particularly electric vehicles (EVs);
- in the longer term, the potential for accelerated deployment of Distributed Energy Resources (DER), hydrogen, and electrification (high scenarios), combined with industrial load closures and sluggish economic growth drive lower electricity demand scenarios;
- maximum electricity demand continues to soften over the next five years, then increases from 2025-26 through growth in residential and commercial sector demand; and
- with the sustained uptake of distributed solar, minimum demand forecasts also show a rapid decline.

The Project will help to meet the forecast increasing demand for energy in the NEM as forecast demand increased from 2025-2026 onwards through production of renewable energy.

The energy sector in Australia is undergoing a necessary and inevitable transition from a centralised system of large fossil fuel generation towards a decentralised system of widely dispersed, renewable energy (mainly wind and solar) (Australian Energy Regulator, 2020). The Australia Energy Regulator (2020) identifies key drivers for the transition as:

- increasing community concern on the impact of fossil fuel generation of carbon emissions. There has been no energy business investing in new coal fired generation in Australia since 2012, whilst investment in wind, solar and batteries continues to grow, as detailed in **Figure 2-5**;
- technological advancements and cost reductions in grid scale wind and solar generation facilitating lower cost options for new build generation, including advancements in turbine technology; and
- deteriorating economics of fossil fuel generation associated with aging of the coal fired generation fleet and increase fuel costs.



Note: Capacity includes scheduled and semi-scheduled generation, but not non-scheduled or rooftop PV capacity. 2019–20 YTD includes data to 31 March 2020.

Figure 2-5 Exit and entry of generation capacity in the NEM

Source: (Australian Energy Regulator, 2020)

Traditionally, NSW's electricity needs have been met by coal-fired generation and some gas peaking power plants. While wind and solar power has increased, fossil fuel generation continued to produce over 70% of electricity in the NEM in 2020, (Australian Energy Regulator, 2021). However, this trend is reversing and over the next two decades, 16 gigawatts (GW) of thermal generation (61% of the current coal fleet in the NEM) is expected to retire and over 26–50 GW of new large-scale wind and solar capacity is forecast to come online (Australian Energy Regulator, 2021).

This Project represents an investment in new large scale renewable energy, providing up to approximately 1003 MW of electricity generating capacity and 200 MW/800 MWh battery energy storage system capacity, thereby providing an essential input into the additional renewable energy sources needed in the transition from coal fired generation to renewable generation.

2.3.3 Wind Farm Benefits

Through the generation of renewable energy, wind farms provide 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* (November 2019) (AWA, 2019), which outlines ways in which wind farms deliver significant financial and social benefits to their host communities. The report also investigates how income and investment from wind farms flow to local communities in the windiest parts of Australia, from payments to landowners and community sponsorships through to community co-ownership and co-investment.

Some key notes from the AWA report have been summarised below:

- The construction of existing wind farms construction has delivered an economic boost of $5.1 billion to regional Australia, and the construction of new windfarms is expected to provide a further economic boost of $4.8 billion.
- 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.
- Regional communities benefit each year from wind farm projects through $24.9 million in payments to host landowners and $29.4 million through wind farm Community Enhancement Funds (CEFs).
- From 2021 onwards, Community Enhancement Funds will fund up to $5 million annually for community projects.

Besides direct payments to host landowners, the report also notes that wind farms deliver significant local investment and financial contributions to local Councils, which directly support local community projects and services.

2.3.4 Project Benefits

The Project would deliver renewable, low-cost energy to the national grid, and will contribute to Commonwealth and the NSW Government's emission reduction targets by:

- providing a source of renewable energy to supplement NSW and national energy requirements, supporting the transition being undertaken in the energy sector away from a centralised system of large fossil fuel generation, towards a more decentralised system of renewable energy production and assist in reducing greenhouse gas (GHG) emissions; and
- contributing additional generating capacity and potentially dispatchable energy by the provision of the large scale battery energy storage system (BESS) which will assist in managing ongoing electricity demand peak required to meet the growing energy demand in NSW;

The Project is located in the South West REZ that will be formally declared in 2022. The South-West REZ policy will coordinate with policy in the other NSW REZs to provide up to 12GW of renewable energy capacity within the state. It is considered that the Project in this location can contribute significantly to this capacity.

According to the NSW Government, the expected benefits of the NSW REZs are:

- more reliable energy from significant amounts for renewable energy supply;
- energy bill savings;
- emissions reduction; and
- community partnership.

In addition, the Project will deliver significant benefits to the Murray River region and local communities, including:

- direct investment in the Murray River region;
- opportunities for local contractors and businesses;
- up to 400 new jobs expected to be created during construction;
- around 12-14 long-term service and maintenance jobs created during Project operation;
- diversified income stream for rural landholders;
- renewable low cost energy to the national grid; and
- development of new skilled labour in the region within the growing renewable energy industry.

Construction and operation of the Project will require a range of skills including engineering, trades (electrical, mechanical, construction), transport, building material providers, equipment operators, consultants and administrative staff.

2.3.5 Site Suitability

The Project Area is considered suitable for the proposed wind farm for the following reasons:

- the Project EnergyConnect corridor, and the corridor of an existing 220 kV transmission line, passes through the Project Area which will allow for low cost renewable energy generated from the Project to be supplied to the NEM;
- it is located within the boundaries of the proposed South-West REZ, and the Project will contribute to the future development of the REZ;

- there are a number of other existing and proposed renewable energy projects located within the region and in close proximity to the Project Area;
- the Project Area is easily accessible via the Sturt Highway and Keri Keri Road;
- the Project is consistent with the RU 1 zoning and will meet the objective of the RU1 zone by allowing for the development of a complementary non-agricultural land use that is compatible with the character of the zone;
- the Project is compatible with the existing land uses of the Site and its surrounding areas, as wind farms have a relatively small footprint, which would allow for existing grazing activities to continue;
- the Project is located within a remote and sparsely populated area with limited receptors in close proximity to the Project Area; and
- the Project is located within an area of mapped high wind speeds.

3. THE PROJECT

This section provides a description of the Project and its indicative design, layout and features. The Project Site and surrounding area are also described, expanding on information from **Section 2.1.**

3.1 Project Area

The Project Area extends around an area of approximately 18,055 hectares (ha). The Project is situated approximately 820 kilometres (km) (by road) from Sydney, approximately 600 km (by road) from Adelaide and approximately 430 km (by road) from Melbourne. The Project Area is 31 km east of Balranald in the Riverina region of south west NSW. The Sturt Highway borders the northern portion of the Project, which is wholly located within the Murray River Local Government Area (LGA). The adjoining LGA's of Hay, Balranald and Edward River are in proximity to the Project Area.

The Project Area lies at an elevation of approximately 65-75 metres above sea level. It has a relatively flat topography with low relief, where elevation generally varies by only a few metres. The existing land uses surrounding the Project Area are predominantly agricultural and are primarily used for irrigated cropping and grazing.

3.2 Project Description and Layout

3.2.1 Project Design – Components and Specification

The indicative Project design components and specifications are provided in **Table 3-1.**

Table 3-1 Indicative Project Design – Components and Specification

Component	Feature	Specification
Energy generation	Wind turbine generators	⩽176 turbines
		⩽291.5 metre tip height
Electrical Reticulation Network	On-site substations	Up to three substations (North, Central, South): 1 x 330 kV main substation and 2 x 132 kV collector substations
	Internal electrical reticulation network, underground and overhead	~350 km / 1,750 km^2 of underground electrical reticulation. ~33 km / 666 km^2 of overhead. Electrical reticulation will generally follow the access roads shown in **Figure 3-1**.
	220 / 330 kV overhead transmission lines	~13 km, connecting the Project to a new switchyard and line cut in at 220kV or 330kV.
	Switchyard	Switchyard and other electrical equipment providing connection to the existing 220 or 330 kV transmission network.
Battery storage	Large-scale battery storage	200 MW / 800 MWh lithium ion battery (indicative).
Access Roads	Access to site and turbines	Access is likely via the Sturt Highway, Keri Keri Road and internal access roads, an indicative layout is provided in **Figure 3-1**.

The indicative preliminary Project layout is displayed in **Figure 3-1**. The preliminary layout, whilst indicative, has been developed following preliminary constraints assessments completed in 2020 (NGH, 2020). The constraints identified in the assessment included:

- Biodiversity: the assessment noted areas including threatened ecological communities, areas of high abundance of hollow bearing trees, raptor nests, candidate species habitat and riparian / marshland / wetland areas. Ongoing design and layout changes will seek to minimise impacts to higher value habitats and vegetation communities.
- Aboriginal heritage: high archaeological potential represented through elevated areas and site clusters, paleochannel and lunette formations, containing AHIMS sites. The assessment noted heritage values may not constrain the development (through design and layout considerations), ongoing design and layout changes to consider cultural heritage values.
- National Parks estate: proximity to the Yanga State Conservation Area, including potential bird and bat collision risks, reduction in ecological connectivity, impacts to cultural heritage and reduced visual amenity. A 230 m avoid buffer to the Yanga SCA has been applied to the Project as recommended in the constraints assessment.
- Hazards and risks, including aviation and hazardous and offensive development: preliminary aviation buffer of 20 km was recommended from all regional airports and 6 km for smaller airstrips, and subject to further assessment by an aviation specialist.
- Visual: prescribed buffers will avoid highest level impact or identify receptors that require the most assessment / mitigation.
- Water: avoidance of infrastructure for recommended riparian corridor widths. A 40 m stream buffer to major waterways was recommended as a “minimise’ constraint buffer and a 20 m “avoid’ buffer stream buffer (given the channels are likely to be a 2nd Order Stream). Avoidance of areas of inundation was also considered in the layout.

The preliminary layout presented in this Scoping Report includes consideration of the outcomes of the preliminary constraints assessment and incorporates a minimum buffer of 3 km between a WTG and a non-involved dwelling.

The EIS and associated technical assessments will further assess identified constraints to facilitate further layout design changes and refinements in response to identified values and constraints, as well as strategies to minimise and mitigate impacts.

YANGA NR

YANGA SC

LOORICA ROAD

ABERCROMBIE CHANNEL

STURT HIGHWAY

TEATREE LAKE

KERI KERI

KERI EAST ROAD

FIVE TREE DAM

ABERCROMBIE CREEK

UPPER SANDHILL LAKE

BIG SANDHILL LAKE

LITTLE SANDHILL LAKE

KERI KERI ROAD

KERKERI LAKE

RAW

Legend

- Involved Dwelling
- Non-Involved Dwelling
- Project Area
- Nature Reserve
- State Conservation
- Cadastre
- Rail
- Main Roads
- Minor Roads
- Path/Track
- Proposed Internal Transmission Line
- Transmission Line (existing and proposed EnergyConnext)

Project Layout (indicative, to be assessed in EIS)

- Turbines
- BESS
- Switching Station
- Batching Plant
- Compound
- Laydown
- O&M
- Substations
- Internal Road
- Indicative potential primary site access points, to be confirmed in EIS
- Indicative potential secondary site access point, to be confirmed in EIS
- Indicative potential location for workers accomodation, to be confirmed in EIS

Source:
NSW DCDB, DTDB 2021
ESRI Imagery July 2016

Preliminary Project Layout

F3-1

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Date:	18/03/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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3.2.2 Wind Turbine Generators

The Project is a proposed wind farm that will consist of up to 176 turbine locations with a combined estimated maximum installed capacity of up to approximately 1,003 MW. The wind turbines will have a hub height of 200 m and a tip height of 291.5 m. The Project will likely utilise Nordex turbines and specifically the Nordex N163-5.X - 5.7 MW model. The turbines will be fixed to a concrete footing and mounted on tubular steel towers, with adjacent hardstand areas for installation and maintenance. The indicative turbine specifications are provided in **Table 3-2.**

Table 3-2 Indicative Turbine Specification

Component	Feature	Specification
Wind turbine generator	Make / Model / Power	Nordex / N163-5.X / 5.7 MW
	Blade Length (incl. nacelle)	Up to 91.5 metres
	Hub height	Up to 200 metres
	Tip height	Up to 291.5 metres
	Rotor Swept Area	Up to 26,302.2 m^2
	Minimum clearance (space between ground and lowest point of blade)	56.5 metres
	Cut-In Wind Speed	3 metres per second (m/s)
	Cut-Out Wind Speed	26 m/s
	Potential Maximum Sound Power Level	109.2 dBA
	Potential Maximum Sound Power Level	107.2 dBA

3.2.3 Battery Energy Storage System

Large-scale battery storage is also proposed to support stabilising the supply of electricity to the National Electricity Market (NEM). The Project will involve the construction of a Battery Energy Storage System (BESS) which will be located in the south of the Project Area. The BESS facility will have a capacity of up to 200 MW/800MWh (4 hours) and would likely utilise lithium ion technology.

3.2.4 Substations, Switching Station, Electrical Reticulation and Grid Connection

Substations and electrical infrastructure to support the Project include up to three substations, inclusive of associated transformers, switchgear, protection, communications equipment and a control room. The Project also includes one switching station to change the voltage for the electricity network.

A network of underground and overhead electrical reticulation will connect the WTGs to the substations. These will generally follow the alignment of the proposed internal access tracks between the WTGs and the main north / south access road to the substations.

A transmission line of approximately 13 km will connect the Project to the existing 220 kV or proposed 330 kV transmission network, both of which traverse the southern portion of the Project Area.

3.2.5 Other Infrastructure and Associated Works

As detailed in **Section 1.3**, the Project will also include various supporting infrastructure and associated works including internal access tracks connecting the various Project elements and facilitating construction and operational activities, car parking, wind monitoring mast, up to two concrete batching plants, crushing facilities, gravel pits, construction laydown areas, construction and operational compounds including site office and maintenance and storage facilities and security fencing.

Temporary construction workers accommodation may also be sited within the Project Area or may be located off site (off site would be subject to a separate development application). This will be explored and assessed further in the EIS phase after further consultation with the local councils and the community.

The final design and location of associated infrastructure and works has not yet been finalised and will be subject to further assessment, including the outcomes of technical and environmental assessments as part of the EIS.

3.2.6 Transport Route and Site Access

Access to the Project Area during construction and operations is proposed via the existing road network. Primary access will be via the Sturt Highway, which borders the northern boundary of the Project Area. Secondary access, if required, may be proposed for Keri Keri Road. The need for this will be subject to assessment in the EIS phase.

The transport route of WTG components and other Project related materials are subject to a Port and Transport Route Assessment, which will be prepared as part of the EIS, the outcomes of which will be incorporated into the Traffic and Transport Impact Assessment. This will identify a proposed transport route from the port to the Project Area, as well as any required road upgrades.

Whilst a port and transport route have not yet been determined, indicative options that may be considered (but not necessarily limited to) are provided in **Figure 3-2**.

3.2.7 Ancillary Activities

The Project may also include the following ancillary activities:

- sourcing of gravel, rock and other materials for construction (this may include cut and fill activities and gravel pits within the Project Area);
- sourcing of water for construction (this may include offsite or onsite water sourcing, including the construction or bores and / or turkey's nest dams onsite);
- subdivision and boundary adjustments relating to lease arrangements, where required;
- visual screening, where required; and
- geotechnical investigations to inform the siting and location of Project layout and infrastructure.

Ancillary activities will be subject to further assessment, including the outcomes of technical and environmental assessments as part of the EIS.

3.2.8 Development Footprint

Due to the early stage of design development, the development footprint is not able to be accurately defined and is subject to ongoing design and refinement during the EIS phase of the Project and will include the Permanent and Temporary Development Footprints. For the purposes of the Scoping Report and associated technical assessments, including the preliminary biodiversity assessment, values have been identified across a broader Project Area, consisting of the landholding boundaries and a more defined area referred to as the subject land. The subject land consists of the preliminary Project layout with a 100 m buffer applied. It has been assumed that up to 20% of the subject land will be directly impacted as a result of a development footprint associated with the Project. This represents an indicative development footprint of approximately 2,653 ha. The development footprint will be further defined during the EIS phase.

The Permanent Development Footprint is the area of land that will be subject to permanent alteration as a result of installation and operation of Project infrastructure until the Project is decommissioned at its end of life. The Permanent Development will comprise of:

- WTG foundations;
- crane pads;
- permanent access roads;
- transmission line and transmission line access roads;
- substation, switching station and other facilities; and
- road upgrades required for the transport haul route.

Temporary Development Footprint (the area of land that will be temporarily disturbed during construction of the Project and rehabilitated following construction) will comprise of:

- access road construction batters;
- underground electrical cable footprint;
- concrete batching plants;
- transmission line temporary access roads;
- laydown and assembly areas adjacent to the crane hardstand and WTG foundation; and
- temporary workers accommodation area.

The impact assessment to be included in the EIS will consider both the Temporary Development Footprint and the Permanent Development Footprint, noting the temporary impacted areas will be rehabilitated at completion of construction.

Potential Transport Route Options

F3-2

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Date:	17/03/2022	Drawing Size: A3	
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3.3 Staging

The anticipated staging of the Project is summarised in **Table 3-3**.

Table 3-3 Project Staging

Stage of Project	Estimated Date of Completion
Site Selection	Completed in 2019
Project Feasibility	Completed in 2021
Planning and Approvals Process	In progress – Aim for completion late 2023
Construction	Planned to commence in 2024-2025
Commissioning and Operations	Planned to commence in 2026-2027

The Project comprises up to 176 WTGs. As is typical for projects of this scale and nature, construction and operation could be undertaken in stages. The Proponent is seeking flexibility to construct the Project in stages, if required.

3.4 Phases

3.4.1 Construction

Construction of the Project is anticipated in 2024 with design and procurement activities leading into groundworks commencing in 2024-25. All on-site construction activities and erection of wind turbines is estimated to take two to three years to complete, this includes commissioning of the Project.

During the construction phase of the Project, a peak workforce of around 400 full time equivalent employees will be required. Temporary construction workers accommodation may be sited within the Project Area or may be located off site (off site would be subject to a separate development application). This will be explored and assessed further in the EIS phase, including consultation with the local councils.

3.4.2 Operations

Operations will commence for a period of up to 30 years. During the operation of the Project the workforce will consist of approximately 12-14 permanent staff. Wind farms are designed to generally operate without intervention, with each wind turbine capable of operating independently of all other wind turbines within the wind farm. The vast majority of all maintenance undertaken on the operational farm will be preventative maintenance through a schedule which will cycle through all the machines to ensure service intervals are met. Implementing this preventative maintenance schedule will occupy the majority of time the staff are employed on the proposed Project once operational. In addition to the preventative maintenance work outlined above, some repair work will be required should break downs occur. In these cases, priority works would be undertaken as soon as possible to ensure all turbines are generating electricity.

3.4.3 Decommissioning and Rehabilitation or Repowering

The EIS prepared for the Project will discuss the potential options associated with the decommissioning of the Project upon completion of operations.

At the end of the operational life of the wind farm, approximately 30 years, the site could be formally decommissioned. A decision will be made at this point whether to erect new turbines (re-power) or to remove the existing turbines and rehabilitate the site.

This process of decommissioning will be undertaken in accordance with the relevant legal requirements, regulations and conditions of approval. The Project will remove all aboveground infrastructure, however access roads may be retained subject to landowner agreement.

3.5 Alternatives

Alternatives to the Project have been explored, including alternative sourcing of energy, site location, site layouts, and the 'do nothing' approach for the Project.

3.5.1 Alternative Sourcing of Energy

The alternative to using wind energy is the continued use of fossil fuels, including coal (both black and brown) and natural gas. The reliance on these energy sources results in the release of greenhouse gas (GHG) emissions such as CO^2 and contributes to the harmful effects of climate change. The RET and REAP discussed in Section 2.3.1 outline the commitment by Australia and NSW in reducing greenhouse gas emissions and have set targets for increasing the generation of renewable energy.

Other forms of large-scale renewable energy accounted for in the RET include hydro, biomass, solar and tidal energy. With the exception of solar energy, these alternative sources are in the early stages of development and are generally not 'market ready' nor as viable as wind energy in Australia.

Due the wind resource, sparsely populated locality and the proposed route of Project Energy Connect it is considered that large-scale wind technology is an optimum form of energy generation.

The NSW Government has also proposed that the area between Buronga, west of Hay, Hillston and Deniliquin is an indicative Renewable Energy Zone (REZ) - the South-West Renewable Energy Zone. The Project is located in the heart of this proposed area that will be formally declared in 2022. The South-West REZ policy will coordinate with policy in the other NSW REZs to provide up to 12GW of renewable energy capacity within the state – it is considered that the Project in this location can contribute significantly to this capacity.

According to the NSW Government, the expected benefits of the NSW REZs are:

- more reliable energy from significant amounts for renewable energy supply;
- energy bill savings;
- emissions reduction; and
- community partnership.

Due to these benefits, alternative forms of energy generation would not be aligned with stated rationale behind REZ policy, and it is considered that the proposed Project is aligned.

The Project is at scale potentially adding significant amounts of renewable energy supply over a 30-year period. Large-scale wind technology is now one of the cheapest forms of new energy generation, reducing cost pressures on consumers and is completely renewable, reducing emissions. Acciona is a long-term owner and operator of renewable assets globally and very rarely sells these assets. This long-term approach means that community partnership is vital in Acciona's approach to the development, construction and operation of its assets.

3.5.2 Alternative Site Location

The Project Area is identified as a highly suitable site for the proposed wind farm and BESS development as identified in Section 2.3.

A project of this magnitude requires significant land area, proximity to existing or proposed transmission networks and available network capacity. Many alternative sites may be limited in providing these critical elements.

Due to the wind resource, sparsely populated locality, the proposed route of Project EnergyConnect, and being located within the South-West REZ, it is considered that the site is optimal for wind energy generation.

Further, as part of the site identification process, the Proponent undertook engagement with Murray River Shire Council to identify potential areas for renewable energy development in the locality, prior to engaging with the host landholders.

3.5.3 Alternative Site Layout Options

The site layout and number of turbines proposed in this Scoping Report have been determined on the basis of the anticipated generation capacity on the NSW-SA Interconnector (Project EnergyConnect), early constructability analysis, and preliminary fatal flaw studies in 2020.

As discussed in Section 3.2.1, the preliminary layout, whilst indicative, has considered the preliminary constraints assessments completed in 2020 (NGH, 2020). Key constraints included:

- Biodiversity: including threatened ecological communities, areas of high abundance of hollow bearing trees, raptor nests, candidate species habitat and riparian / marshland / wetland areas.
- Aboriginal heritage: areas of high archaeological potential and AHIMs sites.
- Water: areas of inundation and riparian corridors.
- National parks estate: proximity to the nearby Yanga State Conservation Area, including potential bird and bat collision risks, reduction in ecological connectivity, impacts to cultural heritage and reduced visual amenity.

The preliminary layout presented in this Scoping Report includes consideration of the outcomes of the preliminary constraints assessment, including the application of a 3 km buffer from a WTG to a dwelling (visual and noise), heritage sites, high value plant community types and inundation and riparian areas.

Using these constraints, further design analysis was carried out looking at the Levelized Cost of Energy (LCOE) and the difference between linear and non-linear turbine alignments at 500 MW (88 turbines) and 750 MW (132 turbines). The conclusion of this analysis determined that the linear arrangement of the turbines for the approximate 1 GW (176 turbines) provided optimal LCOE and corresponded with the current known constraints.

The EIS and associated technical assessments will further assess identified constraints to facilitate further layout design changes and refinements in response to identified values and constraints, as well as strategies to minimise and mitigate impacts.

3.5.4 Do Nothing

The Project Area is currently used for seasonal farming and grazing. Although the ‘do nothing’ scenario would allow for continued use of the Project Area for agricultural production, it will also lead to a missed opportunity to generate additional renewable energy and to reduce Australia’s dependency on fossil fuels for energy generations and the consequential emissions of GHGs. The Project is expected to result in savings of approximately 3.2 million tonnes of GHGs per annum, and the electricity generated could supply up to 700,000 households with energy annually.

In addition, the local area and wider region would not realise the benefits of the Project including:

- the economic benefits to the local and regional community provided directly and indirectly by the employment associated with the Project;
- a capital investment of approximately $2 billion creating direct and indirect employment during construction and operations; and
- contributions to local community facilities and infrastructure through the Community Benefit Fund.

4. STATUTORY CONTEXT

This section outlines the key statutory requirements for the Project under the *Environmental Planning and Assessment Act* 1979 and other relevant NSW and Commonwealth legislation with regard to the *State significant development guidelines – preparing a scoping report* (DPIE, 2021a).

Relevant statutory requirements for the Project will be outlined in further detail within the EIS.

4.1 Power to Grant Consent

Approval for the Project will be sought under Part 4, Division 4.7 of the EP&A Act, which outlines the approval pathway for development deemed to be State Significant Development (SSD). Clause 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 *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP) and *State Environmental Planning Policy (Transport and Infrastructure) 2007 (*Transport and Infrastructure SEPP).

Under the provisions of Clause 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, Clause 20 of the Planning Systems SEPP determines 'electricity generating works' to be SSD if it meets the following 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 a capital investment value of more than $30 million*

The Project meets the definition of 'electricity generating works', which are defined in Clause 2.35 of the Transport and Infrastructure SEPP:

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

The Project involves development for the purpose of electricity generating works using wind power which will have a capital investment value of more than $30 million.

Therefore, the Project is classified as SSD under Part 4 of the EP&A Act.

4.2 Permissibility

The permissibility of wind farm developments in NSW is determined by *State Environmental Planning Policy (Transport and Infrastructure) 2021* (Transport and Infrastructure SEPP)*.*

Clause 2.36 (1) of the Transport and Infrastructure SEPP states that 'electricity generating works' may be carried out with development consent on land within a prescribed rural, industrial or special use zone. The Project Area is zoned in its entirety as RU1 – Primary Production under the Wakool Local Environmental Plan 2013 (Wakool LEP). As RU1 is a prescribed rural zone, the Project is permissible with consent under the provisions of Clause 2.36 (1) of the Transport and Infrastructure SEPP.

Electricity Infrastructure Investment Act (2020)

Clause 23 of the *Electricity Infrastructure Investment Act (2020)* identifies Renewable Energy Zones (REZs) in NSW. The Project Area is located within the South-West REZ, which may support up to 1.2 gigawatts (GW) of additional transmission capacity.

4.3 Other Approvals

Other approvals required under relevant NSW and Commonwealth legislation are detailed in **Table** 4-1.

Table 4-1 Other Approvals required under NSW and Commonwealth Legislation

Approval Category	Legislation	Requirement
Consistent Approvals Section 4.42 of the EP&A Act outlines that these approvals cannot be refused if necessary for carrying out an approved SSD and are to be consistent with the terms of the SSD approval.	Roads Act 1993	The Project will require consent from the appropriate roads authority under Section 138 of the Roads Act for any works undertaken on public roads. The impacts of the Project on roads and traffic will be assessed within the EIS.
	Protection of the Environment Operations Act 1997 (POEO Act)	Under the provisions of Schedule 1, Clause 17 of the POEO Act, activities requiring an environment protection licence (EPL) include *"electricity works (wind farms)".* Accordingly, an EPL will be required for the Project.
Native Title	Native Title Act 1993	Under Section 13 of the NT Act, an individual can apply to the Federal Court for a determination of native title. A review of the potential for native title will be undertaken for the Project in the EIS, however the Native Title Vision (NTV) online mapping tool (NNTT, 2022) currently indicates there are no Native Title claims over the Project Area.
EPBC Act Approval	Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Approval from the Minister for the Commonwealth Department of Agriculture, Water and the Environment (DAWE) is required for any action that will, or is likely to have a significant impact on one or more MNES. The findings of the Preliminary Biodiversity Assessment (**Appendix D**) confirmed the presence of threatened species listed under the EPBC Act within the Project Area. As such, a referral under the EPBC Act is proposed.
Other Approvals	Water Management Act 2000	The Project may require water access licences under the Water Management Act 2000. The soil and water assessment will identify whether any water access licences will be required for the Project.
	Conveyancing Act 1919	The final development footprint will require a lease from the owners of the affected land. Lease of a wind farm site is treated as a lease of premises regardless of whether the lease will be for more or less than 25 years. Subdivision consent is not required under Section 23G of the Conveyancing Act 1919. However, Section 23G of the Conveyancing Act 1919 may apply if subdivision for the purpose of construction, operation and maintenance of a substation is required.

Approval Category	Legislation	Requirement
	Biodiversity Conservation Act 2016	The Biodiversity Assessment which will be prepared to accompany the EIS will provide 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. Given the Project is SSD, entry into the Biodiversity Offset Scheme is automatically triggered.
Approvals not required under SSD Section 4.41 of the EP&A Act states the following approvals, permits etc are not required for an approved SSD.	Fisheries Management Act 1994	The Project will not require a dredging or reclamation work permit under Section 201, a marine vegetation regulation of harm permit under Section 205, or a passage of fish not to be blocked permit under Section 219.
	Heritage Act 1977	The Project will not require a Part 4 approval to carry out an act, matter or thing referred to in Section 57(1), or an excavation permit under Section 139.
	National Parks and Wildlife Act 1979	The Project will not require an Aboriginal heritage impact permit under Section 90.
	Rural Fires Act 1997	The Project will not require a bush fire safety authority under Section 100B, as the development does not involve subdivision for residential or rural residential development. A Bushfire Assessment will be prepared as part of the EIS.
	Water Management Act 2000	The Project will not require 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.

4.4 Mandatory Matters for Consideration

The consent authority is required to consider a range of matters when deciding whether to grant consent for the Project. These are referred to as mandatory considerations, which are detailed in **Table 4-2** below.

Table 4-2 Mandatory Considerations

Statutory Reference	Mandatory Consideration
Considerations under the EP&A Act and Regulation	
Section 1.3 - Objects of the 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,* *(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,* *(c) to promote the orderly and economic use and development of land,* *(d) to promote the delivery and maintenance of affordable housing,* *(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,* *(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),* *(g) to promote good design and amenity of the built environment,* *(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,* *(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,* *to provide increased opportunity for community participation in environmental planning and assessment.*

Statutory Reference	Mandatory Consideration
Section 4.15 - Evaluation	Pursuant to Section 4.15 of the EP&A Act, the consent authority is required to take the following matters into consideration in determining a development application: ■ Relevant environmental planning instruments including: – State Environmental Planning Policy (Resilience and Hazards) 2021; – State Environmental Planning Policy (Transport and Infrastructure) 2021; and – Wakool Local Environmental Plan 2013. ■ Relevant development control plans including: – Wakool Development Control Plan 2013. ■ the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality; ■ the suitability of the site for the development; ■ any submissions made in accordance with this Act or the regulations; and ■ the public interest. These will be considered in the EIS.
Considerations under other legislation	
Biodiversity Conservation Act 2016 – Section 7.14	The Minister for Planning and Homes is required to take into account the impact of the development on biodiversity values as assessed in the BDAR. The Minister may (but is not required to) further consider under the Act the likely impact of the proposed development on biodiversity values.
Considerations under relevant EPIs	
State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP)	Resilience and Hazards SEPP assesses the potential hazards associated with the proposed development by providing definitions and guidelines for hazardous industry, offensive industry, hazardous storage establishments, and offensive storage establishments. In accordance with Clause 3.7 of the Resilience and Hazards SEPP, consideration will be given to current circulars or guidelines published by the Department of Planning relating to hazardous or offensive development, including: ■ Hazardous Industry Planning Advisory Paper No 3 – Risk Assessment ■ Hazardous Industry Planning Advisory Paper No 12 – Hazards In addition, a preliminary risk screening assessment will be undertaken for the Project at the EIS phase in accordance with the Resilience and Hazards SEPP. Under Clause 4.6 of the Resilience and Hazards SEPP, a consent authority is required to consider whether a proposed development site is affected by soil or other contaminants before granting consent. An assessment will be prepared as part of the EIS to determine the potential contamination risk associated with the Project. Noting the agricultural land use across the Project Area, the assessment will take into consideration historical land use that may have resulted in contamination within and surrounding the Project Area.
Wakool Local Environmental Plan 2013	The EIS will address relevant components of the LEP, including: ■ Clause 1.2 – Aims of Plan ■ Land Use Table - Objectives and permissible uses of the *RU1 – Primary Production* zone.

Statutory Reference	Mandatory Consideration
Considerations under Development Control Plans	
Wakool Development Control Plan 2013	The Wakool Development Control Plan 2013 (Wakool DCP) is the relevant DCP that supports the controls contained within the Wakool LEP under the provisions of Division 3.6 of the EP&A Act. Under Clause 2.10 of the Planning Systems SEPP, DCPs do not apply to SSD projects: *11 Exclusion of application of development control plans* *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.* The Project will be classified as SSD. As such, the Wakool DCP does not apply and is not a mandatory consideration for the Project.

5. COMMUNITY ENGAGEMENT

5.1 Community and Stakeholder Engagement Strategy

Community and Stakeholder Engagement will be managed in accordance with the Community and Stakeholder Consultation Plan (CSCP) that has been prepared to support this Scoping Report (refer to **Appendix B**). The CSCP documents the communications and consultation framework and activities that Acciona will undertake throughout Project approval. This plan is intended to establish proactive communication and engagement with stakeholders in the community and help to ensure that their concerns or issues are clearly understood and resolved to the extent possible.

The CSCP has been prepared to align with:

- the principles of the 'International Association for Public Participation (IAP2) Spectrum Model';
- Undertaking Engagement Guidelines for State Significant Projects' (DPIE, 2021d); and
- Clean Energy Council (CEC) guidelines:
  - 'Community Engagement Guidelines for the Australian Wind Industry;
  - 'Best practice Community Engagement in Wind Development'; and
  - 'Community Engagement Guidelines for Building Powerlines for Renewable Developments'.

5.1.1 Objectives

The objectives of the CSCP and consultation throughout the Project are to:

- identify and engage with the local community and key stakeholders;
- build a foundation of strong relationships and community support;
- ensure stakeholders are informed, consulted and involved;
- wherever possible, activities will continue to be conducted with emphasis on stakeholder collaboration and empowerment;
- uphold the four Clean Energy Council's principles (accepted rules of conduct) of community engagement which include: openness, inclusiveness, responsiveness and accountability; and
- provide an accessible complaints management process as a mechanism for feedback to Acciona.

5.2 Scoping Phase Engagement

The CSCP (**Appendix B**) has been designed to enable community members to be part of the Project planning and development process and to provide them with the opportunity to engage in a meaningful way.

Stakeholder identification was undertaken in the CSCP as part of the scoping phase for the Project, which identified the following list of key stakeholders:

- Host Landowners;
- Neighbours;
- Nearby towns;
- Local businesses;
- Project partners;
- Emergency services;
- Community / sporting groups;
- Local schools;

- Chamber of Commerce / Key Industry Groups;
- Local Media;
- Environmental Bodies / Interest Groups;
- Local Indigenous groups;
- Advocacy Groups;
- Local Councils;
- Members of Parliament;
- State Government Agencies and Departments;
- Federal Government Departments;
- Electricity / Utility Network Service Providers;
- Job Network and Training Providers;
- Education and Training Providers; and
- Other Infrastructure Developers.

A variety of methods have been or will be implemented to facilitate community and stakeholder engagement, to ensure that the unique requirements of each stakeholder group are being met. Consultation materials distributed to stakeholders to date are provided in **Appendix B.**

Consultation methods will continue to be updated throughout each phase of the Project, as new stakeholders are identified, or as key contacts for stakeholder groups change.

Key consultation methods include:

- community information sessions;
- community events;
- letters and newsletters;
- feedback surveys;
- website: Keri Keri Wind Farm | ACCIONA in Australia | Business as unusual ;
- on-line community hub: Keri Keri Renewable Energy Project | Community Hub (acciona.com.au);
- emails;
- community information phone line; and
- project briefings.

5.2.1 Government Agency and Key Stakeholders

Details of consultation undertaken with government agencies and key stakeholders during the scoping phase is outlined in **Table 5-1**.

Table 5-1 Summary of Consultation Events – Government

Stakeholder	Date and Type	Consultation Activity and Key Outcomes
Murray River Shire Council	26/8/2021 Presentation	Presentation to Council to introduce the Project and the Project Team. Favourable response from Council.
DPE – Crown Lands	15 September 2021	Email sent regarding management of crown lands. Currently investigating crown land constraints on the site. Discussions are ongoing.

Stakeholder	Date and Type	Consultation Activity and Key Outcomes
DPE	4/11/2021 and 20/1/2022 Meetings	Scoping Phase Updates
Helen Dalton, MP	10//11/2021 Letter	Letter to introduce the Project and the company. No response received.
Yanga State Conservation Area (YSCA) – National Parks and Wildlife Service (NPWS	24/11/2021 Meeting	Meeting to introduce the company, the Project and discuss and perceived issues. Feedback received: ■ YSCA adjacent to KKWF is the least sensitive area of the conservation areas. ■ No fauna of great significance. ■ Known cultural heritage in the area. Generally supportive of the Project – does not perceive any major concerns.
Balranald Shire Council	29/11/2021 Presentation	Presentation to Council to introduce the Project and the Project Team. Favourable response from Council.
Hay Shire Council	7/12/2021 Presentation	Presentation to Council to introduce the Project and the Project Team. Favourable response from Council.
Sussan Ley, MP	28/1/2021 Letter	Letter to introduce the Project and the company Minister Ley is interested to visit the project site.
Department of Agriculture, Water and the Environment (DAWE) (Commonwealth)	2/2/2022 Meeting	Meeting with DAWE to introduce the Project, proposed referral and requirements.

A summary of the key issues identified by government agencies and other key stakeholders during consultation is summarised in **Table 5-2.** The summary is derived from the verbal interaction between Acciona, ERM and these stakeholders and the minutes/notes taken. Communication with stakeholders has been largely verbal with very few documented or written responses from stakeholders given the early stage of the Project.

Table 5-2 Government Agency and Key Stakeholder Key Issues Summary

Topic	Feedback Received
Aboriginal heritage	NPWS advised that the area is known to contain Aboriginal cultural heritage values
Biodiversity	NPWS advised that YSCA adjacent to KKWF is the least sensitive area of the conservation areas and there was no fauna of great significance
Workforce Accommodation	Council interested to understand how the Project workforce will be accommodated during the construction phase.
Transport Route	Council is interested to understand the transport route from port to Project site during the construction phase.
Community Benefits	Councils were interested in community benefits and support.
Economic Benefits	Local stakeholders were positive towards the economic benefits the Project will generate for the region.

5.2.2 Community Engagement

Details of consultation undertaken with the community during the scoping phase is outlined in **Table 5-3.**

Table 5-3 Summary of Consultation Events - Community

Stakeholder	Date and Type	Consultation Activity
Host Landowners	2021 – March 2022 Meetings	Provided Project updates and planning and development schedules. Regular contact regarding ecological and heritage surveys etc. Favourable response received.
Neighbours within 10 kms of Project	November 2021 – March 2022 Emails, Survey and Meetings	Provided an overview of the Project and sent a Factsheet and Preliminary Landscape Values Survey. Positive response received for the Project and the economic values for the community.
Dwelling #99	November 2021	House tenanted by Farm Manager. Engagement has occurred with owner of property. No concerns raised.
Community member	17/11/2021	Provided an overview of the Project and sent a Factsheet. Favourable response received.
Nari Nari Tribal Council	23/11/2021 Email and phone call	Provided an overview of the Project and sent a Factsheet and Preliminary Landscape Values Survey. Favourable response received. Keen to be involved in cultural heritage management.
Community member	24/11/2021 Phone and Email	Provided an overview of the Project and sent a Factsheet. Favourable response received.
Community member	24/11/2021 Phone and Email	Provided an overview of the Project and sent a Factsheet. Favourable response received.
Balranald Local Aboriginal land Council (Balranald LALC)	24/11/2021 Phone call and email	Voicemail and follow up email to Balranald LALC relating to Aboriginal heritage finds during biodiversity field survey. Subsequent discussion with Balranald LALC representative regarding the finds. The Balranald LALC representative advised they would review the email advice.
Balranald LALC	24/11/2021 Email	Emailed received from Balranald LALC representative advising the request for Balranald LALC input relating to the finds had been passed onto the Chair of the Balranald LALC.
Balranald LALC	26/11/21 Phone call	Follow-up direct call to assess availability to attend online meeting with Acciona. Balranald LALC representative requested the meeting to be scheduled for Wednesday, 1 December.
Balranald LALC	30/11/21 Email	Provision of select Project materials to Balranald LALC as background to scheduled meeting.
Balranald LALC	1/12/21 Online Meeting	Scheduled meeting with Balranald LALC to discuss aboriginal finds. Was not attended by Balranald LALC representative.
Balranald LALC	2/12/21 Email	Email requesting advice from Balranald LALC regarding the management of aboriginal finds.
Heritage NSW	8/12/21 Email	Email notifying Heritage NSW of aboriginal finds during biodiversity field survey.
ABC Radio	17/12/2021 Email and phone call	Provided an overview of the Project and sent a Factsheet. Favourable response received.
Aboriginal Cultural Heritage Assessment Report (ACHAR) – consultation with Indigenous groups and RAPs	January 2022 – March 2022 Phone call, email, and advertisements	Advertisements, emails, letters, phone calls inviting involvement in the ACHA and review of draft survey methodology. No comments received to date.

Stakeholder	Date and Type	Consultation Activity
Community Member	31/1/2022 Email	Provided Flyer to promote the Information Sessions
Community Member	31/1/2022 Email	Provided Flyer to promote the Information Sessions
Community Member	31/1/2022 Email	Provided Flyer to promote the Information Sessions
Moulamein Development Inc	31/1/2022 Phone call and email	Provided Flyer to promote the Information Sessions
Growing Business Industry & Tourism Advisory Committee	1/02/2022 Presentation	Presentation to provide an overview of the project and introduce the Project Team. Preliminary Landscape Values Survey. Very receptive of the Project and economic opportunities for the community.
Growing Business Industry & Tourism Advisory Committee	1/02/2022 Email	Provided Flyer to promote the Information Sessions
The Guardian Newspaper	4/2/2022; 8/2/2022 and 11/2/2022 Advertisements	Advertisements to promote the Information Sessions in Moulamein and Balranald. The Project and information sessions were mentioned in the weekly column “Moulamein Notes’. Favourable comments received from the author.
Moulamein Development Inc	14/2/2022 Presentation	Presentation to provide an overview of the project and introduce the Project Team. Preliminary Landscape Values Survey. Positive response received for the Project and the benefits for the town and residents.
Moulamein Community	15/2/2022 Information Session	Information session held at the Moulamein Bowling Club, approximately 30 attendees. Keen interest in the Project and positive feedback.
Balranald Community	16/2/2022 Information Session	Information session held at Theatre Royal, Balranald. Low number of attendees. Positive feedback received.

A social risk analysis was undertaken in the CSCP, which identified key community issues, concerns and opportunities relating to the Project. Information gathered from the social risk analysis was used to shape and influence the consultation strategies proposed in the CSCP. A summary of the key issues identified by the community and details of feedback received is summarised in **Table 5-4**.

Due to their close proximity to the Project Area, the townships of Hay, Balranald, and Moulamein are most likely to be affected by the construction and operational phases of the Project.

Table 5-4 Community Key Issues Summary

Topic	Feedback Received
Workforce Accommodation	Some community members are interested to understand how the Project workforce will be accommodated during the construction phase.
Jobs	Some community members are interested in the number of jobs to be created and how the local community can be involved in the Project.
Local Supply Opportunities	Some local businesses are interested in how they can be involved in the Project.
Fire Management	The Moulamein Rural Fire Brigade were interested in the fire management plans.
Community Benefits	Several community groups were interested in support for local events and projects.
Economic Benefits	Most local residents, neighbours and stakeholders were positive towards the economic benefits the Project will generate for their towns.
Clean Energy	Most local residents and neighbours were enthusiastic that their region will be hosting a clean energy facility and contributing to a greener environment.

5.3 Proposed Engagement

Table 5-5 outlines the details of stakeholder consultation that will be undertaken during the preparation of the EIS. Consultation will be undertaken in line with the proposed methods and strategies, which are outlined with the CSCP (**Appendix B**).

Table 5-5 Proposed EIS Engagement

Stakeholder Group	Stakeholder Details	Engagement Activities
Host Landowners	■ Landowners hosting physical wind farm infrastructure	■ Face-to-face meetings ■ Email / letter / phone calls/ factsheet / newsletter updates/ website/ 1800 number ■ Community Information Sessions
Neighbours	■ Directly adjoining land owners ■ Neighbours within 10 km of the Project Area	■ Door knocking ■ Face-to-face meetings ■ Email / letter /phone calls / factsheet / 1800 numbers / website / newsletter updates ■ Community Information Sessions
Nearby towns	■ Balranald, Hay, Moulamein	■ Information sessions / Website / 1800 number/ Fact sheet/ Newsletters ■ Advertising in local newspapers ■ Information hub (during construction)
Local businesses	■ Primary producers ■ Landscape suppliers ■ Rural services, retail, service and hospitality ■ Trades, including builders	■ Meetings / briefings/ emails/ phone / website / 1800 number / newsletters ■ Community Information sessions ■ Advertising in local newspapers ■ Information hub (during construction)
Project partners	■ Civil works suppliers, manufacturers and other contractors	■ Information Session ■ Advertising in local newspapers ■ Information hub (during construction)
Emergency Services	■ Fire and Rescue NSW Hay Office, Balranald, ■ NSW Rural Fire Service – Balranald ■ NSW Police, Hay ■ NSW Police, Balranald	■ Meetings / briefings/ emails /phone calls / factsheet / website / 1800 number / newsletters ■ Community open days / Information sessions
Community / sporting groups	■ Sporting teams – Moulamein Bowling Club, Moulamein Football Club, Balranald FNC, Balranald Bowling Club, Hay Historical Society Inc, Balranald Discovery Centre	■ Information Sessions ■ Meetings / briefings/ emails /phone calls / factsheet / website / 1800 number / newsletters ■ Advertising in local newspapers ■ Information hub (during construction)
Local Schools	■ Hay War Memorial High School, Balranald Central School, Moulamein Public School	■ Presentations ■ Meetings ■ Information Sessions ■ Emails /phone calls / factsheet / website / 1800 number / newsletters

Stakeholder Group	Stakeholder Details	Engagement Activities
Chambers of Commerce / Key Industry Groups	■ Moulamein Development Inc ■ Growing Business, Industry & Tourism Advisory Committee ■ NSW Farmers, Hay Branch ■ Accommodation providers	■ Presentations ■ Meetings ■ Information Sessions ■ Emails /phone calls / factsheet / website / 1800 number / newsletters
Local Media	■ The Guardian ■ ABC Riverina 2711 ■ Proposed Balranald Community Radio Station ■ 99.1 Smart FM Community Radio (Swan Hill)	■ Meetings ■ Information Sessions ■ Emails /phone calls / factsheet / website / 1800 number / newsletters
Environmental Bodies / Interest Groups	■ Local environmental interest groups, Local Land Services, Hay	■ Emails /phone calls / factsheet / website / 1800 number / newsletters ■ Meetings ■ Information Sessions
Local Indigenous groups	■ Nari Nari People ■ Nari Nari Tribal Council ■ Local Aboriginal Land Councils – Hay and Balranald ■ Registered Aboriginal Parties (RAPS)	■ Public Notification for Cultural Heritage ■ Meetings ■ CHMP Negotiations and development ■ Emails /phone calls / factsheet / website / 1800 number / newsletters ■ Information Sessions
Advocacy Groups	■ RE-Alliance ■ Renew Economy	■ Emails ■ Phone Calls ■ Meetings ■ Newsletters ■ Website
Local Councils	Murray River Council ■ Chris Bilkey (Mayor) ■ Rod Croft (Manager, Planning Services) ■ John Harvie (Manager, ED and Tourism) ■ David Wilkinson (Director, Planning and Environment) Hay Shire Council ■ Jenny Dwyer (Mayor) ■ David Webb (General Manager) ■ Jack Terblanche (Director, Planning and Development)	■ Meetings ■ Newsletters ■ Emails /phone calls / factsheet / website / 1800 number / newsletters ■ Site Tours ■ Open Days
Members of Parliament	■ Hon Sussan Ley, MP (Minister of Environment) ■ Helen Dalton, MP (Member for Murray) ■ Matt Keane (NSW Minister for Energy and Environment)	■ Meetings / Presentations ■ Emails /phone calls / factsheet / website / 1800 number / newsletters ■ Open Days ■ Site Tours

Stakeholder Group	Stakeholder Details	Engagement Activities
State Government Agencies and Departments	■ Department of Planning and Environment ■ Transport for NSW ■ Department of Regional NSW ■ EPA ■ Energy Corporation of NSW ■ NSW National Parks and Wildlife Service ■ NSW Rural Fire Service	■ Meetings / Presentations
Federal Government Departments	■ Department of Environment ■ Department of Infrastructure and Regional Development ■ Department of Agriculture, Water and Environment	■ Meetings / Presentations
Electricity / Utility Network Service Providers	■ TransGrid ■ Essential Energy ■ Telstra ■ Optus ■ NBN Co	■ Meetings / Presentations
Job Network and Training Providers	■ Sureway Employment and Training Hay, Balranald, Summit Employment and Training	■ Meetings ■ Information Session
Education and Training Providers	■ TAFE NSW – Hay, Griffith, Sunraysia, Finley ■ Charles Sturt University, Wagga Wagga	■ Meetings ■ Information Session
Other Infrastructure Developers	■ Lacour, Goldwind, Innogy, Maoneng, Overland Sun Farming, Windlab	■ Meetings

6. PROPOSED ASSESSMENT OF IMPACTS

6.1 Categorisation of Assessment Matters

This section outlines matters requiring further assessment in the EIS and the level of assessment that should be undertaken for each matter.

A preliminary environmental assessment was undertaken to identify the potential matters associated with the proposed construction and operation of the Project. The following were considered in the identification of matters requiring further assessment in accordance with the Scoping Report Guidelines:

- the scale and nature of the likely impacts of the Project and the sensitivity of the receiving environment;
- whether the Project is likely to generate cumulative impacts with other relevant future projects in the area;
- the ability to avoid, minimise and/or offset the impacts of the Project, to the extent known at the scoping stage; and
- the complexity of the technical assessment of the Project.

Each matter and its proposed level of assessment (detailed or standard) is identified in **Table 6-1**. Detailed assessments include environmental aspects that present a potential high constraint to the development, and other aspects which require detailed assessment, but do not pose a high risk constraint. In addition, the matters have been categorised to align with those identified in the Scoping Report Guidelines. A Scoping Summary Table has been included in **Appendix A**.

The key matters requiring more detailed assessments have been identified based on a preliminary assessment of the Project Area and by taking into consideration other wind farm developments in NSW.

Table 6-1 Proposed Assessment

Level of Assessment	Aspect
Detailed (potential high constraint)	Amenity – Landscape and Visual Amenity – Noise and Vibration Biodiversity Heritage - Aboriginal Cultural
Detailed	Access - Traffic and Transport Aviation Telecommunications
Standard	Social Hazards and Risks – Hazards / Preliminary Hazard Analysis Hazards and Risks – Bushfire Heritage – Historic Air Quality and Greenhouse Gas Land Resources Water Resources Hazards and Risks – Electromagnetic Field Hazards and Risks – Blade Throw Waste Management

The EIS will be prepared in accordance with the SEARs to be issued by DPE in response to this Scoping Report, and will incorporate the issues, which have been outlined in **Table 6-1** above. All assessments (including specialist assessments) will be completed by taking into consideration consultation with stakeholders, industry best practice guidelines, and the experiences from other wind farm projects.

6.2 Amenity

6.2.1 Visual

This section provides a summary of the results and findings of the Preliminary Visual Impact Assessment (PVIA) prepared and contained as **Appendix C** to this Scoping Report.

The PVIA was undertaken by Moir Landscape Architecture (MLA). The PVIA was prepared in accordance with the current *NSW Guidelines for Stage 1: Scoping Paper for Wind Farms Wind Energy: Visual Assessment Bulletin DPIE 2016* (the Visual Bulletin).

The Study Area, as referred to in the PVIA and within this section, is generally defined as the Project Area and surrounding land requiring assessment in the PVIA. The Study Area is generally defined as the land up to 8,000 m from the nearest turbine.

The following was undertaken in the preparation of the PVIA:

- **Desktop Assessment:** Application of Preliminary Assessment Tools to determine receptors with potential sensitivity; preparation of a preliminary Zone of Visual Influence (ZVI) to establish a theoretical zone of visibility of the Project; and identification of key viewpoints and landscape features using available mapping and background documents.
- **Site Inspection:** Photographic survey work for the assessment was undertaken in November 2021 to carry out a preliminary assessment of the existing landscape character from publicly accessible land within the Study Area. The findings of the site inspection are included in the PVIA and will form the basis for discussion with the community in the EIS Phase of the Project.
- **Community Consultation:** Community consultation has been undertaken through the scoping phase of the Project via community survey. Results of the community consultation documented in previous studies have also been utilised to gain perspective on the landscape values held by the community to inform the PVIA.

6.2.1.1 Existing Environment

Key Landscape Features and Viewpoints

The Bulletin states proponents must identify key landscape features, dwelling locations and key public viewpoints. This section provides an overview of the key features identified within and around the Project Area.

The landform is generally flat with dry distributary channels and floodplains (NPWS, 2003). Lack of water and dry, arid conditions support scattered stands of belah trees, saltbush and speargrass communities (NPWS, 2003). A number of saltbush and cottonbush varieties dominate the region with very sparse tree communities, thus yielding clear, open views of the expanse. The lack of tall canopy species allows higher wind speeds with continual wind actions on the landscape. Predominance of low-storey vegetation allows easier grazing opportunities for sheep, thus rendering the area favourable for livestock grazing. Most canopy cover is prominent within the extents of the Yanga National Park, SCA and Nature Reserve extents.

Given the dry and arid conditions of the region, the lakes and creeklines remain dry through most of the year. The most significant nearby hydrological features include Abercrombie Creek, The Forest Creek, Dry Lake and Gunyah Swamp. The closest and largest fresh water source is Yanga Lake. Lack of availability of fresh water sources has led to the prominence of native grazing pastures with occasional modified pastures and dryland cropping.

Yanga State Conservation Area (SCA) is located to the immediate west of the Project Area. The SCA exhibits characteristics of the Riverina Bioregion's Murrumbidgee subregion. The SCA and Yanga Nature Reserve are one of the examples of undisturbed patch of dense belah, mallee, rosewood and sugarwood communities with abundant grasses and dillon bush (NPWS, 2003). A combination of these remnant native vegetation patches forms the Murrumbidgee Valley Parks that are a testimony to the endemic landscape characteristics of the western Riverina region. The region also has significant historic and cultural associations such as Aboriginal burial sites, middens, spiritual sites, woolsheds and other structures established during colonial settlement. The parks also host biologically diverse areas that provide habitat for 24 threatened species (DPIE, 2020c).

Recreational associations occur mostly within the extents of the Yanga National Park, Nature Reserve and State Conservation Area (SCA). The Willows Campground and Willows Visitor Access Trail is the closest recreation spot located approximately 11 km from the closest WTG, which offers opportunities for short bushwalks and birdwatching. Yanga Lake and Homestead are located further about 30 km west of the Project Area.

Other areas of interest include the Willowvale Rest Area and St Pauls Rest Area on Sturt Highway. These areas serve as important resting spots for commuters travelling towards the towns of Hay or Balranald.

Consultation

In accordance with the Bulletin: *community consultation at this early stage may be broad, but should include discussions about the proposed project area, likely corridors of development, or preliminary turbine layouts and must involve people from the visual catchment.*

The purpose of community consultation undertaken in the preparation of the LVIA is to:

- establish key landscape features;
- defined areas of scenic quality; and
- identify key public viewpoints valued by that community.

Ongoing community consultation has been undertaken by Acciona through face-to-face meetings and a community survey to both involved and non-involved landholders and interest groups during face to face meetings between November 2021 and February 2022. The survey was also placed on the Project website.

As of 23 February 2022, a total of six surveys had been completed. None of the survey respondents raised concerns about the likely visual changes to the landscape from the Project.

Key landscape features identified by the community include:

- River Environs;
- Big tree on the river;
- Heritage Village;
- Cultural Heritage; and
- Flat Plains

Key viewpoints identified by the community for further assessment include:

- The Willows Campground, Yanga SCA; and
- Willowvale Rest Area, Sturt Highway.

Where possible, these features and viewpoints have been mapped in the PVIA. Additional consultation and further detailed assessment of these features and viewpoints will be undertaken during the EIS phase.

In addition, during consultation with Murray River Council it was noted that the Project would be visible for some residents within the LGA. However, Murray River Council did not express particular concerns in relation to visual amenity.

6.2.1.2 Potential Visual Impacts

The potential visual impacts of the Project have been assessed within the PVIA in accordance with the Bulletin. Preliminary Assessment Tools were used and applied to both dwellings and key public viewpoints within the Study Area. The tools provide an early indication of where placement of turbines will require further assessment and justification, and where consultation with potentially affected landowners needs to be focused – including discussions for landholder agreements.

The preliminary assessment tools involve analysis of two key visual parameters:

1. Visual Magnitude
2. Multiple Wind Turbine Tool

Dwellings identified through the application of the Preliminary Assessment tools have been assessed in detail in Appendix A of the PVIA (**Appendix C**).

Visual Magnitude

The Visual Magnitude Threshold is based on the height of the proposed wind turbines to the tip of the blade and distance from dwellings or key public viewpoints. The proposed wind turbines are based on a worst case scenario with a tip height of 291.5 metres. The 'black line' intersects at a distance of 3,900 metres and the 'blue line' intersects at 5,700 metres (refer **Figure 6-1**).

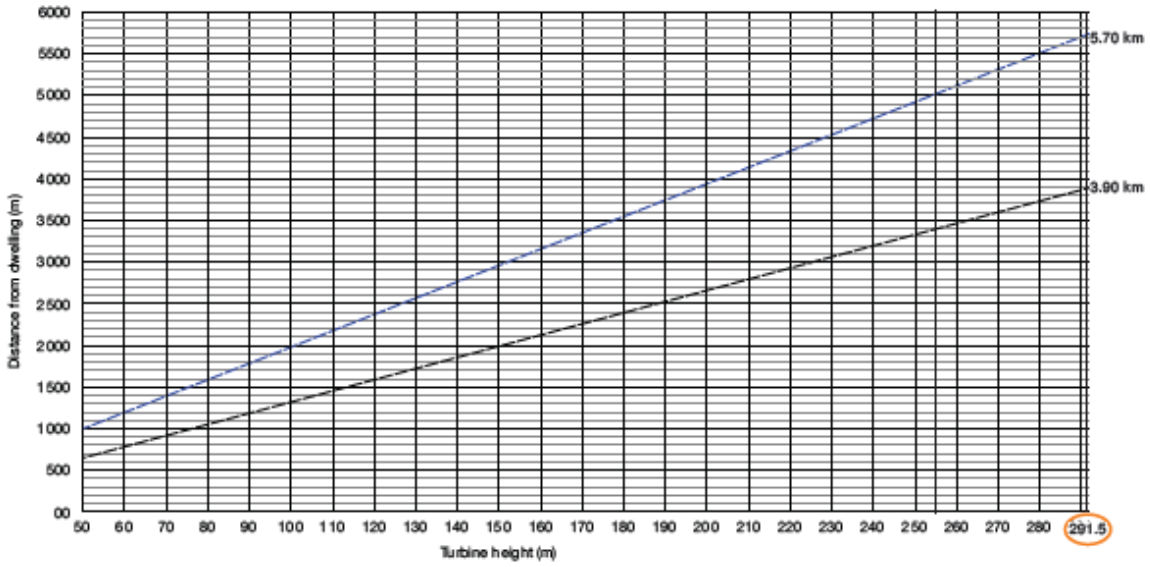


Figure 6-1 Visual Magnitude Thresholds for Keri Keri Wind Farm

(Source: adapted from Visual Bulletin)

For the purpose of the Preliminary Assessment, the Visual Magnitude thresholds are based on a 2D assessment of the Project alone. Further assessment indicates factors such as topography, relative distance and existing vegetation may minimise or eliminate the impacts of the Project from residences.

Assessment of the Visual Magnitude Thresholds for the Project identified dwellings which that will require further assessment in accordance with the Bulletin. The assessment identified:

- two (2) non involved dwellings (Dwellings 19 and 99) within 3,900 metres of proposed wind turbine locations (within black line of visual magnitude). These dwellings are located to the north west of the Project Area, with the nearest turbine at a distance of 3 km.
- 9 non involved dwellings within 8,000 metres of the proposed wind turbine locations. No dwellings were identified between the black & blue lines.

The 3,900 m, 5,700 m and 8,000 m buffer, forming the Visual magnitude threshold and location of dwellings are identified in **Figure 2-2**.

Detailed assessment identified existing vegetation would reduce visibility from both non involved dwellings within the black line of visual magnitude.

Preliminary assessment of 5 representative sensitive receptors included in Appendix A of the PVIA (**Appendix C**) illustrate that existing intervening vegetation that surrounds these non-involved dwellings is likely to reduce views to turbines. Further detailed assessment, site inspections of sensitive receptors to ground truth this analysis and consideration of mitigation measures will be undertaken during the EIS phase.

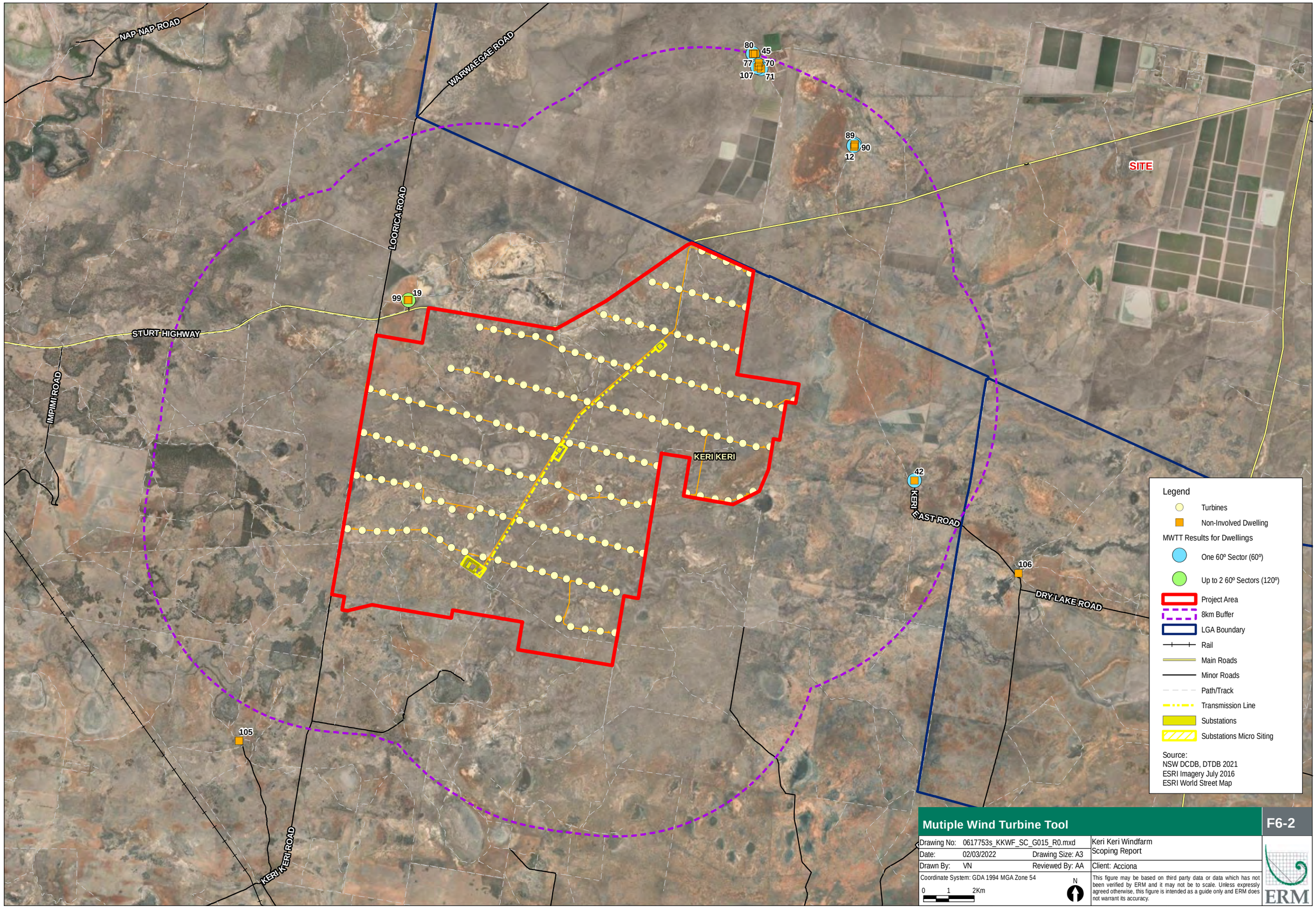
Multiple Wind Turbine Tool

The Multiple Wind Turbine Tool provides a preliminary indication of potential cumulative impacts arising from the Project. To establish whether the degree to which dwellings or key public viewpoints may be impacted by multiple wind turbines, the proponent must map into six sectors of 60° any proposed turbines, and any existing or approved turbines within eight kilometres of each dwelling or key public viewpoint.

When applied to the Project (refer **Figure 6-2**), the 2D Multiple Wind Turbine Tool identified:

- two (2) non involved dwellings (Dwellings 19 and 99) with two (2) sectors of visible turbines;
- the remaining nine (9) non involved dwellings are likely to have views to turbines in up to one (1) 60-degree sector which is deemed acceptable; and
- up to three (3) 60-degree sectors for Willowvale Rest Area, which is a key public viewpoint on the Sturt Highway.

Further assessment of these dwellings using 3D topographic mapping delivered the same results. Existing screening factors (including vegetation and structures) may reduce visibility of the turbines. Further detailed assessment, site inspections of sensitive receptors to ground truth this analysis and consideration of mitigation measures will be undertaken during the EIS phase.



Mutiple Wind Turbine Tool | **F6-2**

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Date:	02/03/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

0 1 2Km

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Zone of Visual Influence

The ZVI (also known as a Zone of Theoretical Influence Model) represents the area over which a development can theoretically be seen and is based on a Digital Terrain Model (DTM). The ZVI usually presents a bare ground scenario – i.e. a landscape without screening, structures or vegetation, and is usually presented on a base map.

The ZVI was determined through the use of digital topographic information and 3D modelling software WindPro. The ZVI has been assessed to approximately 30 km from the Project Area. Although it is possible for the development to be visible from further than 30 km away, it is generally accepted that beyond 10 km visibility is diminished.

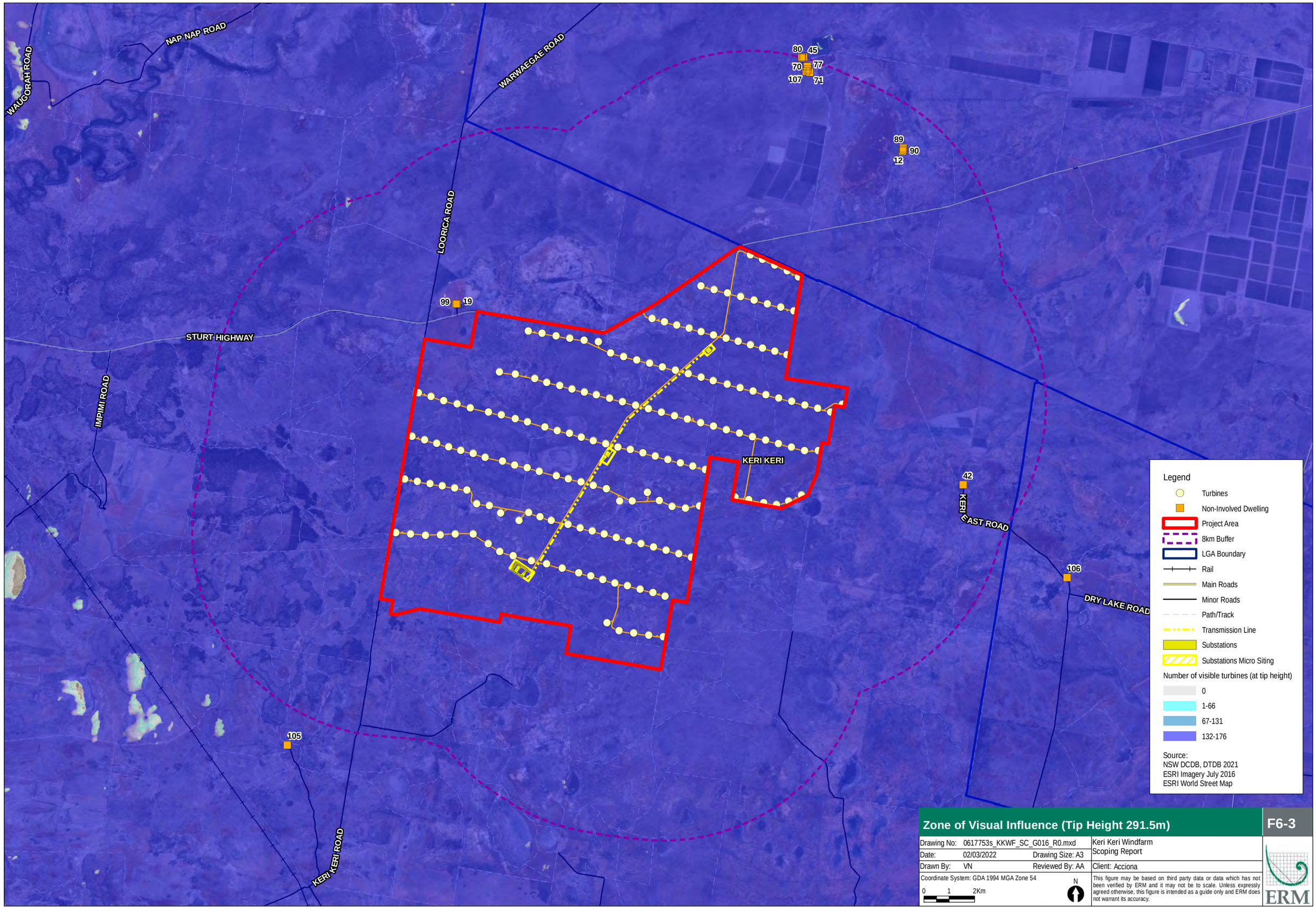
Figure 6-3 depicts the areas of land from which the proposed development may be visible and provides an indicative number of wind turbines based on the blade tip height of 291.5 metres. This indicates:

- due to the relatively flat topography the majority of turbines associated with the Project are likely to be visible from most areas around the Project Area;
- certain areas such as the dry lake systems that form a part of the Yanga Parks and parts of the Murrumbidgee Valley that are located generally northwest/west of the Project Area have been identified in the ZVI as areas with views limited by topography; and
- views to the majority of turbines associated with the Project are likely to be available for all dwellings within eight (8) kilometres of the WTGs, assuming the absence of any screening vegetation or existing structures.

Following the development of the ZVI, detailed site investigations (in the form of a viewpoint analysis inventory and dwelling assessments) were undertaken to ground truth the findings. Preliminary viewpoint analysis (from 10 public locations) and assessment of five (5) representative sensitive receptors have been included in Appendix A and Appendix B of the PVIA (**Appendix C**). These assessments illustrate existing intervening vegetation that surrounds non involved dwellings is likely to reduce views of turbines from a number of locations.

It is noted that the above is based on worst case scenario with no consideration of vegetation or structures. Ground truthing during field work will ascertain potential visibility, by taking into account structures and vegetation.

The closest non involved dwellings (Dwellings 19 and 99) are located to the north west of the Project Area, with the nearest turbine at a distance of 3 km. The dwelling assessment presented in Appendix A of the PVIA (**Appendix C**) illustrates existing intervening vegetation that surrounds the dwellings which is likely to reduce views of turbines. Further detailed assessment, site inspections of sensitive receptors to ground truth this analysis and consideration of mitigation measures will be undertaken during the EIS phase.



Zone of Visual Influence (Tip Height 291.5m)

F6-3

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Date:	02/03/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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6.2.1.3 Assessment Approach

This PVIA report was undertaken in accordance with the Visual Bulletin, and is contained as **Appendix C** to this Scoping Report. The PVIA:

- outlined the community consultation activities undertaken by Acciona and identified the key landscape features and characteristics that were found within and surrounding the Project Area;
- noted the landscape features and locations of concern to the community and will further consider these within the EIS assessment; and
- applied the preliminary assessment tools (magnitude and multiple wind turbine) to the preliminary wind turbine layout.

Further assessment and justification for placement of turbines in multiple sectors will be detailed in the EIS, along with a description of the mitigation and management measures being employed to reduce impacts. Further assessment may identify that factors such as topography, relative distance and existing vegetation may minimise the impacts of the project on nearby involved and non-involved residences.

The scope of the LVIA will include:

- Detailed dwelling assessment at sensitive non-involved dwellings to assess 'sensitive receptors', accounting for screening factors such as topography, vegetation; and determine mitigation measures to reduce visual impacts;
- Visual Baseline Study to further identify and assess landscape features and viewpoints;
- Viewpoint assessment and rating of key viewpoints within the visual catchment; and
- Graphical representations of the Project via wireframes and photomontages.

6.2.2 Noise

6.2.2.1 Existing Environment

The existing noise environment is determined to be that of a typical rural area, dominated by natural noise sources such as foliage noise and bird-song based on review of available online aerial imagery. Residential receptors are identified to be scattered in the area with low human activity. Receptors are also identified in the vicinity of the Sturt Highway and are likely to experience higher ambient noise levels, due to road traffic noise impact. Noise monitoring will be conducted at a later stage at receptors to ascertain the existing ambient noise levels in the area.

6.2.2.2 Potential Noise Impacts

The potential noise impacts were modelled and assessed based on applicable assessment standards and guidelines. The preliminary assessment considers the worst case noise propagation conditions based on preliminary wind turbine layout, specification and operating mode.

Legislative Context

The NSW Department of Planning, Industry and Environment (DPIE) *Wind Energy: Noise Assessment Bulletin - for State Significant Wind Energy Developmen*t (Noise Bulletin) (DPIE, 2016c) dated December 2016, provides practical guidance to proponents, planners, regulatory authorities, acoustic specialists and the broader community on how to measure and assess environmental noise impacts from wind energy projects. It applies to all new SSD wind energy proposals (such as the Keri Keri Wind Farm) seeking to obtain SEARs.

As stated in the Noise Bulletin, DPIE adopted the 2009 South Australian document *Wind farms environmental noise guidelines* (SA EPA, 2009) to form the basis of the regulatory noise standard and assessment methodology that will apply to the Project.

Modelling Method

Operational noise emissions were modelled using Brüel and Kjær's Predictor 7810 *Version 2020* (Predictor) noise modelling software package to calculate noise levels using ISO 9613.2[1].

The Predictor software package allows 3D elevation data to be combined with ground regions, water, foliage and receptor locations, to create a detailed representation of the Project Area and surrounding area. The noise model allows the quantification of noise levels from multiple sources based on sound power levels emitted from each source. The parameter computed at all identified receptors was the $L_{eq,10\text{-minute}}$ parameter, measured in A-weighted decibels (dBA).

The implemented calculation method, as per ISO 9613.2, of the Predictor software ensure that the software meets the requirements of the ISO 17534[2].

The Noise Bulletin requires that the conditions and settings associated with worst-case noise propagation conditions be assessed. Although the Project is still in the early stages of development, noise data and specifications have been provided for the wind turbine likely to be used as part of the Project design as a worst-case noise emission specification. The following data and conservative assumptions were adopted to predict noise propagation in worst-case conditions:

- all 176 turbines operating concurrently as per the locations identified in **Figure 3-1**;
- topography provided by Acciona;
- dwelling/receptor locations as identified in **Figure 2-2** and **Figure 3-1**:
  - there are 13 receptors (within 8 km of a proposed turbine location) considered in the modelling, of which 11 are non-involved landowners;
- wind turbine Nordex N163-5.X - 5.7 MW operating in Mode 0, with the following specifications:
  - cut-in speed of 3 m/s and cut-out speed of 26 m/s;
  - Sound Power Level of 109.2 dBA L_w;
  - 200 metre hub height;
  - blades with non-serrated trailing edges (Non-STE); and
- Conservative Ground Factor of 0[3] despite the Project Area and majority of surroundings being situated on dirt or grasslands.

The data provided for this preliminary noise assessment is valid for a downwind reference position as defined according to IEC 61400-11:3. Applicable environmental conditions correspond to the standardized requirements as per IEC 61400-11. Blade condition is assumed to be clean and undamaged.

Predicted L_{eq} noise levels were compared to the base noise criteria (the lowest criteria that can apply to any receptor) described in the Noise Bulletin, which is 35 dBA. The noise criteria are established on the basis of a 24-hour period but noise predictions are made for a worst-case 10-minute interval as per SA 2009 guidance.

Predicted Noise Levels

Based on the noise modelling method described above, the $L_{eq,10\text{-minute}}$ noise levels (in dBA) have been predicted. The predicted worst-case noise levels and a preliminary compliance assessment

[1] International Organisation for Standardisation (ISO) 9613 Part 2 - 1996 - *Acoustics - Attenuation of Sound during Propagation Outdoors - Part 2: General Method of Calculation* (ISO 9613:2, 1996).

[2] International Organisation for Standardisation (ISO) 17534 - 2015 – *Acoustics - Software for the Calculation of Sound Outdoors*.

[3] A ground factor of 0 indicates hard ground conditions such as concrete, associated with maximum noise propagation; A ground factor of 1 represents soft ground conditions, associated with maximum noise absorption.

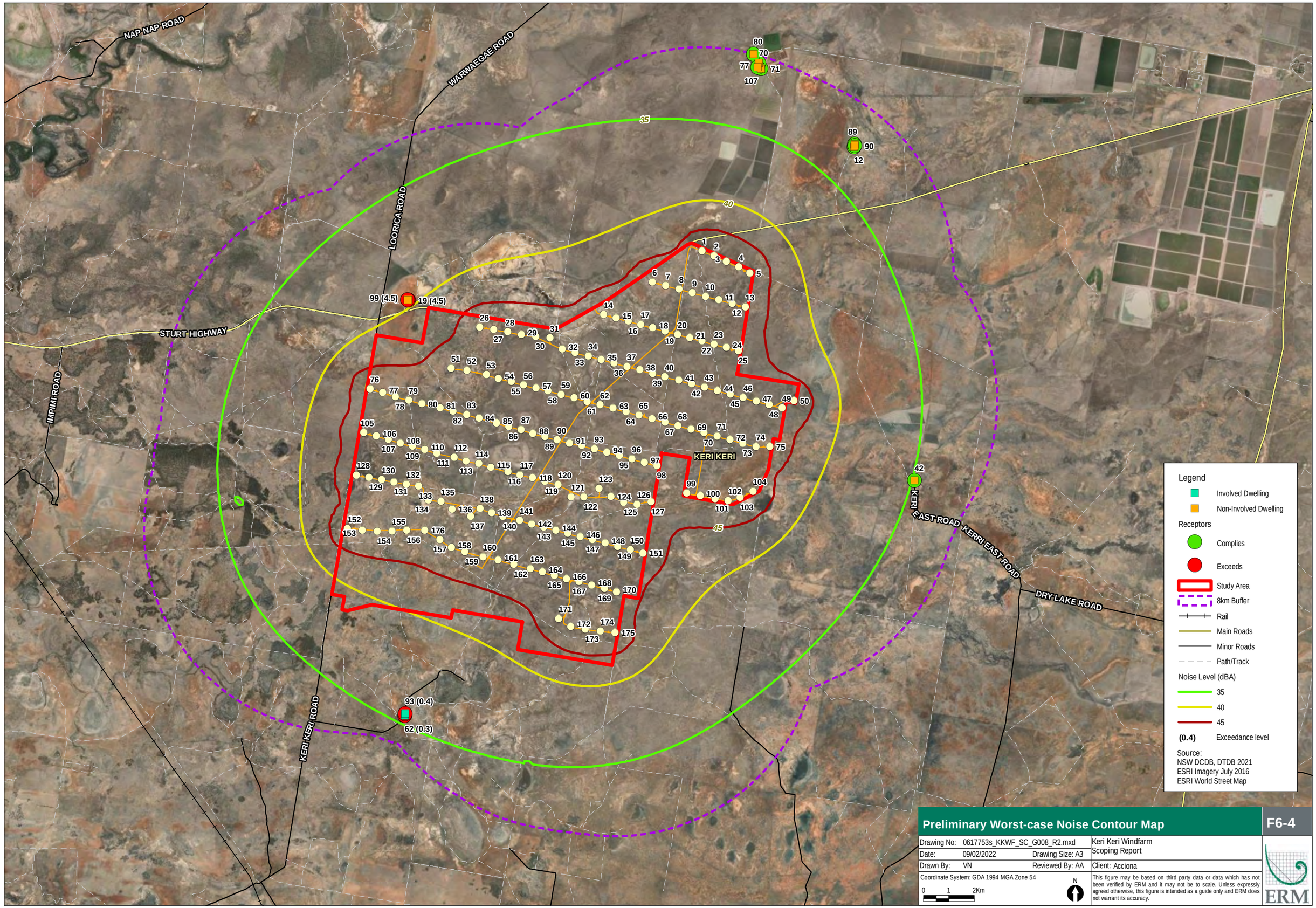
(comparison of predictions to criteria for the closest and/or potentially most affected non-involved landowners) are presented in **Table 6-2.**

Any compliance values that exceed criteria are highlighted in **bold** typeset. A noise contour map (resolution 200 m^2) for these worst-case operational conditions is presented in **Figure 6-4**.

The results presented in **Table 6-2** are for the maximum rated L_W value (109.2 dBA) of the nominated Nordex N163-5.X - 5.7 MW turbine operating in Mode 0, blades with non-serrated trailing edges.

Table 6-2 Predicted Noise Levels and Preliminary Compliance

ID	Status	GPS Co-ordinates (UTM Zone 54, in metres)		Approx. Elevation	Predicted Noise Level, $L_{Aeq,10\ min}$ dBA	Above 35 dBA Criteria?
		Easting	Northing	Metres		
SR012	Non-Involved	783072	6160304	72	33.5	No (-1.5)
SR019	Non-Involved	765553	6154292	73	39.5	**Yes (4.5)**
SR042	Non-Involved	785449	6147202	72	34.9	No (-0.1)
SR062	Involved	765409	6137970	68	35.3	**Yes (0.3)**
SR070	Non-Involved	779341	6163502	70	32.8	No (-2.2)
SR071	Non-Involved	779424	6163383	70	32.9	No (-2.1)
SR077	Non-Involved	779326	6163612	71	32.7	No (-2.3)
SR080	Non-Involved	779121	6163954	70	32.5	No (-2.5)
SR089	Non-Involved	783101	6160405	72	33.4	No (-1.6)
SR090	Non-Involved	783112	6160359	72	33.5	No (-1.5)
SR093	Involved	765421	6138049	68	35.4	**Yes (0.4)**
SR099	Non-Involved	765521	6154300	74	39.5	**Yes (4.5)**
SR107	Non-Involved	779289	6163430	70	32.9	No (-2.1)



Preliminary Worst-case Noise Contour Map

F6-4

Drawing No:	0617753s_KKWF_SC_G008_R2.mxd		Keri Keri Windfarm Scoping Report
Date:	09/02/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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Summary of Findings

Noise levels were predicted using worst-case modelling parameters. The results indicate that at two of the 13 non-involved receptors considered in the modelling (SR19 and SR99), noise levels are predicted to moderately exceed the 35 dBA base noise criteria by 5 dB. The noise level ($L_{eq,10\ minute}$) at both SR19 and SR99 are predicted to be 39.5 dBA.

Noise levels at the two involved receptors considered in the modelling (SR062 and SR093) are predicted to marginally exceed the 35 dBA base noise criteria by less than 1 dB. Noise levels ($L_{eq,10\ minute}$) at SR062 and SR093 are 35.3 and 35.4 dBA respectively.

Noise levels at the remaining non-involved receptors are predicted to be below the 35 dBA base noise criteria, ranging between 31.3 dBA and 34.9 dBA.

Additional modelling was conducted using a Nordex N163-5.X - 5.7 MW turbine with serrated trailing edges (STE). In comparison, the modelling predictions for this model of the turbine are predicted to be 2 dB less than the noise levels predicted for the non-STE model (as shown in **Table 6-2**).

Limitations

The assessment summarised above is based on predicted worst-case noise levels and a fixed 35 dBA base noise criteria (as required in the Noise Bulletin) applicable to the Scoping Report stage. Noise levels from turbines rise as the wind speed at the site increases. However, an increase in wind speed typically results in an equal or greater increase in the background noise at receptor locations due to aerodynamic and foliage noise which may mask turbine noise (Noise Bulletin). Accordingly, these compliance results may change with wind speed-based noise limits that reflect this anticipated increase in background noise with elevated winds.

Background noise is also affected by factors other than wind speed. Receptors SR19 and SR99 are located near the Sturt Highway (located to the north west of the Project Area) and may experience masking from road traffic noise in addition to masking from wind noise.

Further, a ground factor of 0 has been adopted for the preliminary modelling (0 is hard, 1 is soft) reflecting the lowest noise ground absorption factor in alignment with the Noise Bulletin requirements for maximum and worst-case assumptions to be adopted at the Scoping Report stage. The area is predominantly marginal farming land. Based on a review of aerial photography, a ground factor of 0.6 to 0.8 would appear suitable for most of the Project Area, depending on the degree of compaction of the soil.

A sensitivity analysis using a ground factor of 0.6 was completed, and identified that noise levels would be reduced by 0.6 to 1.8 dBA (1.0 dBA on average) as a result. This sensitivity analysis indicates that using a ground factor of 0.6, noise levels would be at or below the base noise limit of 35 dBA for all non-involved landholders except for SR19 and SR99, which would exceed the base noise limit by 2.8 dB and 2.7 dB respectively.

Further wind turbine specifications, such as hub height and operating mode, or layout will be investigated in the next stage with the aim of achieving compliance at all identified receptors.

6.2.2.3 Assessment Approach

Noise levels at all receptors will be further assessed during the detailed noise impact assessment as part of the EIS and subsequent detailed design of the Project. The EIS assessment would include a noise and wind speed monitoring campaign to establish wind speed-based noise limits at identified receptors.

This preliminary assessment has focused on operational worst-case noise emissions from the wind farm, which is the main noise factor required for assessment at this stage of the Project. The EIS noise impact assessment will provide further assessment of this factor as well as other noise related aspects of the Project, as listed below:

- A baseline noise and wind speed monitoring campaign to quantify existing noise conditions (and meteorological conditions) at select non-involved landholders. From this data, wind speed-based noise levels and limits would be established from regression analysis.
- Detailed noise modelling of the Project's construction and operational phases. This will include assessment based on the preferred wind farm layout and turbine specifications.
- Consideration of potential:
  - General construction and operational noise impacts to receptors within the potential area of influence of the Project.
  - Road traffic noise impacts (construction and operational phases, with a focus on construction) to receptors within the potential area of influence of the Project.
  - Vibration impacts (construction and operational phases, with a focus on construction) at receptors within the potential area of influence of the Project.
  - Cumulative operational noise impacts associated with other nearby wind farms or surrounding industry (as relevant).
- Recommendations for noise and vibration reducing mitigation, management measures, safeguards and/or provisions for monitoring.

6.3 Biodiversity

The following section provides a summary of the results and findings of the Preliminary Biodiversity Assessment prepared and contained as **Appendix D** to this Scoping Report.

6.3.1 Existing Environment

6.3.1.1 Overview

The Project Area is located within the IBRA Riverina (RIV) Bioregion. The Riverina Bioregion is characterised by extensive riverine floodplains, and is dominated by chenopod shrublands and native grasslands. The climate is semiarid with low, winter-dominant rainfall, hot summers and cool winters. Large portions of land within the Project Area have been subject to extensive clearing for agricultural purposes including cropping, and modified pastures for livestock grazing. As a result, minimal treed vegetation remains on site, with two small patches of intact remnant Black Box communities, and few sparsely distributed paddock trees and shrubs.

The western boundary of the Project Area is located immediately adjacent to the Yanga State Conservation Area (Yanga SCA), managed by NSW National Parks and Wildlife Service (NPWS). This area was initially reserved in 2007 and covers an area of 34,557.39 ha. The Yanga SCA has connectivity to the Yanga National Park and Yanga Nature Reserve. The creation of the parks initiated the first large-scale protection and conservation of River Red Gum (*Eucalyptus camaldulensis*) in NSW. The River Red Gum forests are an iconic value of the parks and are part of the third-largest contiguous stand of River Red Gum forest in Australia. Other significant vegetation protected by the parks includes Black Box woodland, Lignum shrubland, Nitre Goosefoot shrubland and three endangered ecological communities. In addition, the parks are one of the most biologically diverse areas in the NSW Riverina Bioregion. They provide habitat for 24 threatened animals and contain one of the largest known populations of the nationally endangered Growling Grass Frog (*Litoria raniformis*). The location of the Parks in relation to the Project Area are identified in **Figure** 1-1.

There are Areas of Outstanding Biodiversity Value (AOBV) within the Project Area. These areas are on the southern border, associated with the ephemeral Abercrombie Creek which is located along the southern boundary of the Project Area. During the NGH (2020) and ERM 2021 field surveys all watercourses and hydro lines were observed to be dry, despite substantial rainfall during the winter and spring seasons. Validated PCT's and threatened species records within the context of the Project Area are presented in **Figure 6-5**.

6.3.1.2 Plant Community Types and Potential Threatened Ecological Communities

A review of the state vegetation type mapping for the Riverina region (Version v1.2 - VIS_ID 4469) and NGH (2020) reports was undertaken to assess existing vegetation mapping information within the Project Area. This mapping was further refined based on Spring 2021 survey observations and BAM plot data, resulting in a total of nine (9) PCTs being identified across the Project Area:

- 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).
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion).
- 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone.
- 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion.
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones.
- 159 - Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW).
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains.
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones.
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone.

Four (4) EPBC Act TECs were identified within the Protected Matters Search Tool as having the potential to occur within the Project Area. These TECs include:

- Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of Southeastern Australia.
- Weeping Myall Woodlands.
- Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions.
- Plains mallee box woodlands of the Murray Darling Depression, Riverina and Naracoorte Coastal Plain Bioregions.

Based on field surveys, one (1) TEC has been confirmed to occur within the Project Area:

- Natural Grasslands of the Murray Valley Plains.

A further five (5) TECs listed under either the BC Act or EPBC Act have the potential to occur based on their association with PCTs, identified as known to occur within the Project Area:

- Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW South Western Slopes bioregions (associated PCT 28).
- *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregion (associated PCT 28).
- *Acacia loderi* shrublands (associated PCT 153).
- Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions (associated PCT 159).
- Artesian Springs Ecological Community in the Great Artesian Basin (associated PCTs 160, 163).

The dominant vegetation type across the Project Area has been identified as PCT 164, 'Cotton Bush open shrubland of the semi-arid (warm) zone', which covers 12,624.1 Ha, 69.9% of the Project Area. Other dominant communities include PCT 163, 'Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones', PCT 44, 'Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion', and PCT 153, 'Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones'.

Thirty-four vegetation integrity plots (BAM plots) have been completed across the current Project Area to collect floristic data to identify and map PCTs. Further collection of BAM plots will be undertaken to meet the BAM requirements and will be completed in subsequent survey periods to inform the BDAR and EIS to inform the designation of vegetation zones.

The field surveys undertaken to date have not identified Mallee Box species, Grey Box or Weeping Myall woodlands within the Project Area. A small grove of Buloke (*Allocasuarina luehmannii*) was allocated to PCT 28, this community is representative of the Buloke Woodlands TEC. However, vegetation integrity plots (BAM Plots) have identified species consistent with the critically endangered TEC Natural Grasslands of the Murray Valley Plains.

6.3.1.3 Threatened Flora and Fauna Species

Based on the field survey effort described in the Preliminary Biodiversity Assessment **(Appendix D**), five (5) threatened species are known to occur within the Project Area. These include:

- White-fronted Chat (*Epthianura albifrons*), listed as vulnerable under the BC Act;
- Black Falcon (*Falco subniger*), listed as vulnerable under the BC Act;
- Little Eagle (*Hieraaetus morphnoides*), listed as vulnerable under the BC Act;
- Chariot Wheels (*Maireana cheelii*), listed as vulnerable under the BC Act and EPBC Act; and
- Major Mitchell's Cockatoo (*Lophochroa leadbeateri*), listed as vulnerable under the BC Act.
- The following six (6) threatened species are considered likely to occur within the Project Area based on the Likelihood of Occurrence Assessment:
- Spotted Harrier (*Circus assimilis*), listed as vulnerable under the BC Act;
- Growling Grass Frog (*Litoria raniformis*), listed as endangered under the BC Act and vulnerable under the EPBC Act ;
- Plains-wanderer (*Pedionomus torquatus*), listed as endangered under the BC Act and critically endangered under the EPBC Act;
- Grey-crowned Babbler (*Pomatostomus temporalis*), listed as vulnerable under the BC Act;
- Mossgiel Daisy (*Brachyscome papillosa*), listed as vulnerable under the BC Act and EPBC Act; and
- Winged Pepper-cress (*Lepidium monoplocoides*), listed as endangered under the BC Act and EPBC Act.

The survey effort for threatened flora will be continued during upcoming field surveys to meet the requirements of the BAM, and to inform the EIS.

In accordance with the requirements of Section 5.2 of the BAM, the BDAR will identify the habitat suitability for threatened species within the Project Area.

Species that meet all the relevant criteria will be automatically populated in the BAM-C to be assessed either for ecosystem credits or species credits. No further assessment is required for those species that are unlikely to occur or where the Project Area is considered as unsuitable habitat.

A preliminary list of candidate species is provided in **Table 6-3**.

Table 6-3 Preliminary List of Candidate Species That Will Require Assessment under the BAM

Scientific Name	Common Name
Fauna	
Ardeotis australis	Australian Bustard
Burhinus grallarius	Bush Stone-curlew
Haliaeetus leucogaster	White-bellied Sea-Eagle
Hieraaetus morphnoides	Little Eagle
Litoria raniformis	Southern Bell Frog
Lophochroa leadbeateri	Major Mitchell's Cockatoo
Lophoictinia isura	Square-tailed Kite
Pedionomus torquatus	Plains-wanderer
Phascolarctos cinereus	Koala
Polytelis anthopeplus monarchoides	Regent Parrot (eastern subspecies)
Polytelis swainsonii	Superb Parrot
Ninox connivens	Barking Owl
Tyto novaehollandiae	Masked Owl
Flora	
Austrostipa wakoolica	A spear-grass
Brachyscome muelleroides	Claypan Daisy
Brachyscome papillosa	Mossgiel Daisy
Caladenia arenaria	Sand-hill Spider Orchid
Convolvulus tedmoorei	Bindweed
Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum
Lepidium monoplocoides	Winged Peppercress
Leptorhynchos orientalis	Lanky Buttons
Maireana cheelii	Chariot Wheels
Pilularia novae-hollandiae	Austral Pillwort
Sclerolaena napiformis	Turnip Copperburr
Solanum karsense	Menindee Nightshade
Swainsona murrayana	Slender Darling Pea
Swainsona plagiotropis	Red Darling Pea
Swainsona sericea	Silky Swainson-pea

6.3.1.4 Bird Utilisation

Prescribed impacts related to wind farm development apply not only to threatened species but also to any resident raptor species and nomadic or migratory species whose flight paths are likely to cross the subject land and at Rotor Swept Height (Paragraph 6.7.1.5 of the BAM).

Initial Bird Utilisation Surveys (BUS) were undertaken by Nature Advisory Pty Ltd to inform the NGH (2020) report.

During the formal BUS, a combined total of 35 species were recorded in autumn and spring.

ERM aims to continue to undertake further BUS in winter and summer to determine avian species with the potential to be impacted within the Rotor Swept Area (RSA).

During the initial BUS, five (5) raptor species were considered to be vulnerable to collision, and were recorded at RSA, however the level of use of the site by these species was considered low.

- Wedge-tailed Eagle (*Aquila audax*);
- Black Kite (*Milvus migrans*);
- Nankeen Kestrel (*Falco cenchroides*);
- Brown Falcon (*Falco berigora*); and
- Black Falcon (*Falco subniger*).

Nesting sites were recorded for raptors, including the Little Eagle, Brown Falcon and Wedge-tailed Eagle. At least three pairs of Wedge-tailed Eagles were observed to potentially hold territories and nests within the wind farm footprint.

The EIS and BDAR will assess potential collision risks to both birds and bats.

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STURT HIGHWAY

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KERI KERI ROAD

Legend

Bionet Records

- Black Falcon
- Grey-crowned Babbler (eastern subspecies)
- Major Mitchell's Cockatoo
- Plains-wanderer
- White-fronted Chat
- Chariot Wheels

ERM Records (2021)

- Chariot wheels
- Major Mitchell's cockatoo
- Wedge-tailed Eagle
- White-fronted chat

NGH Records (2020)

- Little Eagle
- Wedge-tailed Eagle
- White fronted chat
- Project Area
- Main Roads
- Minor Roads
- Path/Track
- Threatened ecological communities (TECs)

PCT

- 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)
- 17 - Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)
- 28 - White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zone
- 44 - Forb-rich Speargrass - Windmill Grass - White Top grassland of the Riverina Bioregion
- 153 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones
- 159 - Old Man Saltbush shrubland mainly of the semi-arid (warm) climate zone (south western NSW)
- 160 - Nitre Goosefoot shrubland wetland on clays of the inland floodplains
- 163 - Dillon Bush (Nitre Bush) shrubland of the semi-arid and arid zones
- 164 - Cotton Bush open shrubland of the semi-arid (warm) zone

Source:
ERM Fieldwork 2021, NGH Fieldwork 2020
NSW DCDB, DTDB 2021
ESRI Imagery July 2016

Biodiversity Features

F6-5

Drawing No:	0617753s_KKWF_SC_G017_R0.mxd		Keri Keri Windfarm Scoping Report
Date:	10/02/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

0 1 2Km

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ERM

6.3.2 Assessment Approach

The construction and operation of the Project has the potential to cause impacts to threatened species and TECs listed under the BC Act and EPBC Act. These will need to be considered as part of the EIS to be prepared under Part 4 of the NSW EP&A Act. Additionally, the Project will need to be referred to the Australian Government Minister for the Environment and Energy through the preparation of a separate referral.

As there are recorded Biodiversity values within the Project Area, application of the BAM and the preparation of a BDAR will be required.

Candidate species will be selected for further assessment by considering how they and their habitat might be affected by the Project. A preliminary list has been presented above.

In this instance the main potential impacts of the Project (during construction and operation) that would need to be assessed include:

- clearing of TECs;
- loss of extant native vegetation communities and associated fauna habitat and the subsequent impacts to local population of native species, particularly threatened and migratory species;
- increased habitat fragmentation;
- mortality and injury from vehicle strikes and vegetation clearing; and
- mitigation measures relevant to threatened species, TECs, native vegetation communities, hydrology and construction impacts will be addressed within the EIS. There is also a risk that weeds may be transported within and off-site. Mitigation measures to reduce the chance of the spread of weeds will be considered within the EIS.

The desktop assessment and field surveys undertaken to date have highlighted a range of known and potential biodiversity constraints.

- The following steps are considered essential in ensuring an adequate assessment of biodiversity values is continued throughout future stages of the Project:
- prepare and submit a BDAR in accordance with the BAM;
- prepare and submit EPBC referral to the Australian Government Minister for the Environment and Energy;
- prepare a detailed assessment of MNES; and
- conduct further targeted seasonal fauna and flora surveys for species considered likely or potentially occurring within the Project Area in accordance with relevant federal or State survey guidelines.

6.4 Heritage

6.4.1 Aboriginal Cultural Heritage

6.4.1.1 Existing Environment

Archaeological Background

The Project Area is located within the Murrumbidgee Province of the Riverina Bioregion. The Murrumbidgee Province is generally comprised of a natural flat landscape largely consisting of clays, silts and sands which historically has been subject to a consistent cycle of annual flooding. Environmental influences on this landscape have varied dramatically over time with post glacial climate changes in the Holocene reducing flood peaks and sediment load. Over time this has resulted in modern watercourses crossing and cutting through earlier palaeochannels. These landscape features provide complexity to an assessment of archaeological sensitivity within the Riverine region that may not be identified through the predictive features of the Due Diligence Code of Practice for the Protection of Aboriginal Objects in NSW (DECCW, 2010).

A localised landscape based predictive model was developed by Colin Pardoe for the 'Murrumbidgee Province' as part of the Murrumbidgee Province Aboriginal Cultural Heritage Study (Pardoe & Martin, 2011). This predictive model has focused on the localised landform features and their relationship to site identification and includes assessment of the Project Area. Pardoe's assessments considered the relationship between landform features and the location of archaeological sites making the following conclusions.

- Water – The pattern of site distribution was identified as having its greatest concentration within close proximity to watercourses. **Figure 6-10** demonstrates the waterways within the Project Area. Pardoe and Martin 2011 found some variation in site distribution based on water source type was also noted:
  - Major Streams – No site was located more than 12 km from a major river channel with most sites found with a short distance of this channel (75% of sites were within 3.3 km of a major stream). For the purposes of predictive modelling all land within 5 km of a major stream was considered sensitive.
  - Minor Streams – No site was located more than 12 km from a minor stream (75% were within 2.2 km). For the purposes of predictive modelling all land within 5 km of a minor stream was considered sensitive.
  - Lakes – More than 82% of sites are found within 8 km of a lake. For the purposes of predictive modelling all land within 10 km of a lake was considered sensitive.
  - Swamps – No obvious pattern of distribution was identified which was attributed to variations in the way swamps are described in official mapping data.
- Landforms – Plains made up 93% of the Province, and as such minor variations in landform were noted to be significant as an impetus to the flow of water and location of resources. While sites were identified across most landforms patterns; channelled plain and confined trace landforms were identified as containing a disproportionate number of sites. These landforms were most often associated with the modern active floodplain. Comparatively, burials were most often associated with scalded, channelled and depressed plains associated with paleo environments.
- Soils – Soil type was noted for its association with water resources and vegetation communities. Based on this association, particular soil types were identified to be associated more closely with site features (burials, hearths, mounds etc).
- The vast majority of the Project Area is comprised of landform types, (**Figure 6-10**), which were identified by Pardoe as having the potential to contain Aboriginal sites. Desktop assessment for the current report primarily focused on the presence of watercourses including major streams, minor streams and lakes in its assessment of archaeological sensitivity. The assessment identified a number of significant watercourses in proximity to the Project Area including the Murrumbidgee River, Uara Creek, Forest Creek and Abercrombie Creek. Several lakes were also identified in proximity to the Project Area including Dry Lake and a number of unnamed lakes which are located along Abercrombie Creek. Based on Pardoe's modelling, the land surrounding these features was identified as archaeologically sensitive.

Soil mapping of the region (DECCW, 2002, pp. 104-105) shows that the Project Area is largely made up of grey, brown, and red clays; siliceous sands; and red and brown earths. Soils are closely related to the current and previous hydrological regimes, with areas of lower relief typically comprised of grey cracking clays associated with flood environments. The majority of the Project Area is comprised of level plains of Quaternary alluvium of sands and clays as shown in **Figure 6-12.**

As part of their preliminary constraints assessment for the current project, NGH (2020) utilised these soil profiles to build predictions on the sensitivity of the landscape. NGH assessed that the areas high in clays and alluvial fill were associated with lower elevations and characterised as a depositional environment of lower archaeological potential. Comparatively, areas of siliceous sands were associated with elevated landforms assessed to be an erosional landscape demonstrating high archaeological potential. NGH further noted that the majority of the subject site was characterised as a plain with areas of red and brown earths with a higher silt content that are commonly surrounding the siliceous sands soils, these areas were assessed to have high archaeological potential for containing archaeological deposits, including burials.

Preliminary cultural heritage sensitivity mapping is provided is provided in **Figure 6-6** and has been developed based on the predictions developed from both Pardoe's and NGH's predictions. Further assessment would be required to identify additional environmental or landscape features (including palaeochannels) which may also be archaeologically sensitive, as well as historic land uses which may have disturbed or otherwise modified the archaeological sensitivity of an area. Detailed environmental modelling and ground-truthing would be required to adequately categorise the archaeological and cultural sensitivity of the Project Area.

In addition to the large number of tangible cultural heritage remains identified across the Murrumbidgee Province, Pardoe & Martin (2011) also noted that intangible ceremonial, dreaming and story sites were common through the region. These were often associated with landscape features such as waterholes, hills, trees or other features.

Previous Archaeological Assessments

Several archaeological surveys and reports have been conducted within the Project Area and the surrounding landscape for renewable energy projects and other land management programs. These are briefly discussed below:

NGH Environmental (2016) surveyed 800 ha of land for the proposed Sunraysia Solar Farm near Balranald, located approximately 30 km from the current Project Area. The survey recorded three sites comprising two clusters of burnt clay recorded as ovens and a site complex of seven stone artefacts and three hearths. NGH noted that lack of scarred trees in the assessment area was likely due to historic clearance across the assessment area and the lack of permanent water within the assessment area. NGH interpreted the nature of the archaeological material within this landscape to suggest that Aboriginal use of the landscape was intermittent.

Another survey undertaken in the area was by Anderson (2015) for the Balranald Mineral Sands Project located approximately 70 km from the Project Area. For this assessment, a total of 1,125 ha of the 3,300-ha project area was surveyed with a total of 548 Aboriginal sites identified over the course of the surveys. The overwhelming majority of these sites (89.8%) were composed of a single site element, with the remaining 10.2% having two or more. Isolated and open scatters of stone artefacts were the most common site type throughout the area. Hearths were the second most common with scarred trees, PADs, and shell following in frequency. The assessment noted areas of high and moderate cultural value were associated with the Box Creek distributary streams as well as relict lake fringes and depressions.

A total of two former heritage investigations have been undertaken within the Keri Keri Project Area itself. These investigations highlight the sensitivity of the Project Area with the variety in site types found throughout the Keri Keri area suggesting that the region was seasonally inhabited by Aboriginal people.

Between 2014 and 2016, OzArk Environmental & Heritage Management Pty Ltd (OzArk) (OzArk, 2017) conducted surveys and assessments of the Abercrombie Water Efficiency Project (AWEP), which consisted of a 10 m wide corridor along approximately 276 kilometres of pipeline as well as small areas of ancillary water infrastructure. Parts of the AWEP area was within the Keri Keri property. Initial investigation by OzArk had identified seven sites, three of which being open campsites. An Aboriginal Heritage Impact Permit (AHIP) application was recommended for two isolated finds

(WAIF1, a grinding stone fragment, and WA-IF3, a flaked piece of silcrete) but was refused based on lack of survey coverage. Re-assessment was undertaken including pedestrian transects and an AHIP application was subsequently approved by the OEH, allowing for the harm (removal) to the two previously mentioned objects and the management of a further 42 Aboriginal objects or 'no harm' areas.

NGH Environmental (NGH, 2020) completed a Preliminary Cultural Heritage Study on behalf of Acciona for the current Keri Keri Renewable Energy Project (this Study has been cited previously in Section 6.4.1.1). The desktop report investigated the preliminary issues relating to cultural heritage potential opportunities and constraints relevant to the Project Area. Several Aboriginal sites were assessed and sensitive landscape mapping identified that further archaeological assessment would be required during the development pathway. Preliminary assessment suggested that Aboriginal use of the landscape was seasonally intermittent. The results of these surveys in the landscape immediately adjacent to and within Keri Keri was considered by NGH to suggest that the region of the Hay Plain was extremely sensitive due to its proximity to major regional (and seasonal) waterways along with other landscape features including ancient palaeochannels and relict lake features including lunettes.

Field Assessment

Preliminary biodiversity assessment undertaken by ERM for the current project has confirmed the sensitivity of the landscape through the identification of three sites containing Aboriginal ancestral remains within the Project Area. Preliminary management of this identification has included liaison with NSW Police, preliminary consultation with Balranald Local Aboriginal Land Council and notification of the discovery to Heritage NSW.

Following preliminary identification, the three sites were subsequently visited by Colin Pardoe (Forensic Anthropologist) who recorded a detailed description of each site and confirmed that the remains were comprised of Aboriginal ancestral remains. These sites have subsequently been registered on the AHIMS database (AHIMS ID 48-4-0540, 48-4-0539 and 47-6-0947). At present an exclusion zone has been placed around these finds with long term management of these sites to be subject to comprehensive consultation as part of the EIS assessment.

AHIMS Search Results

Heritage NSW provides the Aboriginal Heritage Information Management System (AHIMS) database which holds information concerning previously recorded Aboriginal sites in NSW. An extensive search of the AHIMS database was conducted on 22 December 2021, using the details provided in **Table** 6-4.

Table 6-4 AHIMS Database Search Details

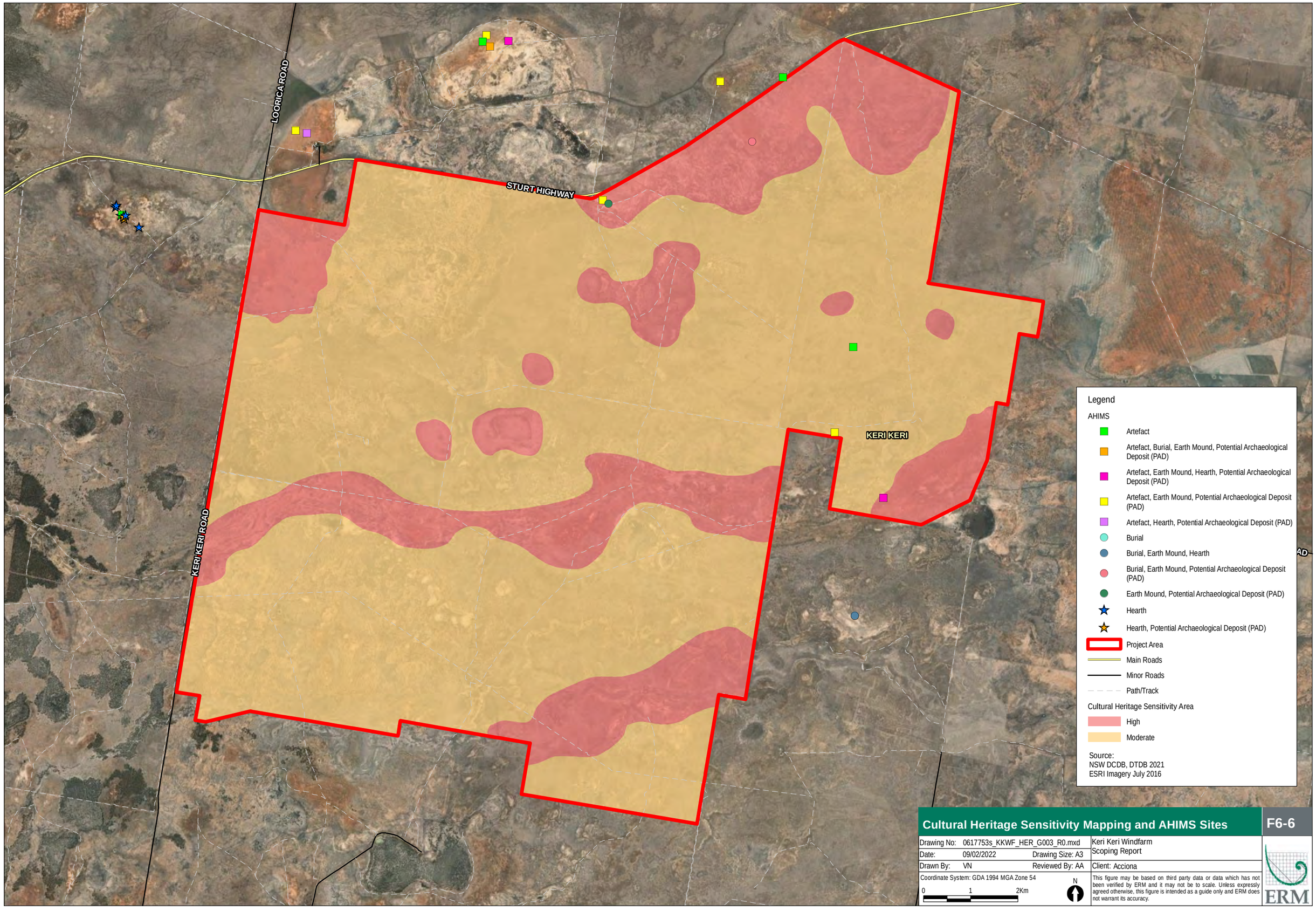
Item	Detail
Client Service ID	649010
Datum	GDA Zone 56
Latitude	-34.84 to -34.68
Longitude	143.85 to 144.06
Buffer	1 km
Number Sites	28

A total of 28 sites were identified within and surrounding to the search area. Six are located within the boundaries of the Project Area, and the remaining 22 sites located directly surrounding the Project Area (refer **Figure 6-6**). The sites are varied in type, consisting of Burials, Earth Mounds, Potential Artefact Deposits (PADS), Hearths and Oven Mounds, Artefacts, and Modified Trees. Many of the registered sites contain multiple site types in one location (e.g. Artefact and Earth Mounds and PADS). Of the six previously recorded sites located with the boundary of the Project Area at least one of them is a burial with human remains. There is a high potential for more sites containing ancestral human remains to exist given the other listed sites contain features such as earth mounds, hearths and PADS.

The results of the full AHIMS search are summarised in **Table 6-5.** It is noted that the current AHIMS search results predate the completion of the biodiversity survey and consequently the Aboriginal ancestral remains identified during that survey are not represented in the below table or mapping.

Table 6-5 AHIMS Registered Site Types

Site Type	Total Number of Site types	Site ID Within Project Boundary
Burial	1	
Burial, Earth Mound, Hearth	2	
Burial, Earth Mound, PAD	1	47-6-0759
Artefact	4	48-40182
Artefact, Hearth	1	
Artefact, Hearth, PAD	1	
Artefact, Earth Mound, PAD	5	47-6-0755, 48-4-0318
Artefact, Burial, Earth Mound, PAD	1	
Artefact, Earth Mound, Hearth, PAD	2	48-4-0317
Artefact, Hearth, PAD	1	
Earth Mound, PAD	1	47-6-0756
Hearth	5	
Hearth, PAD	2	
Modified Tree (Carved or Scarred)	1	
Total	28	



Cultural Heritage Sensitivity Mapping and AHIMS Sites

F6-6

Drawing No:	0617753s_KKWF_HER_G003_R0.mxd		Keri Keri Windfarm Scoping Report
Date:	09/02/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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6.4.1.2 Assessment Approach

Based on the results of soil mapping, AHIMS mappings and the results of previous reports this preliminary assessment has confirmed that areas within the Project Area contain evidence of past Aboriginal land use. Predictive modelling prepared at this stage of the process can assist in determining sensitive landscapes; however, it is acknowledged that more detailed investigation and assessment will be required to inform the next phase of project planning and design. In consideration of these factors, the following recommendations are made:

- Comprehensive investigation, to include pedestrian field survey, consultation with Aboriginal stakeholders, sensitivity mapping, and archaeological test excavation (as required) should be undertaken during the development application stage;
- The investigations are to be undertaken in accordance with all NSW legislation and relevant guidelines including the *Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW* (OEH 2011), the *Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW* (DECCW 2010), and *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010* (DECCW, 2010);
- Results of the investigations are to be detailed in an Aboriginal Cultural Heritage Assessment Report (ACHAR), in accordance with the *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* (DECCW, 2010); and
- Upon completion of the ACHAR, a Cultural Heritage Management Plan (CHMP) should be prepared to ensure appropriate management of any identified cultural heritage throughout the construction process.

6.4.2 Historic Heritage

6.4.2.1 Existing Environment

Historical Background

Early European exploration of the Murrumbidgee Region occurred from 1820's with exploration originally focused along the Murrumbidgee River. Grazing soon followed these early explorers with pastoral runs established in the Murrumbidgee region from the 1820s. Occupation was initially focused on cattle and sheep farming and later grain crops.

Development of a town soon followed at the nearby Balranald. Balranald was first investigated as the site of a township in 1848, when George James MacDonald, The Commissioner for Crown Lands for the Lower Darling District arrived in the region. That same year Leighton Robinson and Thomas Duggan established a general store at Balranald and during the same year a public-house, the Balranald Inn, was erected by a Mr Robertson (Feldtmann, 1976). The township of Balranald was formally gazetted in April 1851 and the first land sale held on 14 January 1852, with thirty-five lots submitted to public auction.

The Project Area was first occupied by Europeans as part of the Keri Keri Pastoral Run. The pastoral run was held originally by John Cummings who predominantly focused on sheep farming. Available pastoral run maps indicate that a number of pastoral improvements and structures were constructed across the Keri Keri Run over time. Noted structures across the run include a number of wells, tanks, dams, sheering sheds, shearers huts and cottages (Historic Land Record Viewer, accessed 9 February 2022). The south western portion of the Keri Keri Run is shown to have included a relatively high density of structures including a homestead feature. Recent historical aerials indicate that the Project Area continues to be utilising primarily as grazing lands.

Statutory Heritage Register Searches

Commonwealth Heritage List

The Commonwealth Heritage List includes natural, Indigenous and historical heritage places owned or controlled by the Australian Government. Items on the list have satisfied the minister as having one or more Commonwealth Heritage values. There are no Commonwealth Heritage listed places within or in proximity to the Project Area.

National Heritage List

The Australian National Heritage List contains natural, historic, and Indigenous places deemed to be of outstanding heritage significance to Australia. Before a site is placed on the list a nominated place is assessed against nine criteria by the Australia Heritage Council. There are no National Heritage listed places within or in proximity to the Project Area.

State Heritage Register

A search of the NSW State Heritage Register (SHR) was conducted on 10 January 2022. The search revealed that there are no SHR-listed items within or in close proximity to the Project Area.

Wakool Local Environmental Plan 2013

A search of the Wakool Local Environmental Plan (LEP) 2013 was conducted on 10 January 2022. The search identified no locally heritage listed sites within the Project Area. The search noted one locally listed heritage items located approximately 30 km from the Project Area, as detailed in **Table** 6-6.

Section 170 Heritage Registers

Section 170 of the *Heritage Act* 1977 requires all NSW state agencies to identify, conserve and manage the heritage assets owned, managed and occupied by that agency. In order to facilitate this, Section 170 heritage registers were established for all NSW government agencies. These registers are held and maintained by each state agency and updated as assets are acquired, altered, or decommissioned.

A search of the relevant Section 170 registers was undertaken on 10 January 2022.

No Section 170 heritage places are located within or in close proximity to the Project Area.

Non-Statutory Considerations

Register of the National Estate

The Register of the National Estate (RNE) is a non-statutory archive of natural, historic and Indigenous places and incorporates over 13,000 places. Originally compiled between 1976 and 2003 by the Australian Heritage Commission, the register is now maintained by the Australian Heritage Council.

Following amendments to the Australian Heritage Council Act 2003, the RNE was frozen on 19 February 2007, which means that no new places can be added, or removed. Since February 2012 the RNE has been maintained as a non-statutory listing.

A search of the Australian Heritage Database was undertaken on 10 January 2022. This search identified no RNE listed places within or in close proximity to the Project Area.

National Trust of Australia (NSW) Heritage Register

The National Trust of Australia maintains a register of landscapes, townscapes, buildings, industrial sites, cemeteries and other heritage places which the Trust determines to have cultural significance. This register is non-statutory but provides an indication of places considered significant by the wider community.

A search of the National Trust Heritage Register conducted on 10 January 2022 indicated there are no National Trust listed properties within or in close proximity to the Project Area.

Heritage Summary

Table 6-6 provides an overview of the statutory and non-statutory heritage listings identified within or near the Project Area.

Table 6-6 Non-Indigenous Heritage Sites Summary

Site Name	Register	Item ID	Description	Distance to Project Area	Significance Level
The Old Court House and Footbridge	Wakool LEP	I5	Moulamein Courthouse with footbridge crossing Billabong Creek	~30 km	Local

It is noted that heritage register searches provide a limited understanding of potential historical archaeological resources within the Project Area, rather providing information about standing structures of importance to the community.

6.4.2.2 Assessment Approach

Preliminary assessment has shown there are no historic heritage items within the Project Area listed on National, State or Local statutory heritage registers. The closest registered historic heritage item is the local heritage item 'The Old Court House and Footbridge' (Wakool LEP 2013 – ID I5) located approximately 30 kilometres west of the Project Area.

While no registered historic heritage items are located within the project area, a number of historic structures have been identified within historic maps of the Keri Keri Run. Further assessment would be required to better establish the non-Indigenous archaeological potential of the Project Area.

Based on this information, it is recommended that a non-Indigenous (Historical) heritage assessment be prepared as part of the EIS. The non-Indigenous heritage assessment report should consider any intangible values held by the community or relevant stakeholders. Preparation of the non-Indigenous heritage report would involve detailed historical research, including analysis of historical aerial imagery, physical inspection of the relevant areas of the Project Area, and consultation with the Wakool and District Historical Society and any other relevant stakeholders.

6.5 Access – Traffic and Transport

6.5.1 Existing Environment

The Project Area is located approximately 470 km from Melbourne, 570 km from Adelaide, and 800 km from Sydney by road. It is anticipated that major turbine components will be delivered to a port and transported by road to the Project Area.

The Project Area is serviced by the Sturt Highway, which is a major highway that has the capacity to carry oversize and overmass (OSOM) vehicles to and from the Project Area. The Sturt Highway is anticipated to be used as much as possible to avoid road upgrades and impacts on local roads and local traffic. Secondary access, if required, may be proposed for Keri Keri Road. The need for this will be subject to assessment in the EIS phase.

The transport route of WTG components and other Project related materials are subject to a Port and Transport Route Assessment, which will be prepared as part of the EIS, the outcomes of which will be incorporated into the Traffic and Transport Impact Assessment. This will identify a proposed transport route from the port to the Project Area, as well as any required road upgrades.

Whilst a port and transport route have not yet been determined, indicative options that may be considered (but not necessarily limited to) are provided in **Figure 3-2** and summarised in **Table 6-7**.

Table 6-7 Potential Port options and distance to Project Area

Port	City and State	Approx. distance from Project Area (by road)
Appleton Dock	Melbourne, VIC	420 km
Port of Geelong	Geelong, VIC	440 km
Port of Portland	Portland, SA	570 km
Port Adelaide	Adelaide, SA	600 km
Port Botany	Sydney, NSW	810 km

The Project may require upgrades to roads along the transport route. The details and specifications of these upgrades will be depend on the size of the vehicles and infrastructure required to be delivered to the Project Area, and are subject to assessment in a Transport Route Assessment.

In addition, the construction of access tracks will also be required throughout the Project Area to facilitate construction and to allow for maintenance to occur throughout the operational phase of the Project.

6.5.2 Assessment Approach

A Transport Route Assessment will be included in the EIS. A detailed Traffic and Transport Impact Assessment (TTIA) will also be included in the EIS, which will consider potential transportation routes for construction traffic and potential impacts of the size, loads, and volumes of vehicles on the road network. The TTIA will generally be prepared in accordance with the *Guide to Traffic Generating Developments* (RTA, 2002), *Austroads Guide to Road Design*, and *Austroads Guide to Traffic Management* (Austroads, No Date).

The scope of the TTIA will likely involve:

- assessment of haulage routes, access points, and swept paths through intersections to determine potential risks and impacts from the largest vehicles;
- assessment of likely Project-alone and cumulative traffic impacts during the construction and operational phases of the Project (including intersection performance, capacity, safety and site access);
- review of any previous traffic impact assessments undertaken for the surrounding area and traffic counts in selected areas;
- identification of mitigation and management measures if required, including in relation to traffic volumes and sight lines;
- identification of any road upgrades required and associated clearing and disturbance works; and
- assessment of the potential impacts of the proposed works on residences and access ways.

6.6 Aviation

6.6.1 Existing Environment

A preliminary review of aircraft landing areas (ALAs) was undertaken of the Project Area and its surrounding regions. Two small ALAs were identified within 30 km of the Project Area, which include Ravensworth Airport (YRWH) approximately 23 km east and Moulamein Airport (YMOM) approximately 25 km south. These ALAs are likely only used for local transport and aerial application operations.

The closest regional airports are located in the towns of Balranald, Swan Hill, and Hay and include:

- Balranald Airport (YBRN) approximately 30 km west;
- Swan Hill Airport (YSWH) approximately 70 km southwest; and
- Hay Airport (YHAY) approximately 74 km east.

6.6.2 Assessment Approach

An aviation impact assessment will be undertaken for the EIS, which will assess any potential impacts to aviation safety associated with the Project. The assessment will include consideration of:

- potential impacts to aviation safety including wake / turbulence issues;
- the need for aviation safety lighting;
- air traffic routes, heights procedures, radar and communications systems and navigation aids; and
- potential impacts on aerial emergency services, aerial firefighting, and aerial agricultural operations.

The assessment will address any aviation concerns raised during consultation with the community and key stakeholders, and identify relevant mitigation strategies to be implemented where required. Consultation with the Civil Aviation Safety Authority (CASA) will also be undertaken to determine relevant aviation safety lighting requirements, notification and reporting requirements, and the potential marking of turbines, wind monitoring towers, and overhead transmission lines and poles.

6.7 Telecommunications - Electromagnetic Interference (EMI)

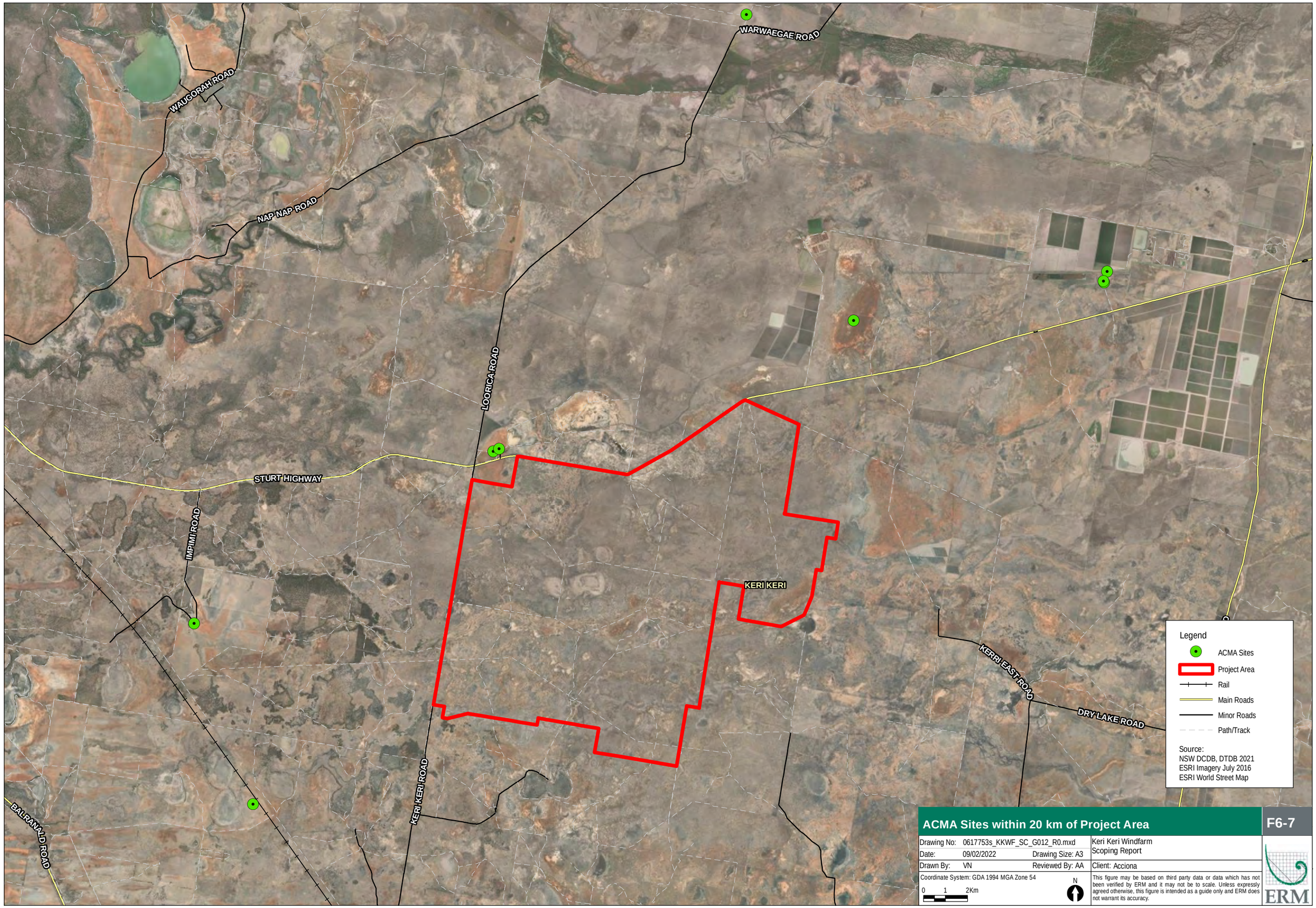
6.7.1.1 Existing Environment

The operation of a wind farm has the potential to interfere with the electromagnetic signals associated with telecommunication services. Existing telecommunication services in the vicinity of the Project Area include mobile phone services, radio communication services, television and radio broadcast services, and aircraft navigation services, which local residents and local towns including Balranald are reliant upon.

A search of the Australian Communication and Media Authority (ACMA) database identified eight sites within 20 km of the Project Area, as presented in **Figure 6-7**.

6.7.1.2 Assessment Approach

An electromagnetic interference (EMI) assessment will be undertaken as a component of the EIS, which will consider the potential impacts of the Project on telecommunications services. It will involve the preparation of a detailed desktop assessment of existing electromagnetic services within the Project Area, and recommended measures to avoid or minimise potential impacts to telecommunications services during construction and operation of the Project.



ACMA Sites within 20 km of Project Area

F6-7

Drawing No:	0617753s_KKWF_SC_G012_R0.mxd		Keri Keri Windfarm Scoping Report
Date:	09/02/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

0 1 2Km

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ERM

6.8 Social

This section provides the first phase Social Impact Assessment (SIA) for the Project, undertaken in accordance with the Department of Planning and Environment's (DPE) Social Impact Assessment Guideline: For State Significant Projects (the Guideline) (DPIE, 2021b) and DPE's Technical Supplement: Social Impact Assessment Guideline for State Significant Projects (Technical Supplement) (DPIE, 2021e).

The first phase SIA involves scoping and a preliminary assessment, identifies the level of assessment to be applied and sets further parameters for the second phase SIA (DPIE, 2021b, p. 12). Accordingly, the first phase SIA includes:

- defining the Project's Social Locality;
- describing the profile of the community in a preliminary social baseline and outlining the potential social impacts; and
- outlining the approach that will be undertaken to complete the second phase SIA during the EIS phase.

6.8.1 Existing Environment

6.8.1.1 Social Locality

One of the first steps in a SIA is the scoping process, which helps to define the social area of influence, or Sociality Locality. Determining the Social Locality for a project involves understanding the nature of the project, the characteristics of the surrounding communities, and how potential positive and/or negative impacts will be experienced by different community members/groups.

In determining the Social Locality, the following Project aspects were taken into consideration:

- The number of wind turbines and their locations across the Project Area, and the layout of the access tracks, substations, switching station, BESS and transmission line.
- The location of these components within the overall Project Area relative to sensitive land uses. This includes proximity to environmental values and topographical features.
- Construction and operation phase activities, such as:
  - land clearing and ongoing access for maintenance;
  - workforce requirements, including skills required and accommodation arrangements;
  - goods and services required by the Project; and
  - haulage routes to and from the Project Area.

When considering these aspects, it was determined that the Project's Social Locality should include the Project Area, the area surrounding the Project Area where noise, visual and other impacts may occur, the haulage routes where similar amenity impacts may be experienced and the communities in larger centres that may provide workers or good and services to the Project;

The Project is located wholly within the Murray River Council Local Government Area (LGA) and is located on the boundary of the Hay LGA and approximately 28 km to the Balranald LGA boundary. The Project Area is accessed from Sturt Highway, and will likely form part of the haulage route for the Project. Given the size and locality of Keri Keri, nearby town centres of Balranald, Hay and Swan Hill, are likely to provide goods and services to support the construction phase of the Project.

The Project's Social Locality, as defined for the purposes of the SIA, and depicted in **Figure 6-8**, is comprised of the following three components:

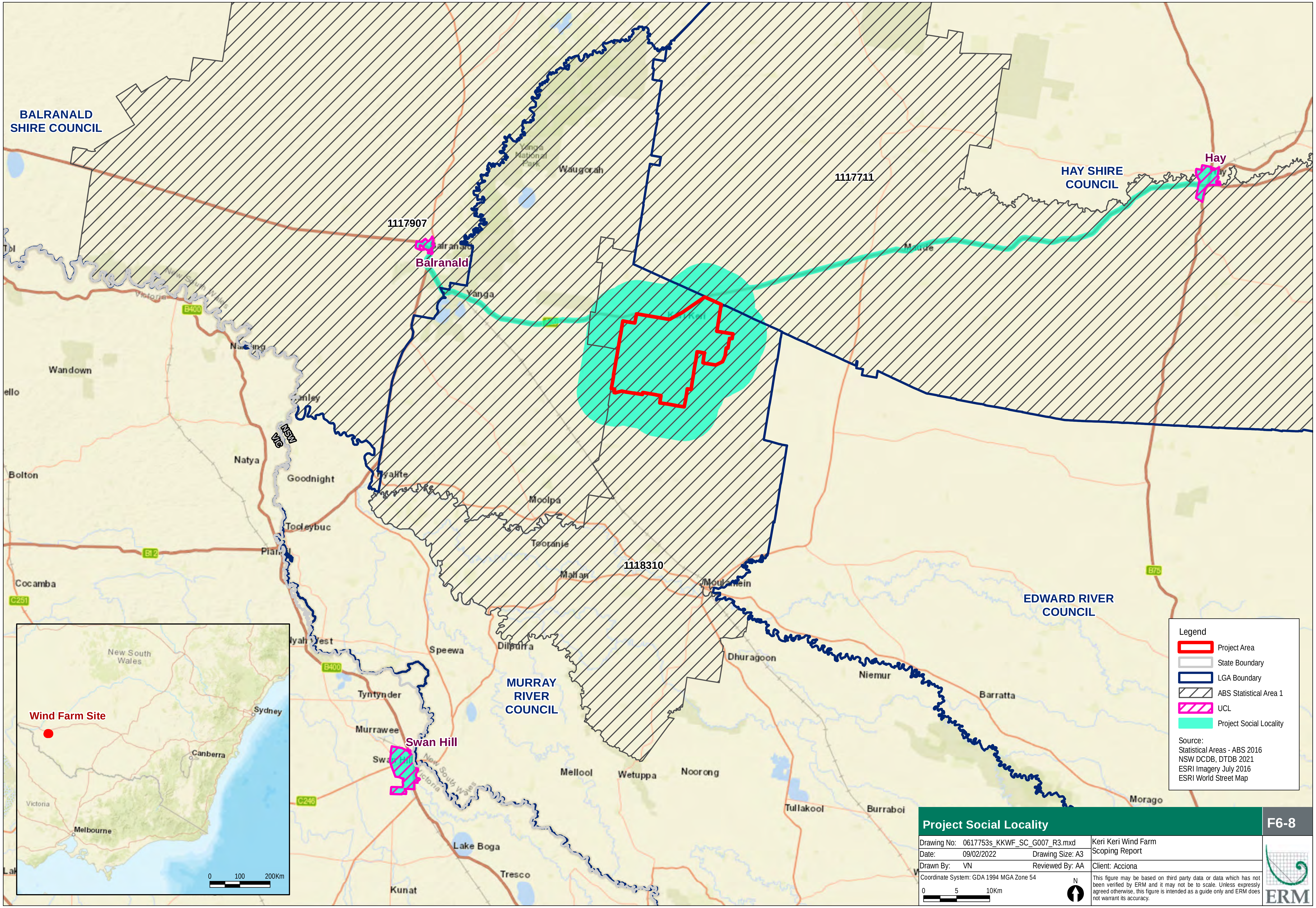
The Project Area and immediate surrounding areas, located within the Australian Bureau of Statistics (ABS) Statistical Area Level 1 (SA1) Nos. 1118310, 1117907 and 1117711. SA1 data has been used to identify key baseline indicators for the Social Locality, where applicable. Additionally, LGA level data for the Murray River and Hay LGAs and the State level data for NSW were used to provide an understanding of the broader and comparative social context within the Project is located.

The potential transportation and haulage routes to larger town centres via the Sturt Highway. Indicative travel times from the Project Area to nearby town centres are provided in **Table 6-8**.

The surrounding towns and regional centres of Hay, Balranald and Swan Hill, which may provide goods and services to support the construction phase of the Project. ABS Urban Centres and Localities (UCLs) data were used to provide baseline information for these locations.

Table 6-8 Approximate Distances to the Project Area

Town/Regional Centre	Travel Distance
Hay	95 km
Balranald	53 km
Swan Hill	127 km



BALRANALD SHIRE COUNCIL
HAY SHIRE COUNCIL
MURRAY RIVER COUNCIL
EDWARD RIVER COUNCIL
1117907
1117711
1118310
Balranald
Hay
Swan Hill
Yanga National Park
Waugorah
Yanga
Maude
Keri Keri
Wandown
Natya
Bolton
Goodnight
Tooleybuc
Piangil
Cocamba
Moolpa
Tooranie
Mallan
Moulamein
Dilpurra
Speewa
Tyntynder
Murrawee
Mellool
Wetuppa
Noorong
Dhuragoon
Niemur
Barratta
Tullakool
Burraboi
Morago
Lake Boga
Tresco
Kunat
NSW
VIC
New South Wales
Victoria
B400
B12
C251
C246
B75
New South Wales
Victoria
Sydney
Canberra
Melbourne
Wind Farm Site
0 100 200Km
Legend
Project Area
State Boundary
LGA Boundary
ABS Statistical Area 1
UCL
Project Social Locality
Source:
Statistical Areas - ABS 2016
NSW DCDB, DTDB 2021
ESRI Imagery July 2016
ESRI World Street Map
Project Social Locality
F6-8
Drawing No: 0617753s_KKWF_SC_G007_R3.mxd
Date: 09/02/2022
Drawing Size: A3
Drawn By: VN
Reviewed By: AA
Keri Keri Wind Farm
Scoping Report
Client: Accionа
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This figure may be based on third party data or data which has not been verified by ERM and it may not be to scale. Unless expressly agreed otherwise, this figure is intended as a guide only and ERM does not warrant its accuracy.
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6.8.1.2 Community Profile

The community profile presented in this section will inform the social baseline in the second phase SIA (as part of the EIS), and is largely based on ABS 2016 census data (ABS, 2021).

Table 6-9 outlines the primary ABS datasets used to provide key demographic data across the Project's Social Locality. For the purposes of the first phase SIA only 2016 ABS datasets (i.e. latest available) were considered, however, in the second phase SIA, relevant 2011 ABS data (or 2021 ABS data, dependent upon release) will also be used for the purposes of trend analysis.

Table 6-9 Summary of Relevant ABS Datasets

Location	2016 ABS Data Reference (Census)
Murray River LGA	15520 (LGA)
Hay LGA	13850 (LGA)
SA1 (west of Project Area)	1117907 (SA1)
SA1 (within Project Area)	1118310 (SA1)
SA1 (north of Project Area)	1117711 (SA1)
Hay	115075 (UCL)
Balranald	115004 (UCL)
Swan Hill	213015 (UCL)
NSW	Code 1 (STE)

In addition to the above listed ABS datasets, the second phase SIA social baseline will be informed by a desktop review of sources from public health advisory bodies, principally NSW Health and local hospitals (i.e. regarding physical and mental health issues prevalent in the local community), and educational institutions, principally the NSW Department of Education and local schools. Information relating to the economic profile of the Project is also provided by ABS 2016 Census data, while information on developmental priorities and challenges in the region will be provided by local and State government planning documents, such as the Murray River and Hay LGA Local Strategic Planning Statement.

Table 6-9 draws on the ABS datasets listed in **Table 6-8** to provide a demographic overview of the Project's Social Locality. As outlined above, the Project Area is located within Statistical Area Nos. 1117907, 1118310 and 1117711. The Statistical Area Nos. 1117907, 1118310 and 1117711 are the primary source providing details of the impacted community's defining characteristics and is used to provide an understanding of vulnerable groups within the Project's immediate Social Locality.

Table 6-10 also includes the ABS' Socio-Economic Indexes for Areas (SEIFA)[4] to provide an indication of comparative socio-economic advantage and disadvantage, alongside details of unoccupied dwellings, dwelling tenure and household composition.

[4] Socio-Economic Indexes for Areas (SEIFA) is a product developed by the ABS that ranks areas in Australia according to relative socio-economic advantage and disadvantage. The indexes are based on information from the five-yearly Census, available at: https://www.abs.gov.au/AUSSTATS/abs@.nsf/Lookup/2033.0.55.001Main+Features12016?OpenDocument.

Table 6-10 Key Indicators for all ABS Datasets (2016) Across the Project's Social Locality

Population	Median Age	Indigenous Pop. (%)	Pop. Over 65 Years of Age	Median Weekly Household Income	Unemployment (%)	SEIFA (Percentile in NSW)	Dwelling Count (Occupied / Unoccupied (%))	Dwelling Tenure (Owned Outright + Mortgaged / Rented, %)	Household Composition (Families / Singles / Groups, %)
Murray River LGA 15520 (LGA)									
11,680	49	3.2%	26.7%	$1,061	3.7%	62	4,470 / 932 (17.3%)	72.4% / 22.2%	69.0% / 28.9% / 2.1%
Hay LGA 13850 (LGA)									
2,946	46	6%	21.7%	$1,075	4.6%	26	1,087 / 294 (21.3%)	62.8% / 30.3%	66.6% / 31.6% / 1.6%
SA1 1117907 (SA1) (west of Project Area)									
398	40	3.3%	10.3%	$1,398	5.0%	61	130 / 93 (41.7%)	63.4% / 30.6%	75.2% / 19.0% / 5.8%
SA1 1118310 (SA1) (within the Project Area)									
229	44	0%	13.9%	$1,399	0%	63	76 / 49 (39.2%)	71.1% / 20.5%	74.7% / 25.6% / 0%
SA1 1117711 (SA1) (North of the Project Area)									
197	45	2.0%	12.4%	$1,437	0%	71	67.0% / 33.0% (33%)	63.5% / 28.4%	77.1% / 18.6% / 4.3%
Hay 115075 (UCL)									
2,316	47	6.3%	24.4%	$1,013	5.5%	-	891 / 213 (19.3%)	60.9% / 32.8%	63.0% / 35.1% / 1.9%
Balranald 115004 (UCL)									
1,159	46	13.4%	21.5%	$1,012	7.9%	-	450 / 108 (19.4%)	63.8% / 33.6%	64.7% / 34.5% / 0.7%
Swan Hill 213015 (UCL)									
10,600	39	3.6%	20.6%	$1,090	5.0%	-	3,924 / 426 (9.8%)	62.1% / 33.6%	64.3% / 31.7% / 4.0%
NSW Code 1 (STE)									
7,480,228	38	2.9%	16.2%	$1,486	6.3%	-	2,604,320 / 284,741 (10%)	64.5% / 31.8%	72.0% / 23.8% / 4.2%

Table 6-11 outlines the key industries and areas of employment for SA1s and the Murray River and Hay LGAs included in the Project's Social Locality, and NSW as a whole.

Table 6-11 Key Industries for Select ABS Statistical Areas (2016 Census Data)

Location	Key Occupation and Industries
Murray River LGA 15520 (LGA)	■ The most common occupations in the Murray River LGA included Managers (24.1%), Professionals (14.0%), Labourers (13.2%), Technicians and Trade Workers (12.6%) and Clerical and Administrative Workers (10.1%). ■ Of the employed people in this LGA, 3.9% worked in Accommodation. Other major industries of employment included Other Grain Growing (3.4%), Local Government Administration (3.3%), Hospitals (except Psychiatric Hospitals) (3.2%) and Primary Education (2.8%).
Hay LGA 13850 (LGA)	■ There were 1,355 people reported to being in the labour force, including 62 people who were unemployed at the time of the 2016 Census. ■ The most common occupations in the Hay LGA included Managers (19.4%), Labourers (15.8%), Technicians and Trade Workers (13.7%), Machinery Operators and Drivers (11.6%) and Clerical and Administrative Workers (10.0%). ■ Of the employed people in the LGA, 6.2% worked in Sheep Farming (Specialised), Supermarket and Grocery Stores (4.7%), Local Government Administration (4.6%), Accommodation (3.6%) and Primary Education (3.6%).
SA1 1117907 (SA1) (west of Project Area)	■ Of the 398 residents in this SA1, there were 222 people who were reported as being in the workforce in the 2016 Census, including 11 unemployed persons. ■ The most common occupations reported were Managers (48.6%, Labourers (19.0%), Professionals (7.1%), Technicians and Trade Workers (6.7%) and Community and Personal Service Workers (6.2%). ■ Of the employed people in this SA1, 25.6% worked in Sheep Farming (specialised) other major industries of employment included Grain-Sheep or Grain-Beef Cattle Farming (12.8%), Other Grain Growing (11.6%), Sheep-Beef Cattle Farming (7.9%) and Other Fruit and Tree Nut Growing (3.0%).
SA1 1118310 (SA1) (within Project Area)	■ Of 229 residents in this SA1, there were 117 people who reported being in the labour force, with none unemployed at the time of the 2016 Census. ■ The most common occupations reported were Managers (46.9%), Labourers (15.9%), Professionals (8.8%), Clerical and Administrative Workers (8.0%) and Community and Personal Service Workers (6.2%). ■ Of the employed in this SA1, 160% worked in Sheep Farming (Specialised), other major industries of employment included Other Grain Growing (13.2%), Grain-Sheep or Grain-Beef Cattle Farming (12.3%), Local Government Administration (6.6%) and Site Preparation Services (3.8%).
SA1 1117711 (north of Project Area)	■ Of the 197 residents in this SA, 103 people were reported to be in the labour force, with none unemployed at the time of the 2016 Census. ■ The most common occupations in this SA1 included Managers (47.7%), Labourers (12.1%), Professionals (9.3%), Clerical and Administrative Workers (8.4%) and Community and Personal Service Workers (7.5%). ■ Of the people employed in this SA1, 21.5% worked in Sheep Farming (Specialised).

Location	Key Occupation and Industries
NSW Code 1 (STE)	■ The most common occupations in NSW included Professionals (23.6%), Clerical and Administrative Workers (13.8%), Managers (13.5%), Technicians and Trades Workers (12.7%), and Community and Personal Service Workers (10.4%). ■ Of the employed people in New South Wales, 3.5% worked in Hospitals (except Psychiatric Hospitals). Other major industries of employment included Cafes and Restaurants (2.4%), Supermarket and Grocery Stores (2.2%), Aged Care Residential Services (2.0%) and Primary Education (1.9%).

6.8.1.3 Social Infrastructure Overview

Social infrastructure comprises schools and other education institutions, medical services, emergency services, recreational facilities and community organisations. Some commercial services are also listed under social infrastructure, such as childcare facilities.

Given the rural location of the Project Area, the nearest town is Balranald, which is approximately 53 km west of the Project Area. Balranald has a District Hospital, that is open 24/7 to provide medical services and includes an emergency facility. Emergency services based in Balranald include Fire and Rescue NSW, NSW police, Ambulance NSW, NSW Rural Fire and Service and the Balranald Rescue Squad. Balranald has two schools, a private primary school and a public school which is from Kindergarten to Year 12. There are four churches located at Balranald, including Catholic, Presbyterian, and Anglican. Balranald also provides grocery stores, a post office, hardware stores, and service stations.

Hay is a regional town located approximately 95 km east of the Project area. Hay has a Health Service which provides primary health care services including community nursing, early childhood nursing, mental health services, palliative care, physiotherapy, speech therapy and nutrition. The Hay Health Service also has a 24-hour Accident and Emergency Department. Hay is serviced by Fire and Rescue NSW, Hay Police Station and NSW Ambulance. In terms of education, Hay has one preschool, one private primary school and three public primary schools, one public high school and a TAFE. Hay also includes a variety of sporting and social clubs, aged care services, support services, religious groups, a post office, supermarkets, accommodation and community infrastructure such as a library and memorial hall.

Swan Hill is a city located in Victoria approximately 127 km south of the Project Area. Swan Hill has the Swan Hill District Health Centre, which is a major medical facility offering a wide variety of medical services. Aside from the hospital, there is a dentist, a doctor's surgery, maternal and child health and various pharmacies located throughout Swan Hill. There are nine churches located at Swan Hill, which include Anglican, Catholic, and Presbyterian. Swan Hill also has a variety of social infrastructure, such as petrol stations, a post office, banks, supermarkets, library, newsagents and an airport. Swan Hill has 10 primary schools (two private schools and eight public schools), two high schools and one TAFE.

The Project Area is located approximately 70 km south-west of the Yanga National Park, and adjacent to the Yanga State Conservation Area. The Yanga National Park is a valued recreation area for the purposes of tourism, fishing, hiking, bird watching; and also contains a number of heritage listed homesteads, woolsheds and camping grounds.

6.8.2 Potential Social Impacts

The first phase SIA provides a preliminary desktop assessment of the potential impacts while the second phase SIA, that will be incorporated into the EIS, develops this preliminary assessment into a full assessment report. The full assessment report provides a detailed analysis of the potential impacts and incorporates key stakeholder feedback.

The scoping of potential social impacts was initially facilitated through consideration of the updated SIA Scoping Tool (DPIE, 2021f) that complements the SIA Guideline (DPIE, 2021b). The scoping tool identifies the social impacts that are considered likely to occur, and the corresponding level of assessment for each social impact. Use of the updated SIA Scoping Tool allows for the level of assessment for the potential social impacts to be identified, which in this case was determined to be 'detailed assessment'.

The social impact assessment approach utilised follows DPIE's Social Impact Assessment Technical Supplement guidance on evaluating the likely significance of both potential positive and negative social impacts (DPIE, 2021e). The first phase SIA provides a preliminary desktop assessment of these potential impacts while the second phase SIA, that will be incorporated into the EIS, develops this preliminary assessment into a full assessment report. The full assessment report will provide a detailed analysis of the potential impacts and incorporate key stakeholder feedback.

An outline of the methodology the second phase SIA will follow is provided below. The second phase SIA will elaborate potential cumulative impacts in view of proposed wind farm and other large-scale projects in the Project's Social Locality.

As this is a first phase SIA, this impact assessment is preliminary in nature and makes assumptions based on the desktop assessment and prior wind farm SIA experience. The identified potential impacts listed in **Table 6-12** will be ground-truthed, supplemented by key stakeholder feedback, and reviewed against any changes associated with further design development subsequent to issuing the SEARs. Further development of this assessment in the second phase SIA will include application of DPIE's social impact significance matrix, as per the SIA Guideline, and an assessment of both pre and post mitigation scenarios.

Table 6-12 Preliminary Social Impact Assessment

Description of Impact	Impact Categories	Project Phase	Level of Assessment
Increased demand / pressures on housing and accommodation (potential shortage and increased cost of living)	Way of life	Construction	Detailed Assessment
Visual impact through degradation of rural amenity (i.e. loss of scenic views as a result of the Project)	Way of life	Life of the Project	Detailed Assessment
Disruption of agricultural activities such as limited access and interruptions to cropping/grazing activities.	Livelihoods	Construction	Detailed Assessment
Increased vehicular movement from workers engaged on the Project, and the transportation of materials and equipment	Health and Wellbeing	Construction	Detailed Assessment
Increased demand and pressure on social, emergency, and recreational services and/or facilities	Way of life	Life of the Project	Detailed Assessment

Description of Impact	Impact Categories	Project Phase	Level of Assessment
Increased demands for goods and services (local businesses benefit from increased economic activity)	Livelihoods	Construction	Detailed Assessment
Increased demand for labour in the local area (generation of employment opportunities)	Livelihoods	Construction	Detailed Assessment
Increased demand for labour in the local community may reduce labour availability for local services and/or businesses	Livelihoods	Construction	Detailed Assessment
Diversification of income streams for involved landowners	Way of life, Livelihoods	Operation	Detail Assessment
Interruptions to daily life, such as traffic changes causing diversions for school buses, road closures, utilities interruptions, etc.	Way of life	Construction	Detailed Assessment
Construction impacts associated noise, dust, vibration which may cause impacts to community health.	Health and Wellbeing, surroundings	Construction	Detailed Assessment
Perceived impacts on land/property values	Livelihoods	Operation	Detailed Assessment
Perceived health impacts, linked to a range of aspects electromagnetic interference, shadow flicker, blade throw, and noise.	Way of life, Community, Culture, Health and Wellbeing	Operation	Detailed Assessment
Alteration of the landscape has the potential to impact tangible and intangible Aboriginal heritage	Culture	Life of the Project	Detailed Assessment

6.8.3 Assessment Approach

This section outlines the plan for developing the second phase SIA, in accordance with the requirements of the Social Impact Assessment Guideline (DPIE, 2021b) and Technical Supplement (DPIE, 2021e). Accordingly, the second phase SIA will be structured according to the following sections:

1. **Introduction, Project Description, Regulatory Context**

   This section will provide a detailed overview of the Project locale, components, stages, and history. It will also provide a detailed review of the legislative and regulatory framework applicable to the SIA, taking into account relevant company policies.

2. Social Locality and Stakeholder Identification

This section will elaborate on the preliminary outline of the Project's Social Locality. The update will incorporate regulator and client feedback on the preliminary identification and provide an updated stakeholder list as the SIA moves into the second phase and more information becomes available.

3. Methodology

The impact assessment methodology to be applied to the second phase SIA follows DPE's Social Impact Significance matrix (DPIE, 2021e, pp. 12-13) as depicted in Figure 6-12. In this matrix, the likelihood level refers to the probability of a social impact's occurrence as a result of the Project while the magnitude is considered in terms of the following elements:

- **Extent:** Who specifically is expected to be affected (directly, indirectly, and/or cumulatively), including any potential vulnerable people? Which location(s) and people are affected? (e.g. near neighbours, local, regional).
- **Duration:** When is the social impact expected to occur? Will it be time-limited (e.g. over particular Project phases) or permanent?
- **Severity**: What is the likely scale or degree of change? (e.g. mild, moderate, severe).
- **Intensity:** How sensitive/vulnerable (or how adaptable/resilient) are affected people to the impact, or (for positive impacts) how important is it to them? This might depend on the value they attach to the matter; whether it is rare/unique or replaceable; the extent to which it is tied to their identity; and their capacity to cope with or adapt to change.
- **Level of Concern/Interest**: How concerned/interested are people? Sometimes, concerns may be disproportionate to findings from technical assessments of likelihood, duration and/or severity. Concern itself can lead to negative impacts, while interest can lead to expectations of positive impacts.

The characteristics of the magnitude of impact combine with their likelihood of occurrence to yield a rating of social impact significance, as indicated in **Table 6-13.** The social impact significance matrix depicted in **Table 6-13** will be applied to yield the initial evaluation of social impacts that are likely to be experienced by different groups within the Project's Social Locality.

Table 6-13 Adapted DPIE Social Impact Significance Matrix

		Magnitude level				
		1 Minimal	**2 Minor**	**3 Moderate**	**4 Major**	**5 Transformational**
Likelihood level	**A** Almost certain	Medium	Medium	High	Very High	Very High
	B Likely	Low	Medium	High	High	Very High
	C Possible	Low	Medium	Medium	High	High
	D Unlikely	Low	Low	Medium	Medium	High
	E Very unlikely	Low	Low	Low	Medium	Medium
	F Positive	P1	P2	P3	P4	P5

(Adapted from DPIE 2021b)

4. Stakeholder Engagement for SIA

This section will provide a summary of stakeholder engagement relevant to the SIA. Key stakeholder interviews specific to the SIA will be conducted as part of wider stakeholder engagement activities. SIA tailored questions and discussion topics will guide semi-structured interviews with key informants in a manner designed to elicit honest responses underpinned by free, prior informed consent of the participants. The broad categories of stakeholders to be targeted for the SIA include: host landowners, neighbouring landowners, Traditional Owner groups, local governments, local businesses and representative groups, social and community service providers, and the wider community. More extensive details of stakeholder engagement activities will be included in appendices, where relevant.

5. Social Baseline

This section will update and expand on the community profile outlined above. The preliminary desktop assessment will be supplemented and ground-truthed with data obtained during fieldwork, including from stakeholder engagement activities outlined above.

6. Expected and Perceived Impacts

This section explains the potential social impacts as identified through the preceding sections of the SIA, particularly the stakeholder inputs into the social baseline as limited by identification of the Project's Social Locality.

7. Impact Assessment and Prediction

This section will update and expand on the preliminary social impact assessment outlined above, providing an impact assessment informed by the stakeholder engagement. Two ratings will be provided in the impact assessment table covering pre- and post-mitigation levels of impact significance.

8. Social Impact Enhancement, Mitigation, and Residual Impacts

This section provides a summary of all of the impact assessment mitigations which have applied to the project through all phases, including earlier phases of planning and development. As noted, the impact assessment will include pre- and post-mitigation impact significance levels. This section elaborates the mitigation measures which may be applied to reduce the social impact significance levels for the various social impacts identified. The level of residual impacts will also be noted.

9. Monitoring and Management Framework

This section will provide an overview of the recommended monitoring and social impact management measures that are to be put in place covering both the construction and operation phases of the Project. For the post-mitigation impact significant levels to be achieved, the social impact mitigations outlined in this section will need to be implemented according to the plan outlined in this section.

10. References

List of all documents and other resources cited in the SIA.

11. Appendices

Appendices will include community profiles and other supporting information such as summaries of stakeholder engagement and primary research.

6.9 Hazards and Risks

This section provides a preliminary assessment of environmental hazards and risks that could arise during the operation of the Project. Specifically, it considers hazards and risks associated with hazardous materials, bushfire, blade throw, electromagnetic interference (EMI) and electromagnetic field (EMF).

6.9.1 Preliminary Hazard Analysis

A Preliminary Hazard Assessment (PHA) is required for potentially hazardous or offensive development under *State Environmental Planning Policy Resilience and Hazards 2021* . Clause 3.2 of the Resilience and Hazards SEPP defines a potentially hazardous industry is as

development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality—

(a) to human health, life or property, or

(b) to the biophysical environment,

Appendix 3 of the *Applying SEPP 33* Guidelines (DoP, 2011) lists the industries that may fall within the Resilience and Hazards SEPP (former SEPP 33), which do not include wind farms or energy storage facilities. However, the BESS facility proposed for the Project is likely to utilise lithium-ion batteries, which are listed as *Class 9 - Miscellaneous dangerous goods*. While Class 9 materials are excluded from the SEPP 33 screening test, the hazards related to these materials should be considered in accordance with the *Applying SEPP 33 Guidelines.*

Batteries can be a serious safety risk for occupants and installers if incorrectly installed or operated, potentially leading to electric shock, fire, flash burns, explosion or exposure to hazardous chemicals and released gases. The *Battery installation guidelines for accredited installers* guidelines, prepared by the Clean Energy Council (2017) state that there are numerous hazards associated with battery systems and storage in relation to electrical, energy, fire, chemical, explosive gas, and mechanical hazards. Where a hazard is identified, risk reduction should be applied to eliminate or reduce these risks, in order to protect persons, property and livestock from fire, electric shock, or physical injury (CEC, 2017).

A Preliminary Hazards Assessment will be undertaken as a component of the EIS, which will assess the potential hazards and risks associated with the Project in accordance with the requirements of the Resilience and Hazards SEPP. Specifically, it will assess the potential hazards associated with the inclusion of a battery energy storage system at the Project Area, and evaluate the likely risks to public safety, by focusing on the transport, handling and use of hazardous materials. The assessment will also determine whether the Project should be considered a hazardous or potentially hazardous industry under the Resilience and Hazards SEPP.

6.9.2 Bushfire

6.9.2.1 Existing Environment

Bushfire presents a threat to human life and assets and can adversely impact ecological values. Bushfire risk can be considered in terms of environmental factors that increase the risk of fire (fuel quantity and type, topography and weather patterns), as well as specific activities (such as hot works and construction activities) or infrastructure components that exacerbate combustion or ignition risks (such as transmission lines and other electrical components).

A review of the NSW RFS Bushfire Prone Land mapping confirms that the Project Area is not currently recognised as being bushfire prone (refer to **Figure 6-9**). The nearest areas of bushfire prone land are located approximately 7.5 km east of the Project Area. It is noted that the Yanga State Conservation Area is located immediately west of the Project Area, which is not mapped as bushfire prone land though is likely considered a bushfire hazard.

Although the Project Area itself is not currently mapped as bushfire prone land, it is recognised that category 3 vegetation (including but not limited to grasslands and freshwater wetlands) will likely be added to the bushfire prone land mapping at some stage to align with the requirements of the NSW RFS Guide for Bush Fire Prone Land Mapping (RFS, 2015).

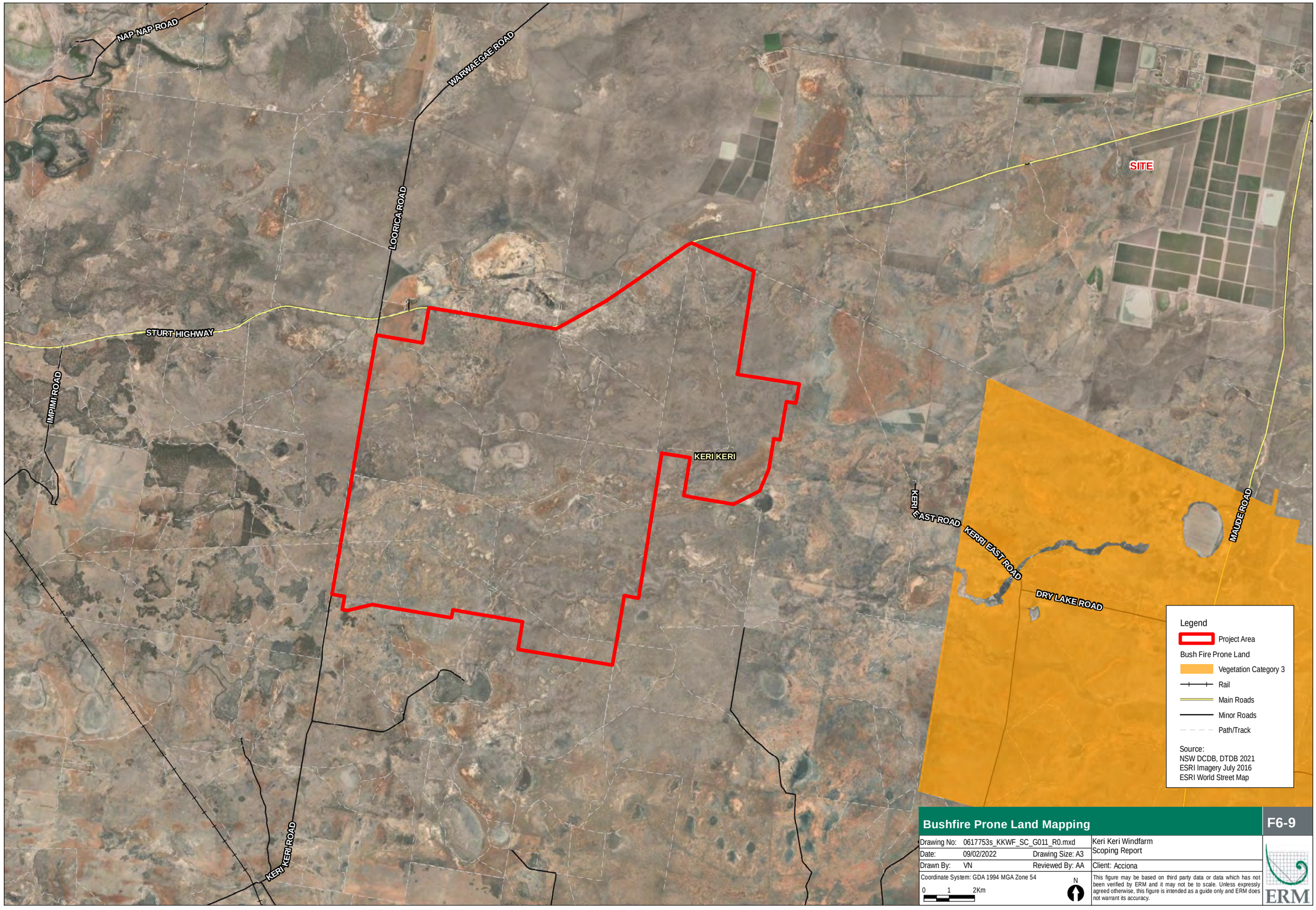
6.9.2.2 Assessment Approach

The EIS will include a Bushfire Risk Assessment and will aim to identify potential hazards and risks associated with bushfires / use of bushfire prone land. The assessment will aim to demonstrate that the proposed windfarm can be designed, constructed and operated to minimise ignition risks and provide for asset protection consistent with the NSW Rural Fire Service Guidelines - Planning for Bushfire Protection 2019.

The Bushfire Risk Assessment and mitigation strategies will be guided by the following factors that contribute to bushfire risk:

- fuels, weather, topography, predicted fire behaviour and local bushfire history;
- suppression resources, access (roads, tracks) and water supply; and
- values and assets.

Mitigation will be a combination of complementary strategies, all of which are required to provide the best possible protection outcome for the solar farm and the community. The EIS will also ensure consideration of the Murrumbidgee Valley National Park Yanga Precinct Fire Management.



Bushfire Prone Land Mapping

F6-9

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Date:	09/02/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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6.9.3 Blade Throw

Blade throw refers to the risk of wind turbine blades breaking during operation, which may result in human injury or potential damage to infrastructure. Blade throw is generally considered to be a low risk during the operation phase of the Project, which will utilise wind turbine technology that has been proven to be both safe and reliable. Further, the nearest non-involved dwelling is located 3 km from a turbine.

A Blade Throw Risk Assessment will be prepared as part of the EIS, which will describe the potential impacts associated with blade throw to nearby residential receptors during operation of the Project. The assessment will be undertaken having consideration of applicable international standards concerning the design of wind turbine components.

The Blade Throw Risk Assessment will likely include the following scope of works:

- assessment of the likelihood of occurrence for a blade throw event;
- assessment of theoretical distance radii for a blade throw event;
- review of distances between turbines and nearby dwellings;
- review of historical blade throw occurrences in Australian wind farms; and
- provision of relevant mitigation measures for Project implementation.

6.9.4 Electromagnetic Field (EMF)

Electromagnetic Fields (EMF) are associated with all electrical wiring and equipment. Electrical fields are caused by the voltage of the equipment, while magnetic fields are caused by the current flowing (amperage). Electric fields and magnetic fields are independent of one another and, in combination, cause energy to be transferred along electric wires.

The Project will involve the generation of EMFs during operation from the proposed transmission lines and substations. Over the past 50 years, concerns have been expressed that the EMFs associated with electrical equipment might have adverse health effects. There are known health effects from very high levels of EMFs and health standards have been established to protect against these effects. However, the WHO (WHO, 2020) recognise that no adverse health effects from long-term exposure to extremely low frequency (ELF) EMF have been confirmed.

An EMF assessment will be prepared as a component of the EIS, which will assess the potential impacts and risks to human health associated with the EMF generated by the wind turbines and associated electrical infrastructure. While adverse health effects from exposure to ELF EMFs have not been established, the possibility remains that such effects may exist and it remains a risk during the construction and operational phases of the Project.

6.10 Water Resources

6.10.1 Existing Environment

The Project Area is located within the Murrumbidgee Catchment of the Murray Darling Basin. The Murrumbidgee Catchment covers an area of 84,000 km^2 and comprises 8 percent of the total area of the Murray-Darling Basin (NSW DPI, 2020). It contains a number of sites of international ecological significance, including the Lowbidgee Wetlands and Fivebough and Tuckerbil Swamps (NSW DPI, 2020). At its closest points, the Project Area is located approximately 25 km south of the Murrumbidgee River and 50 km north of the Murray River.

There are a number of watercourses within the Murrumbidgee Catchment located near the Project Area. At the closest points, the Project Area is located approximately 20 km north of the Edward River, 10 km north of Forest Creek, and 12 km south east of the Uara Creek.

Abercrombie Creek is a watercourse that flows east-west through the southern portions of the Project Area. In addition, there are a number of irrigation channels are present throughout the Project Area, with the main feeder being the Abercrombie Channel to the north. All creeks and watercourses within the broader area are non-perennial, and there are no wetland areas or lakes (other than small farm dams) within the Project Area. A map of watercourses within the Project Area and its surrounding areas is provided in **Figure 6-10**.

The overall topography of the Project Area is relatively flat, with only slight variances in elevation. The elevation across the Project Area lies at approximately 65-75 m above sea level (ASL). There are small sections located in the north and south of the Project Area which are mapped as areas of wetlands inundation under the Wakool LEP. These areas are associated with Abercrombie Creek, Uara Creek and Nolans Chance Lake, which is located north east of the Project Area.

Under the *Water Management Act* 2000, water access licences and controlled activity approvals are required for certain activities. The Project may require water access licences, however approval for controlled activities is not required for SSD projects.

6.10.2 Assessment Approach

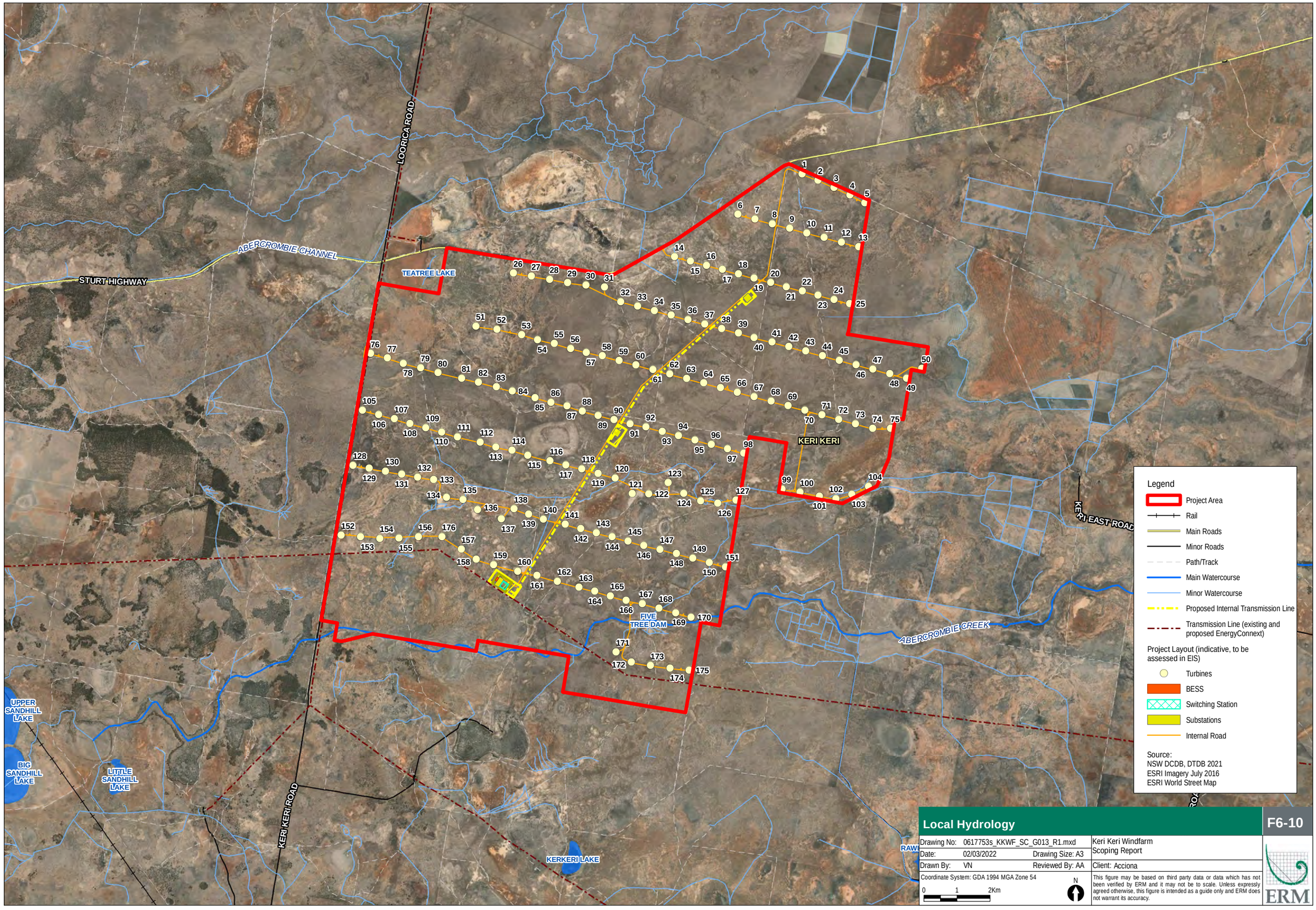
The following approach to water resources will be undertaken as part of the EIS:

Flooding and Hydrology Assessment

- A flooding assessment will be undertaken which will assess:
  - Existing flood behaviour through review of existing available data, developing computer models and defining flood levels, depths, velocities and flood hazard category for the Project Area for existing topographic conditions; and
  - Post development flood behaviour, including quantifying flood levels, depths, velocities and flood hazard category with the Project in place.

Water Assessment

- A water impact assessment will be undertaken for the Project (forming a ‘Soils and Water Assessment), which will include a review of standard construction environmental management plans to ensure that impacts during excavation, road works, transport of machinery, etc. are adequately mitigated through avoidance, minimisation and management.
- The assessment will consider the potential impacts of the Project on hydrology and groundwater and will determine the need for further hydrological investigations. The assessment will also identify and quantify sources of water required during construction and operation of the Project, and determine whether any water access licences under the *Water Management Act* 2000 will be required. All required licences and approvals will be obtained prior to the commencement of construction activities.
- The water impact assessment will be generally undertaken in accordance with the following guidelines and resources:
  - Managing Urban Stormwater; Soils & Construction (Landcom, 2004);
  - Guidelines for Controlled Activities on Waterfront Land (DPI Water, 2018);
  - Relevant Water Sharing Plans (DPI Water); and
  - Guidelines for Watercourse Crossings on Waterfront Land (DPI Water, 2012).



Local Hydrology

F6-10

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Date:	02/03/2022	Drawing Size: A3	
Drawn By:	VN	Reviewed By: AA	Client: Acciona

Coordinate System: GDA 1994 MGA Zone 54

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6.11 Land Resources

6.11.1 Existing Environment

A preliminary review of the Soil and Land Capability Mapping data for NSW (OEH, 2012) suggests that there are two land and soil capability (LSC) classes within the Project Area.

The majority of land within the Project Area is classified as *Class 5 – Severe limitations*. An area through the central portion and a small area in the north west corner of the Project Area are classified as *Class 6 – Very severe limitations*. There are no Class 1 – 4 soils within the Project Area.

A search of the Australian Soil Classification (ASC) Soil Type Map of NSW (OEH, 2017), reveals that the Project Area is largely dominated by Vertosols (VE) soils, which are also known as cracking clay soils. They have a clay texture throughout the profile, display strong cracking when dry, and shrink and swell significantly during wetting and drying phases. Vertosols generally have high soil fertility, and have a large water-holding capacity. To a lesser extent, the ASC Soil Type Map of NSW also revealed the presence of:

- Rudosols (RU) in the central area of the Project Area surrounding Abercrombie Creek and a small area in the northwest of the Project Area; and
- Chromosols (CH) in a small area in the northwest of the Project Area adjacent to Keri Keri Road.

A map of land and soil capability classes in the vicinity of the Project Area is provided in **Figure 6-11**.

OEH (2017) and Mitchell (DECCW, 2002) data shows that the Project Area is composed of grey, brown, and red clays; siliceous sands; and red and brown earths. These soils can be understood in relation to both the current and previous hydrological systems of the area, with the majority of the level plains areas comprised of Quaternary alluvium of sands and clays (pzc), while areas of lower relief within the north of the Project Area comprised of grey cracking clays (lf). In addition, areas of prior stream deposits are also evident throughout the Project Area. A soils map is provided in **Figure** 6-12.

A review of Biophysical Strategic Agricultural Land (BSAL) data showed that there are no areas of BSAL mapped within, or in close proximity to the Project Area.

6.11.2 Assessment Approach

Revised Large Scale Solar Guidelines have been prepared by DPE and provide further guidance on the process for assessing impacts on agricultural land and principles to encourage development on land with limited agricultural productivity. The guidelines were on exhibition to 25 February 2022.

Whilst the guidelines apply to large scale solar developments, consultation with DPE in January 2022 identified the relevance of the guideline to large scale wind farm developments in the context of the approach to assessing soil and agricultural capability within the EIS.

In this regard, the Project EIS proposes to follow the approach to soils and agricultural impact assessment as detailed in Appendix B of the guideline. Figure 1 of Appendix B of the guideline provides a flow chart outlining various levels of assessment. In accordance with that flow chart, the Project Area:

- is on land zoned RU1;
- is not mapped as Land and Soil Capability Class 1 – 4, nor BSAL nor Critical Industry Cluster (CIC);
- is not adjacent to land mapped as Land and Soil Capability Class 1 – 3, nor BSAL nor CIC; and
- is adjacent to land zoned RU1.

A Level 1 Basic Assessment, where the Project location is located adjacent to rural zoned land, is therefore required.

In accordance with the guideline, a Level 1 Basic Agricultural Impact Assessment will include:

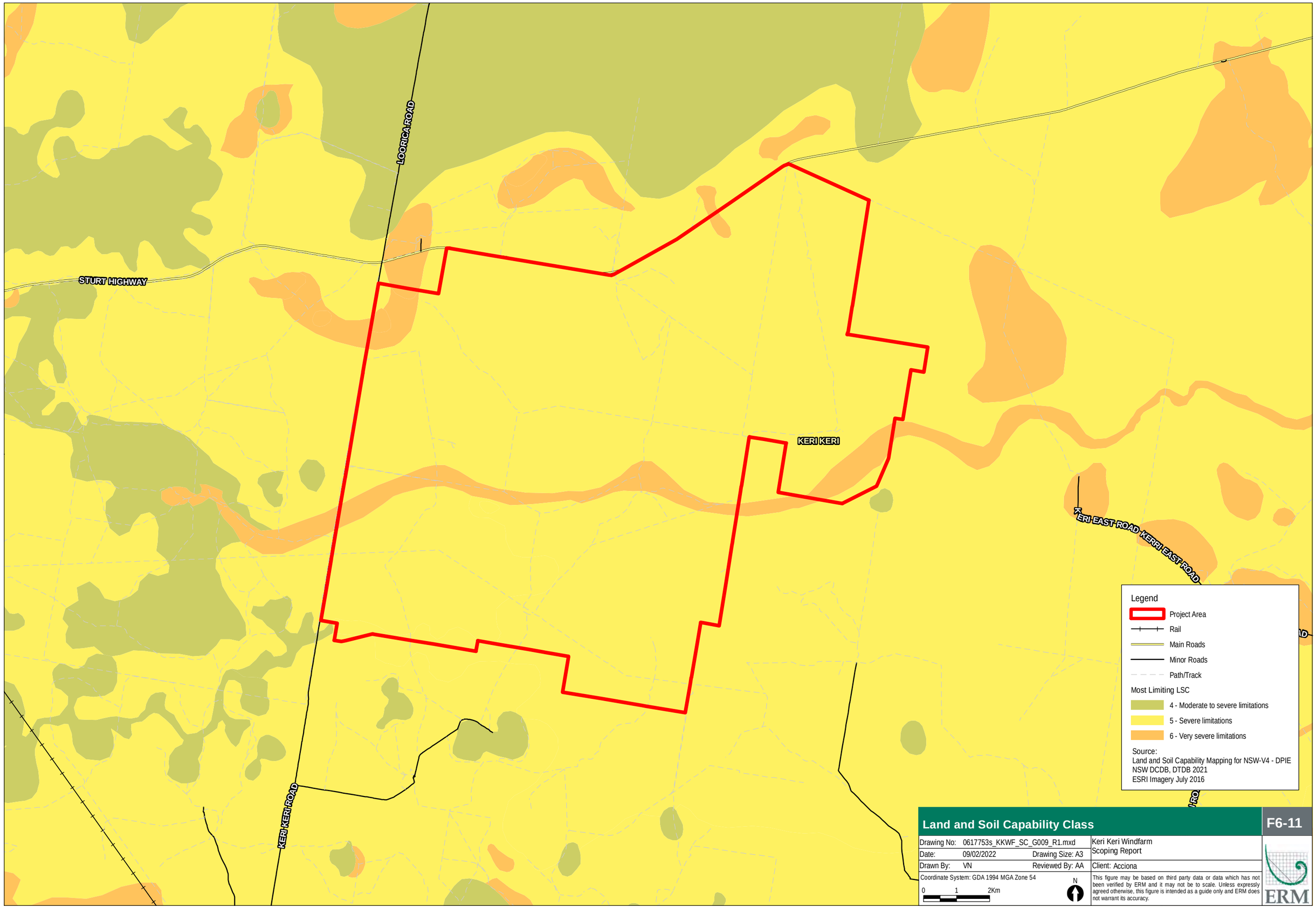
- land and soil capability mapping;
- include consultation with neighbouring landholders to identify potential project impacts (if any) on immediately adjacent agricultural land;
- describe project impacts (if any) on immediately adjacent land;
- describe consultation undertaken; and
- consider measures to reduce impacts on neighbouring agricultural land.

It is noted that in accordance with Table 1 of Appendix B of the guideline, soil sampling is required where the subject site is mapped as LSC Class 1 – 4, BSAL or CIC, or is adjacent to land mapped as LSC Class 1 – 3, BSAL or CIC. These do not apply to the Project and soil sampling is therefore not proposed, consistent with the guideline.

A soil assessment (forming a 'Soils and Water Assessment') will also be undertaken for the EIS, which will primarily focus on assessing the impacts of soil disturbance from vegetation clearing and erosion from excavation works. The assessment will also propose appropriate mitigation measures during construction and operation of the Project.

The soil and landform impact assessment will generally consider the following guidelines:

- Soil and Landscape Issues in Environmental Impact Assessment (OEH, 2000);
- Landslide Risk Management Guidelines (AGS, No Date); and
- Site Investigations for Urban Salinity (OEH, 2002).


LOORICA ROAD
STURT HIGHWAY
KERI KERI
KERI EAST ROAD
KERRI EAST ROAD
KERI KERI ROAD
Legend
Project Area
Rail
Main Roads
Minor Roads
Path/Track
Most Limiting LSC
4 - Moderate to severe limitations
5 - Severe limitations
6 - Very severe limitations
Source:
Land and Soil Capability Mapping for NSW-V4 - DPIE
NSW DCDB, DTDB 2021
ESRI Imagery July 2016
Land and Soil Capability Class
F6-11
Drawing No: 0617753s_KKWF_SC_G009_R1.mxd
Keri Keri Windfarm
Scoping Report
Date: 09/02/2022
Drawing Size: A3
Drawn By: VN
Reviewed By: AA
Client: Acciona
Coordinate System: GDA 1994 MGA Zone 54
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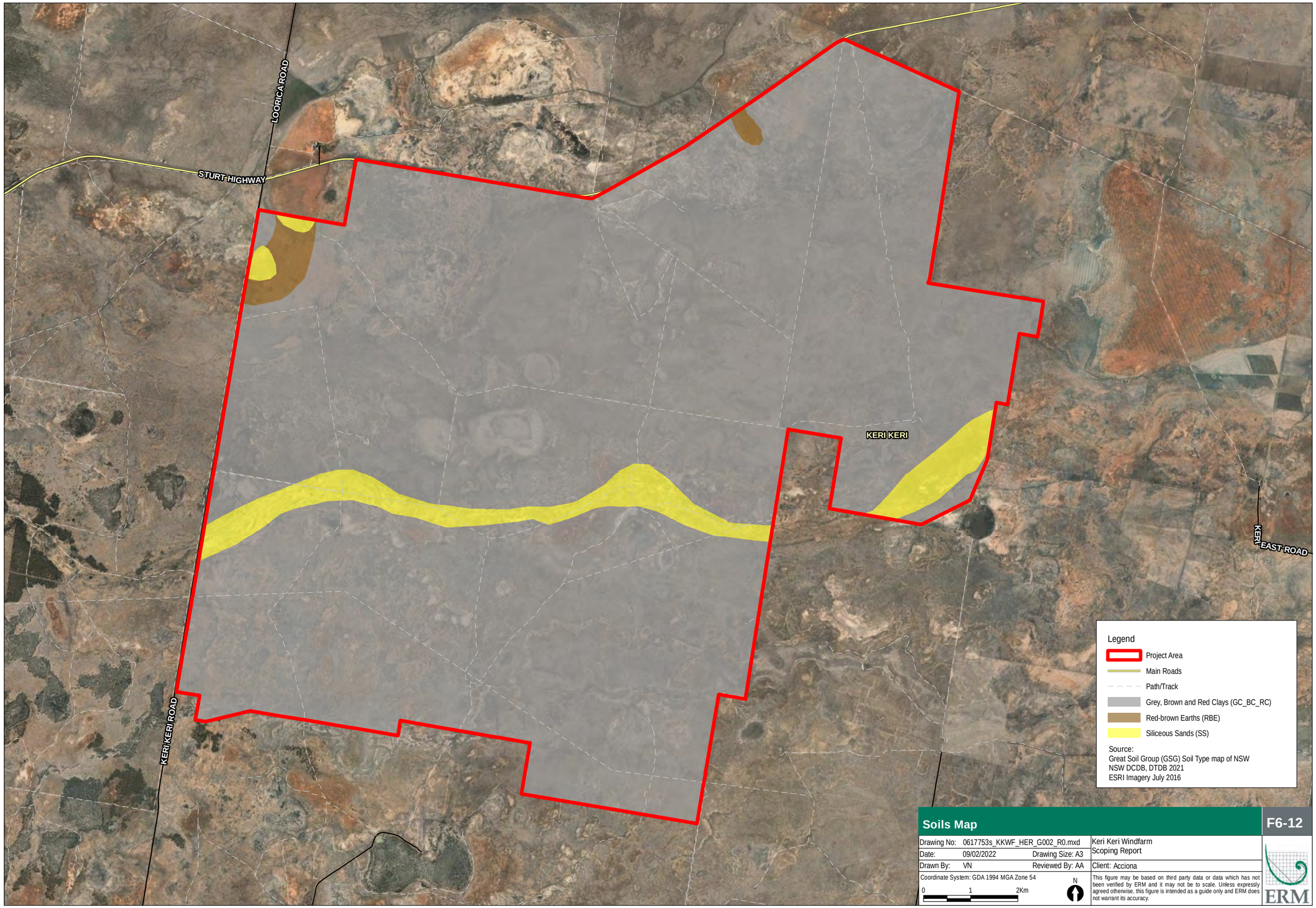

Soils Map

F6-12

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Drawn By:	VN	Reviewed By: AA	Client: Acciona

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6.12 Air Quality

6.12.1 Existing Environment

Land uses in the areas surrounding the Project Area are predominantly agricultural, and this is likely to influence the local air quality. Air quality in the region is generally expected to be of good quality and typical of what is expected in a rural setting, due to factors including low population density and low traffic volumes.

Existing sources of air pollution are likely sourced from dust, vehicle, and machinery from agricultural production, and vehicle exhaust emissions from traffic along the Sturt Highway and Cobb Highway. There may be a small increase in air contaminants during the colder months, due to smoke emissions sourced from soil fuel heating operations.

The nearest climate station to the Project Site at the Balranald RSL (Station No. 49002), which lies at an elevation of 61 m above sea level. A review of the Australian Bureau of Meteorology (BOM) climatic records from 1991-2020 indicate a mean summer maximum temperature of 33.5°C in January, and a mean winter minimum temperature of 3.8°C in July. Additionally, rainfall records from this same station indicate a mean annual rainfall of 327.7 mm, with the highest monthly maximum occurring in November (39.9 mm) and the lowest monthly maximum occurring in March (16.9 mm).

The Project is not expected to have significant impacts on air quality in the region. Impacts during construction will generally relate to dust generation from construction works, while impacts during operation are expected to be minimal. More broadly, the Project will also have a positive impact on air quality by contributing to the overall reduction of greenhouse gas emissions.

6.12.2 Assessment Approach

The EIS will qualitatively consider the potential impacts to air quality, and propose appropriate management and mitigation measures during the construction and operational phases of the Project. Air quality and dust management will generally be assessed in accordance with relevant guidelines and policies including:

- National Greenhouse Accounts Factors (Australian Government, 2021); and
- NSW Climate Change Policy Framework (Office of Environment and Heritage, 2016).

6.13 Waste Management

The EIS will quantify and classify the likely waste streams to be generated during construction and operation and describe and describe measures to management, reuse, recycle and dispose of this waste in accordance with waste Classification Guidelines (NSW EPA, 2014).

6.14 Cumulative Impacts

The Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021c) provides a framework for assessing and managing project-level cumulative impacts. The guideline defines six key steps in cumulative impact assessment, as detailed in **Figure 6-13.**

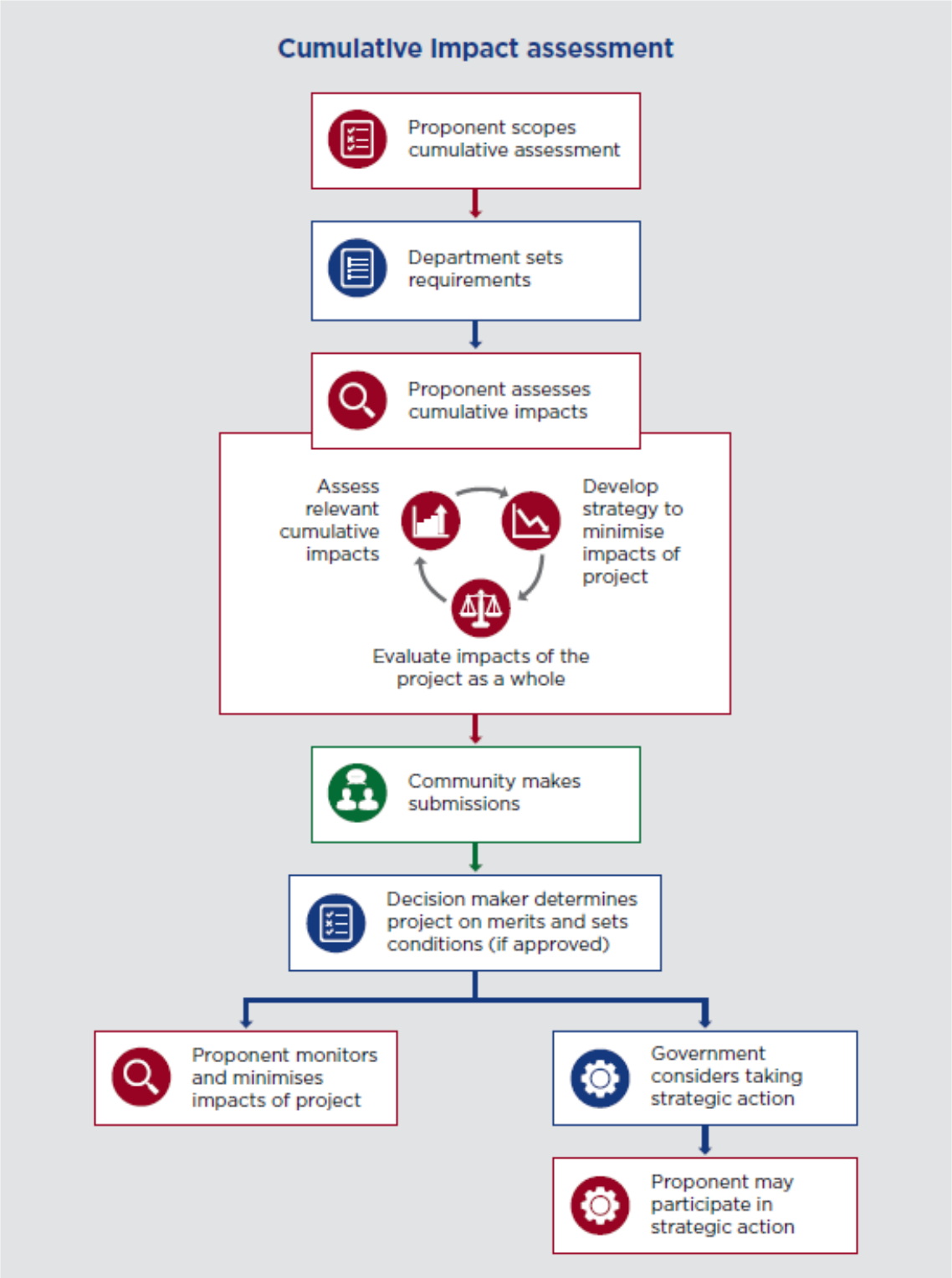

Figure 6-13 Key Steps in cumulative impact assessment

Source: (DPIE, 2021c)

The cumulative impact assessment to be undertaken as part of the EIS is scoped during the Scoping Report phase, and is to include consideration of key questions, as detailed herein.

Table 6-14 Scoping Cumulative Impacts – Key Questions

Scoping Questions	Considerations	Commentary
What to assess	Government 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 4. Site setting and features from a regional and local context are discussed in Section 2.1, which notes: ■ The key land uses and economic activities within the region are centred around agriculture and food production. ■ The closest population centre is the town of Balranald, NSW, which is located approximately 31 km to the north west of the Project Area. ■ The Project Area is situated near Project EnergyConnect, which is a proposed 330 kV transmission line. ■ Yanga SCA is located to the west of the Project Area. ■ Abercrombie Creek is a watercourse that flows east-west through the southern portions of the Project Area. ■ There are a number of proposed, approved or operational renewable energy projects located in proximity to the Project Area and the broader Riverina region as detailed in **Figure 2-1**. ■ There is potential for the impacts of these proposed projects to combine with the potential visual and environmental impacts of the Project, generating cumulative impacts that are greater than the impact of each project individually.
	The Project and other potentially relevant future projects that may be developed over the same time period or similar timeframes as the Project	
	Potentially 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 likely scale and nature of the cumulative impact of these projects.	
What study area	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 study area for matter subject to cumulative assessment will be guided by the relevant technical assessments and locality features. Cumulative visual impacts for example will include, as a minimum, an 8 km radius around the WTGs and is subject to further assessment during the EIS phase, including consideration of topography and vegetation features.

Scoping Questions	Considerations	Commentary
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.	The proposed timeframe for the development of the Project is: ■ Planning and Approvals: completion late 2023 ■ Construction: 2024 (two years) ■ Operation: from 2026 (30 years) Various levels of cumulative impacts may occur during the various Project phases, as detailed in **Table 6-15.**
What projects to include	Build upon past and current operating project assessments by considering the cumulative impacts of the proposed project on key matters when other future proposed projects are included in the assessment.	There are a number of proposed, approved or operational renewable energy projects located in proximity to the Project Area and the broader Riverina region as detailed in **Figure 2-1** including: ■ Limondale Solar Farm, Sunraysia Solar Farm (both operational); ■ Hay Solar Farm (approved); and ■ Lang's Crossing Solar Farm, Burrawaong Wind Farm, Baldon Wind Farm and Keri Keri Solar Farm (all proposed).

Table 6-15 Cumulative Impacts and Timeframes

Project Phase	Estimated Timeframe	Likely Scale of Impact	Duration of Impact	Potential Cumulative Impacts
Assessment	2022	Minor	Temporary	Social – community health and wellbeing
Approval	2023	Minor	Temporary	Social – community health and wellbeing
Construction	2024 - 2026	Moderate to Major	Temporary	Social – community health and wellbeing Amenity – visual Amenity – noise Transport and traffic Other environmental (biodiversity, heritage)
Operation	2026-27 – 2056-57	Minor to Moderate	Ongoing during operations	Amenity – visual Amenity – noise
Decommissioning	Post 2056	Moderate	Temporary	Social – community health and wellbeing Amenity – visual Amenity – noise Transport and traffic

They may also be cumulative benefits to local communities from these projects, through the creation of new employment opportunities and through their contribution to the local and regional economies.

Consideration of cumulative impact is provided in the Scoping Summary Table (**Appendix A**). A cumulative assessment will be undertaken as a component of the EIS in accordance with the Cumulative Impact Assessment Guidelines for State Significant Projects (DPIE, 2021c). As per the DPIE Cumulative Impact Assessment Guidelines, **Appendix E** provides a summary of the cumulative impacts to be assessed.

7. CONCLUSION

A preliminary environmental assessment was undertaken to identify the potential matters associated with the proposed construction and operation of the Project. This considered:

- the scale and nature of the likely impacts of the Project and the sensitivity of the receiving environment;
- whether the Project is likely to generate cumulative impacts with other relevant future projects in the area;
- the ability to avoid, minimise and/or offset the impacts of the Project, to the extent known at the scoping stage; and
- the complexity of the technical assessment of the Project.

Detailed assessments will be undertaken for environmental aspects that present a potential high constraint to the development, and other aspects which require detailed assessment, but do not pose a high risk constraint. The assessments will include:

Table 7-1 Summation of Assessment Approach

Level of Assessment	Aspect
Detailed (potential high constraint)	Amenity – Landscape and Visual Amenity – Noise and Vibration Biodiversity Heritage - Aboriginal Cultural
Detailed (potential constraint)	Access - Traffic and Transport Aviation Telecommunications Social Impacts Cumulative Impacts
Standard	Hazards and Risks – Preliminary Hazard Analysis Hazards and Risks – Bushfire Heritage – Historic Air Quality and Greenhouse Gas Land Resources (Agricultural Assessment Level 1 Basic) Water Resources (Flooding and Water Hydrology) Hazards and Risks – Electromagnetic Field Hazards and Risks – Blade Throw Waste Management

The EIS will be prepared in accordance with the SEARs to be issued by DPE in response to this Scoping Report. All assessments (including specialist assessments) will be completed by taking into consideration consultation with stakeholders, industry best practice guidelines, and the experiences from other wind farm projects.

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APPENDIX A SCOPING SUMMARY TABLE

Scoping Summary Table

Level of Assessment	Matter	Scale of Impact [5]	Nature of Impact [6]	Sensitivity of receiving environment[7]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report Reference
Detailed	Amenity – Landscape and Visual	High	Direct Cumulative Perceived	Sensitive (receptors, townships, communities)	Likely	Yes	Specific	■ Wind Energy: Visual Assessment Bulletin 2016 (NSW Government) ■ Scottish Natural Heritage Visual Representation of Wind Farms – Good Practice Guidance (2017) ■ Environment Protection and Heritage Council, Draft National Wind Farm Development Guidelines (2010) ■ Landscape Institute and Institute of Environmental Management and Assessment, Guidelines for Landscape and Vidual Impact Assessment Third Edition (2013) ■ Clean Energy Council, Best Practice Guidelines and Wind Energy Development (2018)	Section 6.2.1
Detailed	Amenity – Noise and Vibration	High	Direct Cumulative Perceived	Sensitive (receptors)	Likely	Yes	General	■ Wind Energy: Noise Assessment Bulletin 2016 (NSW Government) ■ Noise Policy for Industry (2017) (NSW Environment Protection Authority) ■ Interim Construction Noise Guidelines 2009 (Department of Environment, Climate Change) ■ NSW Road Noise Policy 2011 (Department of Environment, Climate Change and Water) ■ Assessing Vibration: A Technical Guideline 2006	Section 6.2.2
Detailed	Biodiversity	High	Direct Indirect Cumulative	Sensitive (high ecological values of species / biodiversity present)	Likely	Yes	General	■ Biodiversity Assessment Methodology (DPIE 2020) ■ Commonwealth EPBC 1.1 Significant Impact Guidelines – Matters of National Environmental Significance (Commonwealth of Australia, 2013) ■ Commonwealth Department of the Environment – Survey Guidelines for Nationally Threatened Species (various)	Section 6.3
Detailed	Heritage - Aboriginal Cultural	High	Direct Indirect Cumulative Perceived	Sensitive (cultural values)	Likely	Yes	Specific	■ Guide to investigating, assessing and reporting on Aboriginal cultural heritage in NSW (OEH 2011) ■ Code of Practice for the Archaeological Investigation of Aboriginal Objects in NSW (DECCW 2010) ■ Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010 (DECCW, 2010) ■ Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW (DECCW, 2010)	Section 6.4
Detailed	Access - Traffic and Transport	Moderate	Direct Indirect Cumulative	Sensitive (disturbance to other road users)	Likely	Yes	Specific	■ Guide to Traffic Generating Developments (RTA, 2002) ■ Austroads Guide to Road Design ■ Austroads Guide to Traffic Management	Section 6.4
Detailed	Aviation	Moderate	Direct	Sensitive (impacts to aviation and agricultural activities)	Likely	No	Specific	■ The Civil Aviation Regulation 1988; ■ The Civil Aviation Safety Regulations 1998; and ■ National Airports Safeguarding Framework Guideline D: Managing the Risk of Wind Turbine Farms as Physical Obstacles to Air Navigation (DITRDC, 2019).	Section 6.6
Detailed	Telecommunications (Electromagnetic interference)	Moderate	Direct	Sensitive (safety)	Likely	No	General	■ Australian Radio and Communications Act *1992;* ■ NSW Wind Energy Guideline for State Significant Wind Development (DPIE, 2016a); and ■ The Clean Energy Council Best Practice Guidelines (CEC, 2018).	Section 6.7
Standard	Social	Moderate	Direct Indirect Cumulative	Sensitive (social, environmental and economic values)	Likely	Yes	Specific	■ Social Impact Assessment Guideline for State Significant Projects (DPIE, 2021b) ■ Technical Supplement: Social Impact Assessment Guideline for State Significant Projects (Technical Supplement) (DPIE, 2021e)	Section 6.8

[5] Scale of Impacts – based on the severity of the impact, the geographical location and the duration of the impact as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE, 2021).

[6] Nature of Impact - type of impact, ie direct, indirect, cumulative, perceived, as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE, 2021).

[7] Sensitivity of the receiving environment – expressed in legislation, societal values, or vulnerability to change, as detailed in Appendix C of State Significant Development Guidelines – Preparing a Scoping Report (DPIE, 2021).

Level of Assessment	Matter	Scale of Impact [5]	Nature of Impact [6]	Sensitivity of receiving environment[7]	Mitigation Measures Required	Cumulative Impact Assessment	Engagement	Relevant government plans, policies and guidelines	Scoping Report Reference
			Perceived					■	
Standard	Hazards and Risks – Resilience and Hazards SEPP / Preliminary Hazard Analysis (BESS)	Moderate	Direct Indirect Perceived	Sensitive (safety)	Likely	No	General	■ Hazardous and Offensive Development Application Guidelines: Applying SEPP 33 (Department of Planning, 2011) ■ Assessment Guideline: Multi-level Risk Assessment (Department of Planning and Infrastructure, 2011) ■ Hazardous Industry Planning Advisory Paper No 6: Hazard Analysis (Department of Planning, 2011)	Section 6.9.16.9.1
Standard	Hazards and Risks – Bushfire	Low	Direct Indirect	Sensitive (safety)	Likely	No	General	■ Planning for Bushfire Protection 2019 – NSW Rural Fire Service (RFS, 2019)	Section 6.9.2
Standard	Heritage – Historic	Low	Direct Indirect	Sensitive (heritage values)	Likely	No	Specific	■ Historical Archaeology Code of Practice (Heritage Council, 2006)	Section 6.4.2
Standard	Air Quality	Low	Direct Indirect	Sensitive (local air quality)	Likely	No	General	■ National Greenhouse Accounts Factors (Australian Government, 2021); and ■ NSW Climate Change Policy Framework (Office of Environment and Heritage, 2016).	Section 6.12
Standard	Land Resources (agriculture and soils)	Low	Direct Indirect	Sensitive (agricultural land use)	Likely	No	General	■ Soil and Landscape Issues in Environmental Impact Assessment (OEH, 2000); ■ Landslide Risk Management Guidelines (AGS, No Date); and ■ Site Investigations for Urban Salinity (OEH, 2002). ■ Revised Large Scale Solar Guidelines (DPE, 2022)	Section 6.11
Standard	Water Resources (flooding and hydrology)	Low	Direct Indirect	Sensitive (local hydrology and water quality)	Likely	No	General	■ Managing Urban Stormwater; Soils & Construction (Landcom, 2004); ■ Guidelines for Controlled Activities on Waterfront Land (DPI Water, 2018); ■ Relevant Water Sharing Plans (DPI Water); and ■ Guidelines for Watercourse Crossings on Waterfront Land (DPI Water, 2012) ■ Floodplain Risk Management Guidelines (Department of Environment and Climate Change, 2016) ■ Floodplain Development Manual: The management of flood liable land (NSW Government, 2005)	Section 6.10
Standard	Hazards and Risks – Health - Electromagnetic Field	Low	Direct Perceived	Sensitive (safety)	Likely	No	General	■ National Health and Medical Research Council advice	Section 6.9.4
Standard	Hazards and Risks – Blade Throw	Low	Direct	Sensitive (safety)	Likely	No	General	■ Relevant international studies and standards for design of wind turbine components and blade throw risk	Section 6.9.3
Standard	Waste Management	Low	Direct Indirect	Sensitive (environmental values, safety)	Likely	No	General	■ Waste Classification Guidelines (DECCW, 2009)	

APPENDIX B COMMUNITY AND STAKEHOLDER ENGAGEMENT PLAN

APPENDIX C PRELIMINARY VISUAL IMPACT ASSESSMENT

APPENDIX D PRELIMINARY BIODIVERSITY ASSESSMENT

APPENDIX E CUMULATIVE IMPACT ASSESSMENT SCOPING SUMMARY

Key

Level of Assessment	Description
Detailed Assessment	The Project may result in significant impacts on the matter, including cumulative impacts. Detailed assessment is characterised by: ■ Potential overlap in impacts between a future project (e.g. Project A) and the proposed project ■ Potential for significant cumulative impacts as a result of the overlap, requiring detailed technical studies to assess the impacts ■ Sufficient data is available on the future project to allow a detailed assessment of cumulative impacts with the proposed project for the relevant matter ■ Uncertainties exist with respect to data, mitigation, assessment methods and criteria
Standard Assessment	The Project is unlikely to result in significant impacts on the matter, including cumulative impacts. Standard assessments are characterised by: ■ Impacts are well understood ■ Impacts are relatively easy to predict using standard methods ■ Impacts are capable of being mitigated to comply with relevant standards or performance measures ■ the assessment is unlikely to involve any significant uncertainties or require any detailed cumulative impact assessment.
N/A	No potential overlap in impacts between a future project and the proposed project that would warrant any consideration in the cumulative impact assessment

Cumulative Impact Assessment Scoping Summary Table

Project	Distance to Project (approx.)	Project Status/ Indicative timing/ Overlap	Potential overlap between impacts of Project and impact of other projects			
			Access (Traffic)	Amenity – Noise	Amenity – Visual	Social (workforce, workers accommodation, health and wellbeing, goods and services)
Limondale Solar Farm (Operational)	33 km	■ Project completed; no construction overlap ■ Operational since late 2021 ■ Proposed operational life of 30 years ■ Operations overlap				
	Key Features ■ 349 MW capacity solar farm ■ Approx. 872,000 panels ■ Area across 900 hectares		No potential overlap in access, traffic and transport impacts between this project and the proposed Project.	No potential overlap in noise impacts between this project and the proposed Project.	No potential overlap in visual impacts between this project and the proposed Project.	Low risk of cumulative social impacts. Further assessment required.
Sunraysia Solar Farm (Operational)	33 km	■ Project completed; no construction overlap ■ Operational since 2020 ■ Proposed operational life of 30 years ■ Operations overlap				
	Key Features ■ 255 MW capacity solar farm ■ 750,000 solar modules ■ Area across 1,000 hectares		No potential overlap in access, traffic and transport impacts between this project and the proposed Project.	No potential overlap in noise impacts between this project and the proposed Project.	No potential overlap in visual impacts between this project and the proposed Project.	Low risk of cumulative social impacts. Further assessment required.

Project	Distance to Project (approx.)	Project Status/ Indicative timing/ Overlap	Potential overlap between impacts of Project and impact of other projects			
			Access (Traffic)	**Amenity – Noise**	**Amenity – Visual**	**Social (workforce, workers accommodation, health and wellbeing, goods and services)**
Lang's Crossing Solar Farm (Proposed)	78 km	■ Currently in its early planning phase ■ Construction and operations timeframes unknown				
	Key Features ■ 100 MW solar farm		Low risk of cumulative impacts relating to access, traffic and transport, subject to the transport route. Low risk given the distance of this project from the proposed Project. Further assessment required.	No potential overlap in noise impacts between this project and the proposed Project.	No potential overlap in visual impacts between this project and the proposed Project.	Low risk of cumulative social impacts, given the distance of this project from the proposed Project. Further assessment required.

Project	Distance to Project (approx.)	Project Status/ Indicative timing/ Overlap	Potential overlap between impacts of Project and impact of other projects			
			Access (Traffic)	Amenity – Noise	Amenity – Visual	Social (workforce, workers accommodation, health and wellbeing, goods and services)
Hay Solar Farm (Approved)	82 km	■ Project approved in 2017 ■ Proposed 12-month construction period (construction timeline unknown) ■ Proposed operational life of 30 years				
	Key Features ■ 110 MW solar farm ■ 300,000 panels ■ Area across 660 hectares		Low risk of cumulative impacts relating to access, traffic and transport, subject to the transport route. Low risk given the distance of this project from the proposed Project. Further assessment required.	No potential overlap in noise impacts between this project and the proposed Project.	No potential overlap in visual impacts between this project and the proposed Project.	Low risk of cumulative social impacts, given the distance of this project from the proposed Project. Further assessment required.
Burrawong Wind Farm (Proposed)	20 km	■ SEARs issued; EIS submission expected in late 2022 ■ Construction to begin in 2023 across a period of 2-3 years ■ Proposed operational life of 30-35 years ■ Construction and operations overlap				

Project	Distance to Project (approx.)	Project Status/ Indicative timing/ Overlap	Potential overlap between impacts of Project and impact of other projects			
			Access (Traffic)	**Amenity – Noise**	**Amenity – Visual**	**Social (workforce, workers accommodation, health and wellbeing, goods and services)**
	Key Features ■ 750 MW wind farm ■ 107 WTGs ■ Area across approx. 2660 ha		Potential overlap of construction and operational phases. Potential risk of cumulative impacts relating to access, traffic and transport. Further assessment required.	Low risk of cumulative noise impacts. Further assessment required.	Potential risk of cumulative visual impacts, given the close distance of this project to the proposed Project. Further assessment required.	Low risk of cumulative social impacts subject to the proposed timing of the construction of the Burrawong Wind Farm. Further assessment required.
Baldon Wind Farm	Directly east of the Project Area)	■ Proposed; currently undertaking community engagement and preparing the Scoping Report ■ SEARs not yet requested ■ Construction and operations timeframes unknown				
	Key Features ■ 800 – 900 MW wind farm ■ 140 – 170 WTGs		Potential risk of cumulative impacts relating to access, traffic and transport, subject to the construction and operations timeframes and proposed transport route. Further assessment required.	Low risk of cumulative operational noise impacts, noting distance to non-involved dwellings. Further assessment required.	Potential risk of cumulative visual impacts, given the close distance of this project to the proposed Project. Further assessment required.	Low risk of cumulative social impacts, subject to the proposed timing of the construction of the Baldon Wind Farm which is currently unknown. Further assessment required.

Project	Distance to Project (approx.)	Project Status/ Indicative timing/ Overlap	Potential overlap between impacts of Project and impact of other projects			
			Access (Traffic)	**Amenity – Noise**	**Amenity – Visual**	**Social (workforce, workers accommodation, health and wellbeing, goods and services)**
Keri Keri Solar Farm (Proposed)	In the southern portion of the Project Area)	■ SEARs requested ■ Construction expected to begin in 2024 for a period of 18-24 months ■ Operational phase begins in 2026 for a 30-year period ■ Construction and Operations overlap				
	Key Features ■ 400 MW solar farm ■ Area across approx. 1,322 ha		Overlap of construction and operational phases. Further assessment required.	Further assessment required.	Further assessment required.	Further assessment required.
Project EnergyConnect (NSW – Eastern Section) (Proposed)	0 km (within the Project Area)	■ Proposed; EIS currently on exhibition ■ Construction expected to begin in late 2022 for a period of 18 months ■ Potential construction overlap				
	Key Features ■ 330kV transmission line ■ Includes 375 km of new transmission lines and associated infrastructure		Possible overlap of construction phase. Potential risk of cumulative impacts relating to access, traffic and transport. Further assessment required.	Low risk of cumulative noise impacts. Further assessment required.	Low risk of cumulative visual impacts. Further assessment required.	Low risk of cumulative social impacts. Further assessment required.

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